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ASSESSMENT OF PRE-PRACTICE HYDRATION STATUS OF NATIONAL ATHLETES IN SRI LANKA USING URINE SPECIFIC GRAVITY MEASUREMENTS

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ABSTRACT

In the field of competitive sports, optimal performance is influenced by the physiological well-being of the athletes, where hydration is a key factor that influencing their performance. The study aimed to assess the pre-practice hydration status of national athletes in Sri Lanka. A cross-sectional descriptive research design was employed. One spontaneously voided urine sample was collected from each athlete approximately one hour before the training session and this sample was tested for Urine Specific Gravity (USG) using a handheld refractometer. A fluid intake questionnaire was utilized to identify the fluid intake patterns of the athletes and to record the onset menstruation dates of the female national athletes. Using a multistage sample technique, 89 national athletes (60.67% female and 39.33% male) representing both team and individual sport categories were chosen for this study. The collected data were analyzed using descriptive statistics and Pearson's Chi-square test. The results of the Urine Specific Gravity measurements revealed that 51.69% of the athletes were Dehydrated with a mean USG of 1.036 ± 0.002, 31.46% appeared Hypohydrated with a mean USG of 1.024 ± 0.001 and 16.85% of the athletes appeared Euhydrated with a mean USG of 1.0125 ± 0.013. The results indicated there was no association in the pre-practice hydration status of National Athletes in Sri Lanka with gender differences (x^2 =1.6028, p >0.05). Through the fluid intake questionnaire, it was identified, that in women, there was no significant association of menstruation phases (follicular phase and luteal phase) with the pre-practice hydration status (x^2 = 0.41913, p >0.05). The study highlights the importance of tailored hydration strategies to optimize the health and performance of National level athletes in Sri Lanka. **Keywords:** Dehydration, Fluid Balance, Hydration Status, Sport Performance

INTRODUCTION

Hydration is a critical factor influencing athletic performance and maintaining optimal fluid balance to achieve peak physical condition (Barley et al., 2020). The body must be hydrated for at least a few hours before performing a physical activity to allow fluid absorption (Sawka et al., 2015a). Training for long hours can increase the risk of being dehydrated and athletes must keep the body hydrated before training through required body fluids to dodge the functional damage in the body that could be caused during physical activity (Ashadi et al., 2018).

When considering the sexual differences related to hydration status, females tend to have thermoregulatory responses during the luteal phase of menstruation due to excessive sweating (Cheung et al., 2015). Menstrual cycle fluctuations present specific challenges for female athletes since they can affect their level of hydration and, in turn, their performance.

PURPOSE OF THE STUDY

The study aimed to address this gap by investigating estimating and reporting the pre-practice hydration status of National Athletes in Sri Lanka. There were no publications from any National authorities on the Hydration strategies for athletes in Sri Lanka. A pilot study was conducted with a representative group of 56 national athletes and the results of the study confirmed that 91.1% of the participants did not have a standardized Hydration regimen and 8.9% of the Your paragraph text (2) participants who had a hydration regimen only had “in practice/during” (100%) hydration regimen only. 100% of the participants were not aware of any evidence-based practices related to hydration for athletes in Sri Lanka.

METHODOLOGY

The sample consisted of 89 participants which included National Team Sports athletes; Netball, Volleyball, Rugby, Kabbadi, Baseball, Karate, Basketball, Football, Hockey, Swimming, Badminton, Table Tennis, Tennis, and National Individual sports athletes, representing both Track and Field events; 100m, 110m hurdles, 400m, long jump, hammer throw. The mode of measuring the hydration Status selected was to measure the Urine Specific Gravity as it has a simple procedure and is considered a valid method (Wyness et al., 2016). One spontaneously voided (spot) urine sample was collected from each participant approximately forty-five minutes before the training session. The collected sample was assessed for the measurement of Urine Specific Gravity using a “Handheld Refractometer. The ambient temperature was recorded to ensure that all participants had tested for urine-specific gravity under a common range of ambient temperatures tested using the Ambient Temperature thermometer device. The athletes were given a fluid intake questionnaire (Schröder et al., 2011) (Nissensohn and Kavouras, 2016) to gather information about their fluid intake habits before the training session. The questionnaire included details about; the types of fluids consumed (ex: water, soda, soups, vegetable drinks, tea, coffee, etc.), frequency of intake, and a separate section for the female athletes to record the dates of their last menstrual period to estimate whether there is an effect of the follicular and luteal phase of the menstrual cycle on the Hydration status of an athlete.

RESULTS

Among the athletes surveyed, 16.85% were classified as Euhydrated with a mean Urine Specific Gravity (USG) of 1.0359 ± 0.00001, 31.46% with a mean USG of 1.024 ± 0.001, fell under the hypo hydrated category, majority of the athletes, totaling 51.69% with a mean USG of 1.01307 ± 0.00001 were classified as significantly Hypo hydrated, denoting a severe state of dehydration.

After examining the potential differences in pre-practice hydration status between male and female national athletes in Sri Lanka. Chi-Square Test which revealed a Chi-Square statistic of 1.602 with 2 degrees of freedom and a p-value of 0.448. which indicated that there is no significant association or difference in the pre-hydration status of National athletes in Sri Lanka with gender differences. The study investigated the differences in the pre-practice hydration status among female national athletes in the follicular and luteal phases of menstruation. Pearson's Chi-square test yielded a chi-square statistic of 0.419 with 2 degrees of freedom and a p-value p 0.810. It was concluded that there is no significant association or difference in the pre-practice hydration status of female national athletes in Sri Lanka between the follicular and the luteal phases of menstruation.

The questionnaire responses provided a comprehensive summary of the types of beverages consumed by athletes within three hours before engaging in training sessions. Water emerged as the main and the most predominant choice among the athletes, with all respondents (100%) indicating its consumption before the practice sessions.

DISCUSSION

A study conducted by Chandrasekara (2017) suggested that athletes in Sri Lanka are dehydrated during engaging in training sessions; while the current study "Estimation of Pre-Practice Hydration Status of National Athletes in Sri Lanka" has provided evidence that National athletes in Sri Lanka had been dehydrated even before engaging in the training sessions. Suggesting that the athletes not only require hydration maintenance during the training session but also before engaging in the training sessions. The results suggest that gender may not be a significant factor influencing pre-practice hydration levels in this population, although it was evident from previous studies that the female have higher thermoregulatory responses compared to men, and do not sweat until they reach their core body temperatures (Iyoho et al., 2017). Additionally, the lack of association between pre-practice hydration status and menstrual phases among female athletes challenged the assumptions of this study regarding the impact of the menstrual cycle on hydration levels. In previous studies, it has been found that during the luteal phase, the threshold temperature for sweating in females has increased (Lee et al., 2014).

CONCLUSIONS AND RECCOMENDATIONS

The majority of the national athletes in Sri Lanka were found to be significantly hypo hydrated, indicating a severe state of dehydration and highlighting the need for standardized hydration strategies tailor-made for the athletes in Sri Lanka and minimize the risk of dehydration-related complications. There were no significant differences in Hydration status between male and female athletes, both genders exhibited high rates of dehydration, suggesting that the hydration interventions should be tailored to address the needs of all athletes, regardless of gender and the results prove that although have female have higher thermoregulatory responses compared to men, and do not sweat until they reach their core body temperatures it does not affect the hydration status. There was no significant association between pre-practice hydration status and the menstrual phase among female athletes which suggests further investigation on hormonal influences on hydration regulation. Water emerged as the most preferred beverage choice among the national athletes, highlighting the importance of maintaining hydration levels. However, the consumption of other beverages indicates the need for education on optimal hydration practices and the nutritional value of different beverage options.

It is recommended to establish individualized hydration plans for athletes based on their specific hydration needs specifically made for national athletes in Sri Lanka. Develop and implement hydration education programs targeting national athletes, coaches, and support staff to raise awareness about the importance of proper hydration practices to prevent dehydration. Implement regular monitoring and assessment of hydration status among athletes using objective measures such as urine-specific gravity or body weight changes to identify dehydration and for early intervention. Develop evidence-based hydration guidelines for athletes participating in different sports. Conduct further research to explore potential gender-specific hydration requirements and behaviors, as well as the influence of hormonal fluctuations on hydration regulation among female athletes.

Overall, the findings of this study highlight the importance of monitoring and optimizing pre-practice hydration status among national athletes to support performance, recovery, and overall health. By implementing the above recommendations, the stakeholders can work towards improving the hydration practices and overall well-being of national athletes in Sri Lanka and enhancing the performance of the athletes in competitive sports.

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A COMPARATIVE ANALYSIS OF THE IMMEDIATE EFFECTS OF CYCLIC MEDITATION AND BHRAMARI PRANAYAMA ON STRESS REDUCTION

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ABSTRACT:

Stress has become a pervasive issue in modern life, negatively affecting physical and mental well-being. Yogic practices like meditation and pranayama are increasingly recognized for their stress-relieving benefits, but few studies directly compare their immediate effects. Therefore, this study was conducted to examine how Cyclic Meditation and Bhramari Pranayama can help individuals reduce stress effectively and immediately. Eighteen (18) healthy participants, averaging 30 (SD = 10.92) years of age were included in this crossover experimental study. Stress levels were measured using the Visual Analog Scale (VAS), and Heart Rate Variability (HRV) based stress index. Participants were randomly divided into two groups, each experiencing either Cyclic Meditation or Bhramari Pranayama in the first phase followed by one-week washout period. Then the groups switched practices for the second phase. The results showed that both techniques significantly reduced stress levels (p = 0.000). However, Cyclic Meditation demonstrated a greater reduction in stress, with an average decrease of 22.56 points (SD = 16.29) compared to Bhramari Pranayama, which reduced stress by 16.83 points (SD = 15.50). Additionally, the results indicated that Cyclic Meditation is more effective in reducing stress compared to Bhramari Pranayama. The mean change in the Stress Index for Bhramari Pranayama was 0.29 (SD = 6.46), while Cyclic Meditation showed a larger mean reduction of -3.25 (SD = 5.72). These findings suggest that both practices are effective tools for acute stress relief, making them valuable additions to stress management routines. Cyclic Meditation appears to offer additional benefits by influencing physiological markers of stress more effectively. This study highlights the potential of yogic practices to enhance well-being and provides evidence to guide individuals and professionals in choosing appropriate stress management techniques. **Keywords:** Cyclic Meditation, Bhramari Pranayama, Stress Reduction, Yoga, Heart Rate Variability (HRV)

INTRODUCTION

Stress has become an inevitable part of modern life, affecting on both mental and physical well-being. It can disrupt the daily routines, relationships, and even long-term health if left unchecked. It is essential to adopt effective strategies to manage and reduce stress to maintain a healthy and balanced life, Among the many options available, yogic practices like Cyclic Meditation and Bhramari Pranayama have been widely recognized for their ability to help calm the mind and restore inner balance (Subramanya & Telles, 2009; Fort, 2021). While numerous studies have highlighted the individual benefits of these techniques—such as reducing anxiety, improving focus, and enhancing emotional resilience—there is still a lack of research comparing how these practices work in the short term (Kuppusamy et al. 2018; Telles et al. 2010).

PURPOSE OF THE STUDY

This study aimed to investigate how Cyclic Meditation and Bhramari Pranayama can help people manage stress and feel calmer in the moment. Moreover, this study intended to determine which of the two practices is better for immediate stress relief. The findings are expected to give individuals clear, practical advice on what might help them most, while also offering healthcare professionals reliable recommendations to support their patients' well-being.

METHODOLOGY

This study was conducted as a mixed-methods crossover approach. Eighteen (18) healthy adult participants, 18 to 55 years, were recruited from community centers and healthcare facilities using the conventional sampling method. The participants were randomly assigned to one of two groups, Group A or Group B, using a computer-generated randomization process. The research was carried out in two phases, separated by an initial assessment and a one-week washout period to avoid any carryover effects.
At the beginning of the study, demographic information of the participants, including their age, sex, and physical activity levels, were obtained through a structured questionnaire. The Physical Activity Readiness Questionnaire (PAR-Q) was included to ensure everyone could safely participate in the interventions. Baseline stress levels were measured using two reliable methods: the 100mm Visual Analog Scale (VAS) for subjective stress perception and Heart Rate Variability (HRV) based stress index parameter to evaluate stress objectively.

In the first intervention phase, participants in Group A practiced Bhramari Pranayama, while those in Group B engaged in Cyclic Meditation. Each session lasted about 20 minutes and participants were guided by pre-recorded instructions to ensure consistency. After completing their respective sessions, participants were reassessed for stress levels using the same VAS and HRV measurements. A one-week washout period followed the first phase to ensure that the effects of the initial sessions did not influence the results of the subsequent interventions. In the second phase, the groups switched activities. Group A moved to Cyclic Meditation, while Group B moved to Bhramari Pranayama. Stress levels were again measured immediately after each session using the same assessment tools. The data collected from both phases were analyzed using IBM SPSS Statistics version 22. Paired sample t-tests and Wilcoxon signed-rank tests were applied to examine changes in stress levels before and after each intervention. A p-value of less than 0.05 was considered statistically significant, helping to ensure that the findings were meaningful and reliable.

RESULTS

This study investigated how Cyclic Meditation and Bhramari Pranayama can immediately reduce stress, focusing specifically on changes in perceived stress levels (measured by VAS) and physiological stress levels (measured by the HRV-based Stress Index). The results showed that Cyclic Meditation significantly reduced stress in the study population. The average VAS scores of the participants dropped from 42.83 (SD = 17.59) to 20.28 (SD = 12.12), a highly significant improvement ($p = 0.000$). Similarly, the HRV-based Stress Index also decreased significantly ($p = 0.048$), with average scores falling from 10.44 (SD = 5.54) to 7.19 (SD = 1.36) after the intervention, highlighting its effectiveness in managing both subjective and physiological stress. Bhramari Pranayama also proved effective in reducing stress in the study population. The average VAS scores of the participants showed a significant drop from 33.39 (SD = 21.87) to 16.56 (SD = 13.17) after the practice ($p = 0.000$). The HRV-based Stress Index for Bhramari Pranayama showed a slight increase, rising from an average of 8.45 (SD = 4.76) to 9.13 (SD = 5.81). However, this change was not statistically significant ($p > 0.05$), indicating that it did not have a notable effect on physiological stress.

When comparing the two practices, Cyclic Meditation appeared more effective in reducing both perceived and physiological stress levels in the study population. These findings suggest that while both techniques can help manage stress, Cyclic Meditation may offer a slight edge, particularly in regulating physiological responses as indicated by the HRV-based Stress Index.

DISCUSSION

The findings of the study revealed that both techniques effectively reduced perceived stress levels. Cyclic Meditation demonstrated a significant reduction in VAS scores, showing its effectiveness in calming the mind and reducing perceived stress. Bhramari Pranayama also showed a significant reduction in VAS scores, but its effect was slightly less pronounced compared to Cyclic Meditation. These results emphasize the value of both practices as tools for immediate stress relief. These results align with earlier research, including Subramanya and Telles (2009), who emphasized how effective Cyclic Meditation is in lowering perceived stress and enhancing mental well-being, and Kuppusamy *et al*. (2018), who highlighted the stress-relieving benefits of Bhramari Pranayama.Cyclic Meditation led to a significant reduction in the Stress Index, suggesting its potential to regulate physiological stress responses effectively. This consists with study conducted by Telles *et al*. (2010), which showed that Cyclic Meditation promotes autonomic regulation and vagal dominance. In contrast, Bhramari Pranayama showed a slight increase in the Stress Index, though this change was not statistically significant. This indicates that while Bhramari Pranayama is effective in reducing perceived stress, its immediate impact on physiological stress might be less robust compared to Cyclic Meditation.The findings highlight an important distinction between the two practices: while both are effective for subjective stress relief, Cyclic Meditation appears to have an additional advantage in managing the body's physiological stress responses. This could be attributed to the combined stimulation and relaxation phases in Cyclic Meditation, which might promote deeper autonomic regulation and a more balanced physiological state, as supported by research from Srinivas and Kumari (2015).

CONCLUSION

In conclusion, both techniques offer valuable benefits for stress management. However, Cyclic Meditation is superior in reducing both perceived stress and physiological stress compared to Bhramari Pranayama. These insights provide a useful foundation for further research into personalized stress reduction strategies that address individual needs.

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EFFECT OF EIGHT WEEK TRAINING PROGRAM TO DEVELOP FOOTWORK SKILL IN BEGINNER NETBALL PLAYERS IN KARAGSATHALAWA MAHAVIDYALAYA SRI LANKA

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ABSTRACT

This study examined the effect of an eight-week training program on the footwork skills of beginner netball players at Karagasthalawa Maha Vidyalaya. Netball, a sport predominantly played by women worldwide, requires precision to enhance performance and minimize the risk of injury. Despite the critical role of footwork in netball, limited studies have explored its systematic development.

This research employed a pre-test/post-test true experimental control group design, involving 10 novice players randomly assigned to treatment (n=5) and control (n=5) groups. The Modified Bass Test was used to assess footwork ability. The results indicated a significant improvement in the treatment group's footwork scores, which increased from 10.4 (pre-test) to 61.2 (post-test) ($p = 0.002$). In contrast, the control group demonstrated only a slight improvement, with scores increasing from 12.6 to 16.4, showing no statistical significance ($p = 0.442$). Independent sample testing further revealed that the post-test scores of the treatment group were significantly higher than those of the control group ($p = 0.000$), emphasizing the effectiveness of the structured training program.

The findings underscore the importance of systematic training programs in improving footwork skills, reducing injury risks, and boosting player confidence. Additionally, the program contributed to enhanced discipline and athleticism among participants. The study recommends incorporating qualitative assessments to capture the motivational patterns and in-depth experiences of players during training.

Overall, this study provides valuable insights into beginner-level netball training, highlighting the necessity of targeted interventions to improve player performance and safety. Structured footwork training not only enhances on-court dynamics but also establishes a foundation for long-term development and confidence, both on and off the court. Keywords: Footwork development, Netball training, Beginner athletes, Skill improvement

INTRODUCTION

Netball, a dynamic and widely enjoyed team sport, predominantly attracts women and is regulated internationally by the International Netball Federation (INF). Countries like Australia often regard netball as a beloved national sport (Dixon et al., 2022). Originating from basketball in the late 19th century, netball emphasizes specific positions, such as goal shooter, goal attack, wing attack, center, wing defence, and goalkeeper, each with unique responsibilities and movement restrictions (Hepler et al., 2021). Over time, the sport has evolved to promote inclusivity and equality (Smith & Jones, 2023).

Footwork is a fundamental skill in netball, critical for enhancing agility and balance during gameplay. Effective footwork enables players to execute both offensive and defensive movements while minimizing the risk of stepping violations. Novice players must first develop strong footwork skills before progressing to more complex netball techniques. Well-structured training programs are essential for improving agility and neuromuscular control, which are critical for precise footwork under pressure. This is supported by the findings of Bloomfield et al. (2007) and Young & Farrow (2006).

This study seeks to evaluate the effect of an eight-week footwork training program on novice netball players, focusing on its impact on motor coordination, agility, and overall game performance. Given the limited research on footwork training in netball, this study aims to contribute to the existing body of knowledge.

BACKGROUND OF THE STUDY

This study explores the impact of an eight-week footwork training program on the skill performance of novice netball players at Karagasthalawa Maha Vidyalaya. The program aims to enhance fundamental skills, reduce stepping violations, and build players' confidence in managing their under-resourced environment. Footwork training is emphasized for its ability to improve agility, balance, and movement efficiency, which are crucial for success in netball.

RATIONALE OF THE STUDY

The primary objective of this study is to assess the effects of a structured eight-week footwork training program on novice netball players. The findings are expected to provide empirical evidence to support the design of effective training programs that enhance agility, performance, and skill execution in netball.

PURPOSE OF THE STUDY

The study aims to evaluate the effectiveness of an eight-week structured footwork training program in improving the performance of beginner netball players at Karagasthalawa Maha Vidyalaya. It focuses on developing critical skills such as balance, agility, and movement efficiency, addressing common gameplay challenges like stepping, landing, and pivoting violations. The study also seeks to offer evidence-based recommendations to optimize training methodologies in resource-limited settings, reducing injury risks and improving overall performance.

OBJECTIVE

Main Objective: To investigate the effect of an eight-week training program on developing footwork skills among beginner netball players at Karagasthalawa Maha Vidyalaya.

Specific Objective: To compare the pre-test and post-test results of the treatment group following the eight-week training program.

METHODOLOGY

This research employed a pre-test/post-test experimental design to assess the impact of an eight-week structured footwork training program on novice netball players at Karagasthalawa Maha Vidyalaya. Ten players were purposively sampled and randomly divided into two groups: a treatment group (n=5) and a control group (n=5).

The treatment group underwent an eight-week footwork training program aimed at improving balance, agility, and movement efficiency, while the control group continued with routine practice without any special intervention. The Modified Bass Test was conducted both before (pre-test) and after (post-test) the intervention to measure footwork performance. Comparisons between the pre-test and post-test results determined the program's effectiveness in improving footwork, reducing stepping violations, and minimizing injury risks.

RESULTS

The results revealed a significant improvement in the treatment group, with a p-value of 0.002. Post-intervention, the treatment group achieved substantially higher scores compared to the control group. The confidence interval, ranging from 24.31 to 59.29, further confirmed the meaningful difference between the groups.

DISCUSSION

The findings of this study unequivocally demonstrate the effectiveness of the eight-week footwork training program in enhancing the footwork skills of novice netball players at Karagasthalawa Maha Vidyalaya. A significant increase in the Modified Bass Test scores among the treatment group highlights the success of structured training in developing fundamental motor skills.

The improvement from below-average performance to passing levels underscores the importance of targeted skill development, particularly in under-resourced settings. These results align with existing literature, which emphasizes the benefits of structured sports training for improving agility, neuromuscular control, and performance under pressure (Young & Farrow, 2006; Bloomfield et al., 2007).

This study also highlights the broader implications of structured training programs, including reducing injury rates, enhancing decision-making skills, and boosting player confidence. It provides practical recommendations for coaches and sports organizations seeking to implement effective training strategies, particularly in environments with limited resources. Future research could explore the long-term impact of such training programs on player development, injury prevention, and overall game performance.

CONCLUSION

The eight-week training program significantly improved the footwork skills of novice netball players at Karagasthalawa Maha Vidyalaya. The structured and focused intervention enhanced key sports skills, helping players overcome common technical challenges while building confidence.

This study underscores the potential of targeted training programs to address skill deficiencies in resource-limited environments. It provides valuable insights for coaches and sports organizations aiming to develop young athletes. Future studies should examine the long-term effects of such interventions on player performance, injury prevention, and skill mastery.

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ANALYSIS OF INJURY PATTERNS: A COMPARATIVE STUDY OF PROFESSIONAL FOOTBALL PLAYERS IN SRI LANKA

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ABSTRACT

Professional football players are at a significant risk of injury because of the physical demands of playing the game, therefore injury prevention and management are essential for effective prevention and long-term player health. While injury patterns have been studied in various sports, there is a significant research gap regarding injury patterns in Sri Lankan professional football. The aims of this study are to analyze the injury patterns of professional football players in Sri Lanka and understand the relationship between injury patterns and injury factors. Data regarding injury categories such as ankle, hamstring, head and knee, environment factors like weather and ground type, training time and conditions, and past injury were gathered from a survey of 50 National Football Players. The data was analyzed using descriptive statistics and Chi-Square Test. Based to these results, hamstring and knee injuries are most frequent (22%), followed by head injuries (18%) and ankle injuries (12%). There were significant correlations observed between injury factors and training time, ground type, and weather. It was shown that players with past injuries were more likely to suffer injuries again. Additionally, training time was significantly correlated with the frequency of injuries, especially hamstring and knee problems. This study provides significant information about injury risk for professional football players in Sri Lanka. These results indicate that specific training plans, types of playing surface, and weather conditions could increase the risk of football injuries for the professional players. The study emphasizes the importance of specific preventive strategies and rehabilitation programs for decreasing injury risk and can enhance player performance. **Keywords**: Football injuries, Hamstring injury, Injury patterns, Injury prevention, Knee injury, Training time.

INTRODUCTION

Football is a physically demanding sport, with professional players exposed to a variety of risks that can result in injuries (Faisal, 2024). Understanding injury patterns is crucial for developing effective prevention strategies and ensuring players' long-term health (Owoeye et al, 2020). Previous studies have focused on injuries in various sporting disciplines, but there is limited research on injury patterns specifically within the context of Sri Lankan professional football. This study aims to fill this gap by examining the most common injuries sustained by football players in Sri Lanka and identifying factors that contribute to these injuries.

PURPOSE OF STUDY

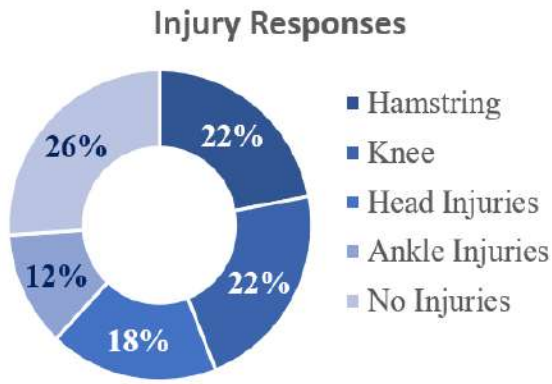
The previous related works on injury patterns and contributing factors conducted in developed countries and regions where football is the most popular sport (Lakshakar, 2022, Pulici, 2023, Ibrahimović, 2021). In Sri Lanka, football is now rapidly gaining popularity and there is limited research on the injury risk factors (Sri Lanka Football, nobody's child! 2023). The primary objectives of this study are to determine the most frequent injury types experienced by Sri Lankan professional football players and investigate various factors that impact those injuries. Additionally, the study aims to shed light on how certain injury types are associated with weather, ground types, training methods, past injuries, and training time. The study attempts to assist in the development of optimal injury prevention and management plans adapted to the needs of Sri Lankan football players through studying those factors. Furthermore, this study seeks to provide evidence on injury patterns with the goal of developing a resource efficient computer-based injury prediction method in future work.

METHODOLOGY

Data from 50 national football players who play for Sri Lanka was gathered via quantitative research. Participants were questioned about their training conditions, environmental factors, past injuries, and current injury classification (ankle, hamstring, head, and knee). Data concerning training duration, ground type, and weather during practices and matches were also collected. Descriptive statistics were applied to analyze the survey responses in order to determine the distribution and frequency of injury classifications. The relationship between various injury types and injury factors like weather, ground type, training methods, and past injuries was examined using the Chi- Square Test.

RESULTS

Compared to the study, the least frequent injury types across those who took part were knee and hamstring (22%), head injuries (18%), and ankle injuries (12%). Further, a significant number of players (26%) said they were free from injuries at that moment. The results of the Chi-Square test indicated a significant connection between the types of injuries and weather, ground types, and training time. While ankle and head injuries were more frequent among players who practiced fewer hours, hamstring and knee injuries were more common among players who practiced longer hours. Weather additionally had an impact on the frequency of injuries, with certain weather conditions-like rainy or cloudy weather-causing more injuries.



DISCUSSION

According to the study's outcomes, the majority of frequent injuries among Sri Lankan professional football players are hamstrings and knees, which is in keeping with worldwide football injury trends. Fortunately, they have become less common; head injuries are still extremely dangerous, particularly in high-contact scenarios. This study also showed that training duration has a significant impact on the probability of injuries, especially those engaging the knee and hamstrings. The type of ground was an important factor; artificial turf was linked to greater injuries than hardy and natural grass. Furthermore, it turned out that weather had an influence on the potential of the injury, with rainy and cloudy conditions increasing the risk of injuries. The results indicate that players who have suffered with past injuries are more likely to sustain future injures, emphasizing the importance of particular recovery as well as injury prevention programs for those who have suffered injuries. For the purpose of decreasing the risk of injuries, this study also highlights how essential it is to change methods of training according to ground types, weather, and players' injury records.

CONCLUSION

This study finds valuable data about the injury patterns of Sri Lankan professional football players. The results emphasize the need for specialist injury prevention programs that consider the effects of weather, ground type, training time, and also the past injuries that affect the probability of issues. Future studies will focus on developing suitable rehabilitation programs, training plans and modifications depending on weather and ground conditions for the aim of reducing the chance of getting injuries. The results of this study can also encourage coaches, players, sports physiotherapists, health professionals, and Sri Lankan different sports governing bodies in adapting scientifically proven methods into practice for enhanced player well-being.

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A REVIEW:
ANTERIOR CRUCIATE LIGAMENT INJURIES EFFETENESS FOR WOMEN'S' FIELD HOCKEY PLAYERS' PERFORMANCES AND CARRIER

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ABSTRACT

This review aims to examine the causes of the anterior cruciate ligament (ACL) injury to prevent from in Sri Lanka as women athletes. Field hockey is a 60-minute invasion sport that is divided into four halves. The game was divided into two 35-minute halves before the 2015 rule change. The physical condition of field hockey players has an impact on both their individual and team performance because it is a fast-paced, intermittent sport. Field hockey is a popular sport performed all over the world. The second-largest team sport in the world, field hockey is practiced in more than 100 nations. It is a well-liked, family-friendly sport in Canada that is primarily practiced by both men and women in clubs. The sport, which is also practiced in many schools, provides players, officials, and administrators with a lifetime of social and athletic opportunities. The most often injured ligament in the knee is the anterior cruciate ligament (ACL). ACL injuries have undergone many stages of treatment, including no operative care, extra capsular augmentation, primary ligament repair, and ACL reconstruction (ACLR). A complete seek of digital databases, which includes PubMed, Scopus, and SPORT Discus, Research Gate, Google Scholar was conducted to determine the relevant 4 research out of 10 articles. In total, 12 studies (55%) reported injuries normalized by field hockey exposure. In line with sport-specific playing postures, decreased knee flexion during landing may be a factor in the increased incidence of ACL injury in lacrosse players compared to field hockey players. These distinctions between specialist athletes may be useful for injury prevention programs for sports-specific training. As a result, prevention is preferable to treatment. **Keywords:** ACL injuries, Effectiveness, Physical performance, Women's field hockey

INTRODUCTION

A 60-minute invasion game called field hockey is played over four quarters. Before the 2015 regulation change, the game was split into two 35-minute halves. Field hockey is a fast-paced, intermittent sport;

hence field hockey players' physical condition affects both their performance individually and as a team as a whole [1,2,3]. The game of field hockey is played widely across the world. Field hockey is the second-largest team sport in the world played in over 100 countries. In Canada, it is a popular family-orientated sport, played mainly in clubs by both men and women. The game is also played in many schools and offers a lifetime of both sporting and social opportunities for players, officials, and administrators alike.

The rules of field hockey are very similar to the rules of soccer except that players must use their sticks instead of their feet to play the ball. There are 11 players on a team made up of a goalkeeper, defenders, midfielders, and forwards. The only player on the field who is allowed to use their feet and hands as well as their stick is the goalkeeper [4,5,6]. The key rule differential between field hockey and soccer lies with there being no offside rule in field hockey allowing for an extremely fast, potentially high scoring and exciting game. Despite the name “field” hockey, the game has recently developed (since the mid-1980s) from a grass pitch-based sport into a sport played on artificial surfaces. In BC, the outdoor game is played on both grass and artificial surfaces [7,8]. Not merely an outdoor sport, field hockey is also played as an indoor sport (six aside) on gymnasium floors that allow for an even faster game [9,10].

What is an injury?

An injury is any physiological damage to living tissue caused by immediate physical stress. An injury can occur intentionally or unintentionally and be caused by blunt, trauma, penetrating trauma, burning, toxic exposure, asphyxiation, or overexertion, injuries can occur in any part of the body and different symptoms are associated with different injuries. Although field hockey is classified as a non-contact sport, acute injuries may result from contact with a stick, the ball, another player, or the playing surface or goal cage [11]. The most common injuries in women's field hockey include: Hand and wrist injuries, Facial injuries, Ankle injuries, and Knee injuries. Knee injuries, including anterior cruciate ligament (ACL) tears, are very common, as are muscle strains, particularly of the quadriceps and hamstrings [12,13].

Anterior Cruciate Ligament (ACL) injury

The anterior cruciate ligament (ACL) is the most commonly injured in the knee. Treatment for ACL injuries has evolved from non-operative treatment to extracapsular augmentation and primary ligament repair to ACL reconstruction (ACLR) [14,15]. ACL surgery has progressed from the first repair by Mayo-Robson in 1895 to the first recorded reconstruction using a free strip of iliotibial band by Grekow in 1914 [16]. May as caused due to the low placement of the hand on the stick, the right hand in particular is at risk of an acute contact injury from being struck by an opponent’s stick, fractures of the hands, especially the fingers, are common, the player can be struck by the stick or ball. All of these injuries require consultation with a sports health professional. Inversion ankle sprains are the most common sports-related injury where ankle injuries comprise 15% of all field hockey injuries [17].

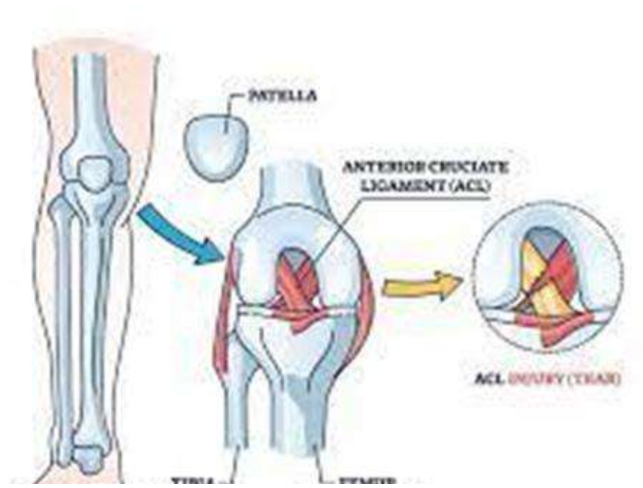

Figure 1 - ACL injury and bones related to it. Source: Internet

RESEARCH GAP

Here research gap is to identify the causes of ACL injury to prevent from in Sri Lanka as women athletes. It seems that Sri Lankan women players excel from playing for many reasons. So that it is better to find out the causes that affected it.

MATERIALS AND METHODS

A complete seek of digital databases, which includes PubMed, Scopus, and SPORT Discus, Research Gate, Google Scholar was conducted to determine the relevant 4 research out of 10 articles. The hunt terms used blanketed versions of "ACL injuries", "women’s field hockey", "physical performance," and "effectiveness". Additionally, reference lists of recognized articles have been manually looked for extra relevant research.

Table 1; Summary of included studies

No	Ref	Author	Year	Journal	Topics
[1]	19	Hillary J Braun et al.	2014	PubMed	Differences in ACL Biomechanical Risk Factors between Field Hockey and Lacrosse Female athletes
[2]	20	Saulo Delfino Barbose et al.	2018	PubMed	Injuries in Field Hockey Players: A Systemic Review
[3]	21	Robert Longstaffe	2020	PubMed	Anterior Cruciate Ligament Injuries in the National Hockey League: Epidemiology and Performance Impact
[4]	22	Ashley H. et al	2022	Journal of Women's Sports Medicine	Anterior Cruciate Ligament Reconstruction: women Filed Hockey

RESULTS

The risk of bias score of the 22 studies included ranged from three to nine of a possible ten. In total, 12 studies (55%) reported injuries normalized by field hockey exposure. Injury rates ranged from 0.1 injuries (in school-aged players) to 90.9 injuries (in Africa Cup of Nations) per 1000 player-hours and from one injury (in high-school women) to 70 injuries (in under-21 age women) per 1000 player sessions. Studies used different classifications for injury severity, but—within studies—injuries were included mostly in the less severe category. The lower limbs were most affected, and contusions/hematomas and abrasions were common types of injury. Contact injuries are common, but non-contact injuries are also a cause for concern [18]. Therefore, it can be identified that ACL injuries should be prevented by percussions mainly.

DISCUSSION

Field hockey has a low incidence of acute injuries during competition. We recommend that the Federation continues to monitor best practices in sports injury epidemiology, commit to rigorous data collection, and consider recording injuries and illnesses out of competition.

LIMITATIONS

Limitations can be identified as the way of not having small injuries and being considered as ACL injuries by women and not considering this injury type as a preventable and career-risking event.

FUTURE DIRECTIONS

These things should be applied to Sri Lankan-level women athletes to cure and prevent ACL injuries and specific methods of training should be applied to each training program related to women and children.

CONCLUSION

Anterior cruciate ligament injuries occur infrequently, as it relates to other hockey injuries. Despite a high return to play, the performance after an ACL injury demonstrated a decrease in points and goals per game and season. Decreased knee flexion angle during landing, consistent with sport-specific playing postures, may contribute to the higher incidence of ACL injury in lacrosse players relative to field hockey. Sport-specific training injury prevention programs may benefit from considering these differences between specialized athletes. Therefore, prevention is better than cure.

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THE EFFECT OF EIGHT-WEEKS TRANING PROGRAM TO DEVELOP AEROBIC ENDURANCE LEVEL OF SELECTED NETBALL PLAYERS IN SABARAGAMUWA UNIVERSITY OF SRI LANKA

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ABSTRACT

This study examined the influence of an eight-week aerobic endurance training program on the aerobic capacity of selected netball players at Sabaragamuwa University of Sri Lanka. Engaging a pre-test/post-test design, six players were separated into a treatment group (n=3) and a control group (n=3). Aerobic endurance levels were assessed consuming the 20m beep test, as extensively predictable measure of cardiovascular fitness. The treatment group endured a structured training program considered to increase aerobic endurance, while the control group sustained their regular training predictable. The results exposed a noteworthy development in the treatment group's performance, with a growth of 0.8 levels in their 20m beep test totals (from Level 5.2 to Level 6.2). In compare, the control group presented a minor decrease of 0.2 levels (from Level 5.5 to Level 5.3). These results emphasize the efficiency of the aerobic endurance training program in cultivating the cardiovascular fitness and inclusive enactment of netball players. Improved aerobic endurance funds continual energy levels, faster retrieval, and condensed fatigue-induced blunders during gameplay, which are critical for netball performance. However, the study's slight sample size and moderately short intervention period limit the generalizability of the outcomes. Impending research should aim to comprise larger sample sizes and encompass the period of training interferences to make accessible more inclusive comprehensions. Furthermore, integrating assorted training variables could further optimize endurance development in netball players. This study highlights the importance of evidence-based training practices in sports, contribution appreciated endorsements for coaches and athletes to improve physical fitness and inexpensive willingness in netball.

Keywords: Aerobic endurance, training intervention, cardiovascular fitness, fatigue reduction, netball performance.

INTRODUCTION

Netball is a fast-paced, dynamic team sport requiring physical fitness, tactical understanding, and teamwork. Played by two teams of seven players, the game implicates scoring by passing a ball through a elevated hoop, with players restricted to specific court areas, highlighting movement and positioning as key elements(McLaThe silent game: A critical reading of the history of netball in Australiachlan, 2016). Aerobic endurance is indispensable in netball due to the continuous movement, high-intensity conversions, and physical demands throughout a match. It epitomizes the ability of the cardiovascular and respiratory systems to supply oxygen to working muscles during sustained activity, permitting players to maintain performance while minimizing fatigue(Powers & Howley, 1995). Aerobic endurance, frequently considered by VO2 max, is critical in netball, where repeated bursts of high-intensity effort are followed by transitory recovery periods, underlining the need for well-developed aerobic fitness for optimum performance (McArdle et al., 2010)

BACKGROUND OF THE STUDY

This study explores the effectiveness of an eight-week aerobic endurance training program for netball players at Sabaragamuwa University of Sri Lanka. Assumed the great physical demands of netball, aerobic endurance is vital for sustaining performance, reducing fatigue, and enhancing recovery during matches. A structured training program is crucial to meet these demands and optimize player performance.

RATIONALE OF THE STUDY

This research appraises the impact of an eight-week aerobic endurance training program on netball players' performance. The findings aim to provide practical perceptions for designing effective training strategies, qualifying athletes and coaches to enhance physical fitness and effectiveness in netball.

PURPOSE OF THE STUDY

This study was, therefore, aimed at exploring the effectiveness of an eight-week aerobic endurance training program in improving the aerobic endurance levels of selected netball players at Sabaragamuwa University of Sri Lanka. To recommend on optimum training methodology, the existing study examined how structured training would affect key factors related to aerobic performance in netball players, such as cardiovascular fitness, fatigue opposition, and game play effectiveness. This research aims to provide evidence-based references for improving the training practices of netball players at the university.

OBJECTIVE

Main objective to investigate the effect of an eight-week training program on aerobic endurance levels of selected netball players at Sabaragamuwa University. Specific Objective to assess the difference in aerobic endurance levels between the treatment and control groups following the eight-week training program.

METHODOLOGY

This study hired a pre-test/post-test design to explore the effects of an eight-week training program on aerobic endurance levels in selected netball players at Sabaragamuwa University of Sri Lanka. The study area was identified as Sabaragamuwa University. A purposive sample of six netball players was designated for the study. A pre-test was conducted using the 20m beep test to quantity the preliminary aerobic endurance levels of the participants. Following the pre-test, the participants were alienated into a treatment group (n=3) and a control group (n=3). The treatment group endured an eight-week training program specifically planned to enhance aerobic endurance. The control group continual with their systematic training routine without any specific aerobic endurance interferences. At the end of the eight-week period, a post-test using the 20m beep test was conducted to consider the changes in aerobic endurance levels in both groups. Data analysis was conducted to equate the pre-test and post-test results of the treatment and control groups. The results were investigated to regulate the effectiveness of the eight-week training program in cultivating aerobic endurance levels in netball players.

RESULT

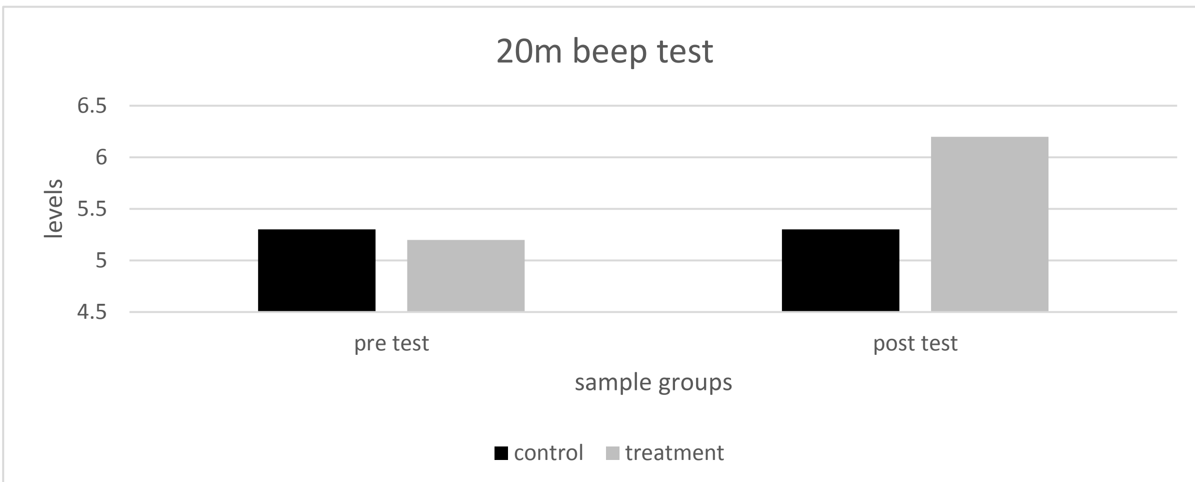
In the 20m Beep Test, the Control Group verified a minor improvement, with a pre-test average score of **Level 5.5** and a post-test average of **Level 5.3**, reflecting and lessening of **0.2 levels**. In difference, the Treatment Group's average pre-test score was **Level 5.2**, and their post-test score enhanced suggestively to **Level 6.2**, showing a prominent increase of **0. 8 levels**. This substantial improvement in the Treatment Group associated to the Control Group highlights the success of the eight-week aerobic endurance training program.

The results show that structured aerobic endurance training can lead to significant increases in cardiovascular fitness and performance in netball players (Table 01, Figure 01).

Pre-Test		**Post Test**		**Difference**	
Control Group	Treatment group	Control Group	Treatment group	Control Group	Treatment group
Level 5.3	**Level 5.2,**	**Level 5.3**	**Level 6.2**	**-0.2 levels**	**0. 8 levels**

Table 01

Figure o1



DISCUSSION

The eight-week aerobic endurance training program expressively enhanced the aerobic performance of the treatment group, as evinced by their 20m Beep Test scores growing from Level 5.2 to Level 6.2, a gain of 0.8 levels. In distinction, the control group showed a minor deterioration from Level 5.5 to Level 5.3. These results climax the effectiveness of structured aerobic endurance training in enhancing cardiovascular fitness and performance in netball players. The outcomes align with prevailing literature, such as(McArdle et al., 2010), which highlights the critical role of aerobic capacity in sustaining high-intensity performance and suspending fatigue in team sports like netball. This study emphasizes the value of evidence-based training interventions for improving player performance. The results recommend that integrating targeted aerobic training into consistent practices can suggestively benefit netball players, improving their endurance and overall game willingness.

CONCLUSION

The study accomplishes that an eight-week aerobic endurance training program expressively improved the cardiovascular fitness and performance of netball players. The treatment group showed a distinguished 0.8-level development in the 20m Beep Test, while the control group qualified a slight decay. These findings highlight the efficiency of structured aerobic training in improving endurance, decreasing fatigue, and enhancing game performance. Including such battered programs into regular training can significantly benefit netball players' competitive enthusiasm.

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THE EFFECT OF AN EIGHT-WEEK SPEED ENDURANCE TRAINING PROGRAM ON ANAEROBIC PERFORMANCE IN MALE INTERMEDIATE 400M ATHLETES AT SABARAGAMUWA UNIVERSITY OF SRI LANKA

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ABSTRACT

The 400 m sprint demands a combination of speed, endurance, and optimal mechanics for peak performance. This study investigated the impact of an eight-week speed endurance training program on anaerobic performance in 400 m male intermediate athletes. The research utilized an experimental design with a purposive sample of two male undergraduate athletes (age 23 years, height 1.77 ± 5.65 m, weight 64 ± 5.65 kg) from Sabaragamuwa University, Sri Lanka. The training intervention consisted of three sessions per week and focused on speed endurance drills and exercises using the repetition method. This method involved repeated sprints with short recovery periods, designed to enhance the athletes' ability to maintain high-intensity performance during the 400 m race. Pre- and post-tests measured anaerobic performance through 400 m and 300 m sprint times. The results showed significant improvements in anaerobic performance in the treatment group. The 400 m sprint time decreased from 60.06 seconds to 58.27 seconds, showing a greater improvement compared to the control group, which reduced from 58.14 seconds to 57.53 seconds. Similarly, the 300m speed endurance test revealed a notable reduction in sprint times for the treatment group, from 42.16 seconds to 38.71 seconds. These findings indicate a shift in the speed endurance performance level of the treatment group from average to good. This study concludes that an eight-week speed endurance training program using the repetition method effectively enhances anaerobic performance in 400 m athletes. It recommends incorporating structured training interventions into athletic preparation to optimize performance. Long-term applications of such programs may further improve competitive outcomes in sprint events. **Key Words** – 400m Sprint, Anaerobic Performance, Repetition Method, Speed Endurance

INTRODUCTION

Speed and endurance, particularly anaerobic, are crucial for athletic performance in the 400 m. Speed endurance allows athletes to perform intense work for long periods, requiring high physiological demand. Anaerobic energy systems, including ATP-CP and lactic acid production, are essential for middle-distance running. Studies suggest that structured training protocols can enhance specific physical capacities like speed and strength endurance (Hussein Sagheer et al., 2022). However, increasing performance in intermediate-level athletes remains challenging. Unstructured training programs cannot develop the necessary physical and physiological changes. Specific training methods like HIIT and repetitive interval techniques have been found effective in improving anaerobic and endurance capacity. This research aims to explore the effects of an eight-week speed endurance training program on male intermediate 400 m athletes' anaerobic performance (Zou, 2014).

PURPOSE OF THE STUDY

This study aimed to investigate the efficacy of an eight-week speed endurance training program in improving anaerobic performance in male intermediate 400 m athletes. To provide guidance on optimal training methodologies, the study examined how structured training impacts key performance factors, such as speed endurance and strength endurance, in middle-distance runners. Ultimately, the findings aim to contribute to the enhancement of competitive performance in 400 m athletes.

METHODOLOGY

This study employed an experimental research design to investigate the effects of an eight-week speed endurance training program on anaerobic performance in male intermediate 400 m athletes. A purposive sample of two male undergraduate athletes (age 23 years, height 1.77 ± 5.65 m, weight 64 ± 5.65 kg) from Sabaragamuwa University, Sri Lanka, was selected, focusing on intermediate-level 400 m runners. The training intervention spanned from the Special Preparation Period to the Competition Period, emphasizing six speed endurance exercises (table 1) to enhance anaerobic performance. The training program was conducted three sessions per week and included specific speed endurance drills & exercises designed to sustain high-intensity performance. Additionally, the repetition method training was incorporated into the program to improve the athletes' ability to maintain high-intensity efforts over repeated sprints, further boosting anaerobic capacity (Thotwaththa & Chandana, 2023). To measure the effectiveness of the training, pre-and post-tests were conducted on anaerobic performance. Anaerobic performance was evaluated using timed 400 m and 300 m sprint tests. Data were gathered through video analysis and stopwatch recordings to ensure precise measurement of sprint times. Statistical comparisons were employed to analyze the pre-and post-test results, providing a clear assessment of the training program's impact. This structured approach, transitioning from the special preparation period to the competition period, ensured that the athletes were progressively trained and peaked at the right time, focusing on speed endurance as a key determinant for 400 m performance.

Table 1: Speed Endurance Exercises and progressive overload

Exercise	Week 1-2	Week 3-4	Week 5-6	Week 7-8
150 m run	[80 -85 % x 2] 2 (Rest – 1 x 4 min)	[80 -85 % x 2] 3 (Rest – 1 x 4 min)	[80 -85 % x 2] 3 (Rest – 1 x 4 min)	-
200 m run	-	[70 -75 % x 4] 2 (Rest – 2 x 4 min)	[70 -75 % x 4] 2 (Rest – 2 x 3 min)	85 -90 % x 3] 2 (Rest – 2 x 3 min)
300 m run	[80 -85 % x 3] 2 (Rest – 2 x 6 min)	[85 -90 % x 4] 2 (Rest – 2 x 6 min)	-	[85 -90 % x 3] 2 (Rest – 2 x 4 min)
350 m run	[70 -75 % x 2] 3 (Rest – 3 x 4 min)	-	-	-
400 m run	-	-	[85 -90 % x 2] 4 (Rest – 2 x 4 min)	[85 -90 % x 1] 4 (Rest – 2 x 3 min)

RESULT

The 400 m test and the 300 m speed endurance test, comparing a control group and a treatment group.

In the 300 m Test, the control group had a pre-test time of 39.23 seconds and a post-test time of 38.52 seconds, showing an improvement of 0.71 seconds. Conversely, the treatment group's pre-test time was slower at 42.16 seconds, but their post-test time improved to 38.71 seconds, resulting in a significant improvement of 3.45 seconds. This indicates that the treatment group benefited more from the intervention compared to the control group (table 2).

Table 2: Pre-test and posttest 300 m Test

Pre-Test		Post Test		Difference	
Control Group	Treatment group	Control Group	Treatment group	Control Group	Treatment group
39.23 sec	42.16 sec	38.52 sec	38.71sec	0.71 sec	3.45 sec

For the 400 m test, the control group's performance showed marginal improvements across four segments of the race. The first hundred was timed at 14.11 seconds in the pre-test and improved to 13.96 seconds in the post-test. Overall, the control group's total time improved from 58.14 seconds in the pre-test to 57.53 seconds in the post-test. In contrast, the treatment group exhibited more pronounced improvements, particularly in the second hundred, where their time dropped from 14.30 seconds to 13.53 seconds. The overall time for the treatment group improved from 60.06 seconds to 58.27 seconds, highlighting a more significant enhancement in speed endurance (table 3).

Table 3: Overall time in 400 m race

400 m Distance Phases	**Control group**			**Treatment Group**		
	Pre-Test Timing	**Post Test Timing**	**Difference**	**Pre-Test Timing**	**Post Test Timing**	**Difference**
1st Hundred	14.11sec	13.96sec	0.15sec	14.71sec	14.63sec	0.08sec
2nd Hundred	14.52sec	14.21sec	0.31sec	14.30sec	13.53sec	0.77sec
3rd Hundred	14.36sec	14.37sec	-0.01sec	15.36sec	15.00sec	0.36sec
Last Hundred	15.15sec	14.99sec	0.16sec	15.65sec	15.11sec	0.54sec
Overall Time	58.14sec	57.53sec	0.61sec	60.06sec	58.27sec	1.79sec

DISCUSSION

The eight-week speed endurance training program resulted in significant improvements in anaerobic performance for the treatment group compared to the control group. In the 400 m event, the treatment group also improved significantly, reducing their overall times from 60.06 seconds to 58.27 seconds, while the control group showed a smaller improvement, from 58.14 to 57.53 seconds. This demonstrates that specific speed endurance training is particularly effective in enhancing running efficiency and endurance. Additionally, in the 300 m speed endurance test, the treatment group showed a notable increase in anaerobic capacity, with their time decreasing from 42.16 to 38.71 seconds, whereas the control group only slightly improved, from 39.23 to 38.52 seconds (figure 1). These results underscore

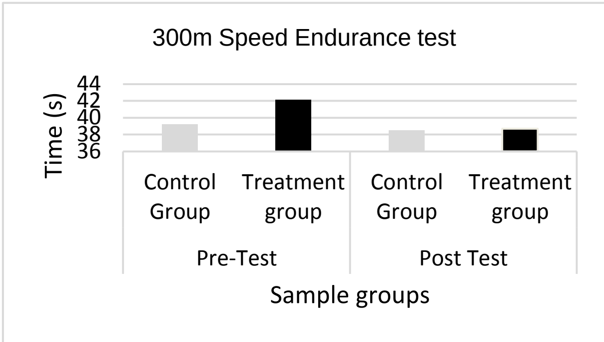

Figure 2: 300m Speed Endurance Test

the importance of speed endurance training for sustaining performance in the later stages of a 400m race, where fatigue typically sets in. These findings are consistent with existing literature, (Hussein Sagheer et al., 2022), which emphasize the importance of speed endurance in sprint performance. The athletes in the treatment group were able to perform at higher levels of efficiency and endurance, demonstrating the effectiveness of targeted speed endurance training. The results suggest that structured eight-week training programs can significantly benefit intermediate-level 400 m athletes, and long-term application of such training may yield even greater improvements.(كمبش حميد اسماء & حسن كامل اسراء, 2023)

CONCLUSION

The study, the impact of an eight - week speed endurance training program on the improvement of anaerobic performance in 400 m male intermediate athletes, concludes that structured speed endurance training using the repetition method significantly enhances anaerobic performance. Over eight weeks, the treatment group showed marked improvements in sprint times, particularly in the 400 m and 300 m tests, compared to the control group. Results indicate that incorporating such targeted interventions can optimize competitive performance, especially for sustaining high intensity in the later stages of middle-distance events.

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THE IMPACT OF REACTION TIME ON ATTACKING SKILLS IN UNDER-14 NETBALL PLAYERS AT KARAGASTHALAWA MAHA VIDYALAYA

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ABSTRACT

The purpose of the study was to determine whether an interval training program at R/Karagasthalawa Maha Vidyalaya could improve the attacking skills and reaction time of female under-14 netball players. Nine participants were divided into treatment and control groups for the sample. A teacher-made attacking test was used for skill evaluation, and the Ruler Drop Test (RDT) was used for measuring reaction speed. The study employed an accurate experimental design. Using SPSS software, a repeated measures ANOVA test was conducted to analyze the collected data. The results showed that individuals in the treatment group significantly improved their reaction times ($p < 0.001$). However, the teacher-made attacking test did not indicate any significant improvement in attacking skills ($p > 0.05$). The study concludes that the interval training program effectively reduced the reaction times of female under-14 netball players but suggests that a new approach is necessary to enhance their attacking skills. Further research is recommended to develop improved methods for enhancing young netball players' attacking abilities. Keywords: Attacking Skills, Interval Training, Netball, Reaction Time, Under-14 Players

Extended Abstract

INTRODUCTION

Netball is a dynamic and competitive team sport, widely popular in Australia, particularly among females of all ages and skill levels (McGrath & Ozanne-Smith, 1998). Played by two teams of seven, the game involves sprinting, jumping, throwing, and catching to advance the ball towards the goal circle to score, while the opposing team employs defensive strategies to regain possession (Bandara, 2021). Effective attacking in netball requires coordination, environmental awareness, and strategic play to exploit defensive weaknesses and control the game. Reaction time (RT), a critical factor in netball, reflects the speed of processing stimuli and initiating motor responses. Measured using tools like the Ruler Drop Test (RDT), RT enhances agility, speed, and quick decision-making, which are essential for successful gameplay. Improved RT and skill not only elevate individual and team performance but also make the sport more enjoyable and engaging (Ángel Latorre-Roman et al., 2018; Aranha et al., 2015; Young & Willey, 2010).

OBJECTIVES

To improve the higher performance in attacking skill by improving the reaction time and skill of female netball players in R/Karagasthalawa Maha Vidyalaya.

METHODOLOGY

The study employed a True Experimental Design to examine physical activity levels and netball knowledge among under-14 female players from Sri Lankan colleges, focusing on their potential for future national representation. Using random sampling, nine students from Karagasthalawa Maha Vidyalaya in the Sabaragamuwa District were selected, with an average height of 1.53m, weight of 40.88kg, and BMI of 17.67 kg/m². All participants had basic netball training from under-12 activities. Five students formed the treatment group, while four were in the control group.

A pilot study assessed players' attacking skills, focusing on speed, agility, control, and ball handling under time constraints, refining the methodology and establishing performance benchmarks. Reaction time was evaluated using the Ruler Drop Test (RDT), a simple and reliable method for measuring motor coordination, speed, and reflexes, widely utilized in sports and psychological research (Ferreira et al., 2024).

RESULTS AND DISCUSSION

The repeated measures ANOVA test was conducted using SPSS software, analyzing the data separately for the Controlled Rope Test and the Attack Test. This analysis aimed to determine whether there were significant differences between the test variables, as outlined in the study's hypothesis.

Table 1. Test of Within-Subject Effect (RDT)

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Rular_Drop_Test	Sphericity Assumed	372.135	2	186.067	16.427	.000
	Greenhouse-Geisser	372.135	1.639	227.107	16.427	.001
	Huynh-Feldt	372.135	2.000	186.067	16.427	.000
	Lower-bound	372.135	1.000	372.135	16.427	.005
Rular_Drop_Test * Treatment	Sphericity Assumed	202.071	2	101.035	8.920	.003
	Greenhouse-Geisser	202.071	1.639	123.320	8.920	.006
	Huynh-Feldt	202.071	2.000	101.035	8.920	.003
	Lower-bound	202.071	1.000	202.071	8.920	.020
Error(Rular_Drop_Test)	Sphericity Assumed	158.576	14	11.327		
	Greenhouse-Geisser	158.576	11.470	13.825		
	Huynh-Feldt	158.576	14.000	11.327		
	Lower-bound	158.576	7.000	22.654		

During the Ruler Drop Test analysis, the results indicated a significant effect on performance, with $F(2,14) = 16.427$ and $p < 0.001$, as demonstrated in Table 01 of the within- subjects effects.

Table 2. Test of Between-Subject Effects (RDT)

Tests of Between-Subjects Effects

Measure: MEASURE_1
Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	10758.419	1	10758.419	119.717	.000
Treatment	633.100	1	633.100	7.045	.033
Error	629.060	7	89.866		

Additionally, the "Tests of Between Subjects Effects" table reveals a significant difference between the treatment and control groups on the Ruler Drop Test, with a p-value < 0.05. This ANOVA summary indicates an improvement in players' performance on the Ruler Drop Test, as shown in Table 02 above. The RDT was used to assess each participant's hand-eye coordination and reaction time, following the standard testing procedure. Results indicated that the netball group exhibited faster reaction times in both dominant and non-dominant hands compared to the sedentary group. This improvement can be attributed to consistent and ongoing training and practice (Kamarudin et al., 2021).

Table 3. Test of Within-Subject Effects (Attacking Test)

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Attacking_Test	Sphericity Assumed	.026	2	.013	2.820	.094
	Greenhouse-Geisser	.026	1.040	.025	2.820	.135
	Huynh-Feldt	.026	1.235	.021	2.820	.126
	Lower-bound	.026	1.000	.026	2.820	.137
Attacking_Test * Treatment	Sphericity Assumed	.061	2	.030	6.690	.009
	Greenhouse-Geisser	.061	1.040	.059	6.690	.034
	Huynh-Feldt	.061	1.235	.049	6.690	.026
	Lower-bound	.061	1.000	.061	6.690	.036
Error(Attacking_Test)	Sphericity Assumed	.064	14	.005		
	Greenhouse-Geisser	.064	7.279	.009		
	Huynh-Feldt	.064	8.643	.007		
	Lower-bound	.064	7.000	.009		

During the attacking test, the results showed F (2,14) = 2.820, with a p-value of 0.094, which is greater than 0.001. This indicates no significant effect, as reflected in Table 03 of the within-subject's effects. These findings suggest that the teacher-made test did not effectively contribute to improving attacking skills.

Table 4. Test of Between-Subject Effects (Attacking Test)

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	53.131	1	53.131	1730.493	.000
Treatment	.046	1	.046	1.512	.259
Error	.215	7	.031		

Additionally, the "Tests of Between Subjects Effects" table for the attacking test (Table 04) shows a p-value greater than 0.05 between the treatment and control groups. As a result, the ANOVA summary indicates that there is no significant effect on players' performance in the teacher-made attacking test.

CONCLUSION

The study aimed to assess the impact of an interval training program on reaction time in female under-14 netball players at R/Karagasthalawa Maha Vidyalaya. Nine participants were divided into a treatment group (5 players) and a control group (4 players). Both groups underwent attack and ruler drop tests before, during, and after eight weeks of training (three sessions per week). The results showed a significant reduction in reaction time in the treatment group ($p < 0.05$, $F(2,14) = 16.427$). However, no significant improvement was observed in attacking skills ($F(2,14) = 2.820$, $p = 0.094$), suggesting that the attacking test was not effective for under-14 players, although it showed improvements in older age groups. The test also indicated a decline in students' endurance during the attacking drill.

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ANALYZING THE EFFECTIVENESS OF EIGHT-WEEK MULTILATERAL TRAINING PROGRAM ON PHYSICAL FITNESS PERFORMANCE OF SRI LANKA NATIONAL POOL KARATE PLAYERS

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ABSTRACT

Karate is a traditional Japanese martial art, that demands a unique blend of physical strength and mental discipline to master its techniques and improve overall performance. Physical fitness plays a pivotal role in the performance and success of athletes across various sports, and karate is no exception. The goal of this study is to analyze the effect of multilateral training programs on physical fitness performance in karate players. The purpose of this research is to enhance the level of physical fitness preference of karate players. Apart from that trying to evaluate the effect of an 8-week training program on the physical fitness components of karate players. The specific objectives used to conduct the research are to enhance the technical skills of the players and to provide a useful training program for karate training to enhance the physical fitness performance of karate players. The study's methodology included recruiting a sample of karate players as two groups experimental group (EG) & control group (CG). The resulting measure was the using standard test batteries such as the 30s burpee test, 30m sprint test, ruler drop test, and sit & reach test. Data was analyzed by comparing the pre-test and post-test results. The results indicated a significant improvement in physical fitness performance levels in both males and Females, as evidenced by the post-test compared to the pre-test. Statistical analysis using paired sample t-tests confirmed the statistical significance of the improvements. Future research could explore the sustainability of these improvements and investigate the specific components of the training program that contributed most significantly to physical fitness component enhancement. **Keywords:** Enhance, Karate, Karate training program, Multilateral training program, Physical fitness performance, Test batteries

INTRODUCTION

Karate is a Japanese martial art focusing on defensive and counter-attacking movements while fostering mental and moral development. Rooted in self-discipline and perseverance, it is symbolized by "kara" (empty) and "te" (hand), meaning "empty hand," with the suffix "-do" emphasizing a way of life. Introduced to Japan by (Gichin Funakoshi in 1922), traditional karate emphasizes self-improvement through kihon, kata, and kumite. Kumite tests focus, resolve, and self-control, helping practitioners refine their techniques and mental resilience. Physical fitness is crucial for karate, requiring strength, speed, agility, flexibility, and endurance (Uthoff & Lenetsky, 2022). Multilateral training programs, which develop multiple fitness components simultaneously, offer a holistic approach to enhancing performance. While research on their impact on karate is limited, studies in related combat sports, like judo and taekwondo, show significant improvements in strength, speed, and power, highlighting their potential benefits for karate athletes. Key physical fitness components for karate include agility, balance, flexibility, endurance, coordination, strength, and speed, all crucial for effective techniques, recovery, and performance. This study aims to evaluate the impact of an 8-week multilateral training program on enhancing these attributes, offering insights into improving athletic performance in karate. This study investigates the impact of an 8-week multilateral training program on key physical fitness components essential for karate, such as agility, balance, flexibility, endurance, coordination, strength, and speed. Focusing on Sri Lankan national pool karate players, the study aims to evaluate the program's effectiveness in improving fitness and technical skills, enhancing overall performance in competitive karate.

PURPOSE OF THE STUDY

This study aims to evaluate the effectiveness of an 8-week multilateral training program in enhancing physical fitness components essential for karate performance, including agility, strength, speed, endurance, flexibility, and coordination. It also aims to provide insights for developing evidence-based training programs to improve physical performance among karate players.

MATERIAL AND METHODS

Study design

This study used a controlled study design that included pre- and post-testing (at weeks one and eight, respectively) to evaluate whether an 8-week multilateral training program, replacing a part of karate-specific training (kata and kumite) could produce improvement. These outcomes were identified by statistically significant improvement in strength, endurance, agility, balance, and coordination (burpee test battery), Flexibility (sit & reach test), reaction time (ruler drop test), and speed (30m sprint). The participants for this study were selected using a purposive sampling technique.

Participants

The purposive sampling method was used to select eight participants (4 girls and 4 boys) from the Sri Lanka national karate pool as the Sampling size. Karate players aged between 21 and 23 years, with ranks ranging from 3rd Kyu to 2nd Dan, were included in the study. Participants with any medical conditions that may affect their physical performance were excluded. All participants were pair-matched based on gender and then randomly allocated into 2 groups: an experimental group (EG, n= 4; age, 22 ± 2 years; body mass, 63.4±8.3kg; height, 174.2±8.2 cm; 2 males and 2 females) that performed a multilateral training or a control group (CG; n=4; age, 22± 2 years; body mass, 65.3 ± 5.2 kg; height, 170.3 ± 9.8 cm; 2 male and 2 females) that performed a karate technical training only.

PROCEDURES

All study procedures were performed in the karate gym, fitness center, and ground. Pre-test and post-test assessment were performed at weeks 1 (baseline) and 8 (end of the study). All participants participated in an introductory training session before the testing procedures. Before pre-and post-testing, all participants underwent a standardized 10-minute warm-up that consisted of low-to-moderate intensity aerobic exercise and stretching. Initial and final test measurements were made at the same time of day and under the same experimental conditions. All measurements for fitness testing were performed by the same blinded experimenter.

Pre-test procedures

In the first week of the training program, a pre-test was conducted to identify the level of the selected subjects (EG and CG). Various fitness testing techniques were used to measure physical fitness performance, including,

- Burpee test – strength, endurance, agility, balance and coordination.
  (chandana & happuarchchi, 2021)
- Sit & reach test – Flexibility
- Ruler Drop test – reaction time
- 30m sprint test – Speed

The ground, place arrangement, and test procedure were done according to internationally accepted methods for the test batteries used here.

Eight-week multilateral Training program

EG was trained three times per week on non-consecutive days (Monday, Wednesday, and Friday) for eight weeks replacing a part of their karate technical training with a multilateral training without increasing the total training time. Before each training session, all EG participants participated in a 20-minute dynamic warm-up period followed by dynamic and static stretch exercises (5 min.). The dynamic warm-up included arm swings, trunk twisting, high marching, stride jumping, high knees, side bending, side stretching, skipping leg swings, backward sprinting, and lateral shuffles. Stretching included Achilles' tendon/calf stretches, skier's stretches, quadriceps stretches, hurdler's stretches, straddle stretches, groin stretches, back stretches, and archers. Each training session ended with ~15 min. of cool-down activities. The 8-week periodization training program series is given below.

Table 01-Week 01- Introduction and Foundation

Goal - Establish a baseline for physical fitness and technique

Focus Area	Exercise	Details
Strength	Push-ups	3 sets of 15 reps
	Squats	3 sets of 15 reps
	Core Work: Plank, Russian Twists	Plank: 30 seconds, Russian Twists: 15 per side
	Karate Stance Hold (Horse Stance)	Hold for 1 minute
Endurance	Running or Cycling	20 minutes at moderate intensity
Flexibility	Dynamic Stretching (Leg Swings, Arm Circles, Hip Rotations)	10 minutes
	Static Stretching (Hamstrings, Quads, Lower Back)	Hold each stretch for 30 seconds
Agility & Speed	Ladder Drills	3 sets of 30 seconds

	Short Sprints	5 x 20 meters with rest between each sprint
Power	Box Jumps	3 sets of 10 reps
Balance & Coordination	Balance Board or Single-Leg Hold	Hold for 30 seconds per leg
	Karate Kick Form Practice (Front, Side, Roundhouse)	Focus on technique and balance

Table 02-Week 2: Strength and Stability Focus

Goal: Build strength and reinforce foundational movements

Focus Area	Exercise	Details
Strength	Push-ups	4 sets of 20 reps
	Lunges	3 sets of 15 reps per leg
	Core Work: Russian Twists with Weight	3 sets of 15 reps per side
	Karate Stance Work (Static Holds for Each Stance)	Hold each stance for 1 minute
Endurance	Running or Cycling	25 minutes at moderate intensity
Flexibility	Static Stretching (Calves, Quads, Hamstrings)	Hold each stretch for 30 seconds
	Deep Squat Hold	Hold for 1 minute for flexibility and balance.
Agility & Speed	Ladder Drills with Footwork Variations	3 sets
	Short Sprints	6 x 30 meters with rest between each sprint
Power	Plyometric Exercises (Jump Lunges, Squat Jumps)	3 sets of 10 reps for each exercise
Balance & Coordination	Single-Leg Balance on Balance Pad	Hold for 30 seconds per leg
	Karate Movement Drills (Focus on Balance Shifts and Transitions)	Practice transitions smoothly between stances and kicks

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Table 03-week 03- Speed, Power, and Flexibility

Goal: Improve explosiveness, mobility, and karate-specific movements.

Focus Area	Exercise	Details
Strength	Push-ups with Shoulder Taps	4 sets of 20 reps
	Squat Jumps	3 sets of 15 reps
	Core Work: Ab Wheel Rollouts or Plank Variations	3 sets of 12 reps
Endurance	High-Intensity Interval Training (HIIT)	30 seconds sprint, 30 seconds rest for 10 sets
Flexibility	Dynamic Stretching before Training (Leg Swings, Arm Circles, Hip Rotations)	10 minutes
	Static Stretching Post-Training (Focus on Hamstrings, Quads, Lower Back)	Hold each stretch for 30 seconds
Agility & Speed	Ladder Drills (Focus on Speed and Footwork Variations)	3 sets
	Short Sprints with Reaction Time (Coach Calls Direction)	5 x 20 meters, rest between each sprint
Power	Medicine Ball Slams	3 sets of 12 reps
	Jumping Burpees	3 sets of 10 reps
Balance & Coordination	Balance Drills (Single-Leg Hold on Stability Ball)	Hold for 30 seconds per leg
	Karate Movement Drills (Focus on Form and Balance during Kicks and Stances)	Practice transitions, stances, and balance while performing techniques

Table 04 - Week 4: Power, Endurance, and Speed

Goal: Increase explosive strength and endurance.

Focus Area	Exercise	Details
Strength	Push-ups with Claps	4 sets of 15 reps
	Squats	4 sets of 20 reps
	Core Work: Planks and Russian Twists	Plank: Hold for 45 seconds, Russian Twists: 15 per side
Endurance	Steady-State Cardio (Running or Cycling)	30 minutes at moderate intensity
Flexibility	Dynamic Stretching before Session (Leg Swings, Arm Circles, Hip Rotations)	10 minutes
	Static Stretching Post-Session (Hamstrings, Quads, Lower Back)	Hold each stretch for 30 seconds
Agility & Speed	Speed Drills (10 x 20 meters sprints)	Rest between each sprint for 30 seconds
	T-Drill Agility Test	3 sets
Power	Kettlebell Swings	3 sets of 15 reps
	Jump Squats	4 sets of 10 reps
Balance & Coordination	Karate Footwork Drills (Focus on Fast Transitions and Stance Changes)	Practice footwork and stances for 10 minutes
	Stability Ball Exercises (Core and Balance Focus)	3 sets of 15 reps each

Table 05-Week 5: Strength Endurance and Skill Integration

Goal: Combine strength with endurance for higher performance.

Focus Area	Exercise	Details
Strength	Pull-ups (or Inverted Rows)	3 sets of 10 reps
	Bulgarian Split Squats	3 sets of 12 reps per leg
	Core Work: Leg Raises, Russian Twists, and Plank Variations	3 sets of 15 reps for each core exercise
Endurance	High-Intensity Interval Training (HIIT)	20 seconds of work, 40 seconds rest for 20 minutes
Flexibility	Yoga or Mobility Drills for Flexibility	20 minutes (focus on hip flexors, hamstrings, and shoulders)
Agility & Speed	Cone Drills (Weaving, Quick Direction Changes)	3 sets of 30 seconds each
	Quick Footwork Drills (Sprints with Reaction Time)	10 x 20 meters, rest 30 seconds
Power	Plyometric Push-ups (Explosive)	3 sets of 10 reps
	Explosive Medicine Ball Throws	3 sets of 15 reps
Balance & Coordination	Stability Ball Exercises (Core Work and Balance)	3 sets of 15 reps
	Karate Focused Skill Drills (Footwork, Stance Transitions, Kicks)	Practice foot placement, transitions, and explosive movements

International Journal of Health, Physical Education and Computer Science in Sports
ISSN 2231-3265 Volume 55; Issue 2, ISRA Journal Impact Factor 7.217
A Peer Reviewed (Refereed) International Research Journal

Table 06-Week 6: Advanced Endurance and Strength Focus

Goal: Push conditioning and increase strength.

Focus Area	Exercise	Details
Strength	Deadlifts (or Kettlebell Swings)	4 sets of 10 reps
	Jump Squats	4 sets of 15 reps
	Core Work: Plank Variations (Side Plank, Forearm Plank, Plank to Push-up)	Hold each variation for 45 seconds (3 sets per variation)
Endurance	Steady-State Cardio (Running or Cycling)	35 minutes at moderate intensity
Flexibility	Dynamic Stretching (Leg Swings, Arm Circles, Hip Rotations)	10 minutes
	Static Stretching (Focus on High Kicks, Quads, Hamstrings)	Hold each stretch for 30 seconds
Agility & Speed	Ladder Drills with Speed Variations (In-out, Lateral Steps)	3 sets of 30 seconds each
	Short Sprints with Sharp Turns (Sprinting and Quick Direction Changes)	6 x 20 meters, rest for 30 seconds
Power	Broad Jumps	4 sets of 10 reps
	Box Jumps	3 sets of 10 reps
Balance & Coordination	Karate Footwork Drills (Focus on Fast Transitions and Kicks)	Practice for 15 minutes focusing on accuracy and foot speed
	Stability Ball Exercises (Core and Balance Focus)	3 sets of 15 reps

Table 07 - Week 7: Peak Power and Endurance

Goal: Optimize explosive strength and muscle endurance.

Focus Area	Exercise	Details
Strength	Deadlifts (or Kettlebell Swings)	4 sets of 10 reps
	Jump Squats	4 sets of 15 reps
	Core Work: Medicine Ball Russian Twists and Plank Variations	3 sets of 15 reps each
Endurance	Interval Sprints (40 meters, 20 seconds work, 20 seconds rest)	10 rounds rest 30 seconds
Flexibility	Dynamic Stretching before Session (Leg Swings, Arm Circles, Hip Rotations)	10 minutes
	Static Stretching After Session (Focus on Hamstrings, Quads, Groin)	Hold each stretch for 30 seconds
Agility & Speed	Agility Ladder Drills with Speed and Directional Changes	3 sets of 30 seconds each
	Sprint Drills with Reaction Time (Coach Calls Direction)	6 x 20 meters, rest 30 seconds
Power	Kettlebell Clean and Press	3 sets of 10 reps
	Power Push-ups (Explosive, Clap Push-ups)	3 sets of 12 reps
Balance & Coordination	Balance Drills (Single-Leg Hold with Head Turns or Dynamic Movement)	Hold for 30 seconds per leg (3 sets)
	Karate Movement Drills (Focus on Technique under Fatigue: Stances, Kicks)	Practice for 15 minutes with a focus on speed and form

Table 08 -Week 8: Taper and Recovery with Application

Goal: Recovery-focused week with application to karate movements.

Focus Area	Exercise	Details
Strength	Light Bodyweight Strength Training (Squats, Push-ups, Core Work)	3 sets of 10-15 reps for each exercise
	Active Recovery Exercises (Glute Bridges, Leg Raises)	3 sets of 10-15 reps per exercise
Endurance	Light Jogging or Swimming	20 minutes at a low intensity
Flexibility	Full-Body Stretching and Mobility Drills	20 minutes (focus on hips, shoulders, hamstrings)
Agility & Speed	Light Agility Drills (Focus on Footwork and Movement Transitions)	3 sets of 20 seconds per drill
	Light Sprints (20 meters, with adequate rest)	4 x 20 meters, rest 30 seconds
Power	Explosive Push-ups (Modified if needed)	3 sets of 8-10 reps
	Medicine Ball Slams (Light Weight, Controlled Movement)	3 sets of 10 reps
Balance & Coordination	Dynamic Balance Drills (Single-Leg Hold with Arm/Leg Movements)	Hold for 30 seconds per leg (3 sets)
	Karate Skill Practice (Light Sparring or Partner Work for Timing and Technique)	15 minutes, focusing on technique and flow

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A Peer Reviewed (Refereed) International Research Journal

Post-test

After giving the 8-week special training schedule, a post-test will be done to identify the improvement of the Physical fitness level of the sample players. This post-test will be conducted after finishing the session on the last day of the 8-week training program. Again, the internationally recognized test will be used to identify the enhancement of physical fitness components of athletes and used as a pre-test standardized test as the post-test standardized tests will be used to measure the physical fitness components of the players. For the test battery used here, the ground, place arrangement, and test procedure were done according to internationally accepted methods.

RESULTS

The results of the 30s Burpee Test are shown in the table below,

Table 09-Performance improvement (EG)

Sample	**Pre-test Results**	**Post-test Results**	**Improvement**
GS	11	19	06
MP	09	14	05
AS	12	18	06
DH	10	15	05

Table 10-Performance improvement (CG)

Sample	**Pre-test Results**	**Post-test Results**	**Improvement**
BG	11	11	00
DR	08	09	01
HS	10	11	01
DP	09	10	01

The 30m Sprint test results are shown in the table below.

Table 11-Performance improvement (EG)

Sample	Pre-test time(second))	Post-test time(second)	Improvement
GS	5.55	4.26	1.29
MP	6.9	5.01	1.89
AS	5.68	4.36	1.32
DH	5.97	5.01	0.96

Table 12-Performance improvement (CG)

Sample	Pre-test time(second))	Post-test time(second)	Improvement
BG	6.54	6.21	0.33
DR	5.96	5.02	0.94
HS	5.89	5.31	0.58
DP	6.45	6.32	0.13

The sit & reach test results are shown in the table below.

Table 13- Performance improvement (EG)

Sample	Pre-test (cm)	Post-test (cm)	Improvement
GS	22.00cm	27.85cm	5.85cm
MP	15.40cm	20.09cm	4.69cm
AS	21.35cm	24.69cm	3.34cm
DH	16.94cm	21.87cm	4.93cm

Table 14-Performance improvement (CG)

Sample	Pre-test (cm)	Post-test (cm)	Improvement
BG	20.03cm	21.89cm	1.86cm
DR	17.60cm	19.63cm	2.03cm
HS	19.35cm	21.03cm	1.68cm
DP	18.95cm	19.87cm	0.92cm

The results of the Ruler drop test are shown in the below table.

Table 15-Performance improvement pre-test (EG)

Sample	**01 (CM)**	02 (CM)	03 (CM)	04 (CM)	05 (CM)	06 (CM)	07 (CM)	08 (CM)	**09 (CM)**	**10 (CM)**	**Average**	**Norms table results**
GS	14.00	17.80	16.90	15.60	19.00	18.20	18.00	15.20	18.00	17.80	16.77cm	Average
MP	19.50	19.80	17.80	19.86	16.50	18.70	19.13	18.79	18.65	19.25	18.79cm	Average
AS	12.95	14.35	18.69	15.3	18.26	17.30	16.74	16.36	17.46	14.65	16.20cm	Average
DH	16.57	19.89	15.99	18.37	16.57	18.95	19.85	16.35	14.75	18.98	17.61cm	Average

Table 16-Performance improvement post-test (EG)

Sample	**01 (CM)**	02 (CM)	03 (CM)	04 (CM)	05 (CM)	06 (CM)	07 (CM)	08 (CM)	**09 (CM)**	**10 (CM)**	**Averag e**	**Norms table results**
GS	12.33	14.80	13.90	13.60	13.00	11.20	12.00	11.20	12.00	11.81	12.58cm	Above Average
MP	11.50	10.80	12.80	11.60	10.50	11.70	10.13	09.79	11.65	12.20	11.25cm	Above Average
AS	11.56	14.76	14.12	13.80	14.50	11.65	12.35	11.75	14.12	11.97	13.05cm	Above Average
DH	10.25	09.99	11.28	12.10	11.25	11.87	10.58	09.89	12.89	12.84	11.28cm	Above Average

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Table 17-Performance improvement pre-test (CG)

Sample	**01 (CM)**	02 (CM)	03 (CM)	04 (CM)	05 (CM)	06 (CM)	07 (CM)	08 (CM)	**09 (CM)**	**10 (CM)**	**Average**	**Norms table results**
BG	12.00	14.40	14.90	15.30	16.00	14.20	16.50	14.90	17.86	18.90	15.28cm	Average
DR	16.80	18.60	18.80	18.46	14.60	19.60	19.15	17.49	18.64	18.95	18.10cm	Average
HS	13.55	14.35	14.60	16.36	15.66	15.90	14.56	16.66	16.59	15.45	17.00cm	Average
DP	18.67	17.99	18.45	18.45	15.47	17.95	15.55	15.35	15.25	16.98	17.01cm	Average

Tale 18-performance improvement post-test (CG)

Sample	**01 (CM)**	02 (CM)	03 (CM)	04 (CM)	05 (CM)	06 (CM)	07 (CM)	08 (CM)	**09 (CM)**	**10 (CM)**	**Average**	**Norms table results**
BG	12.05	14.50	14.20	15.56	16.56	14.40	17.50	15.10	14.86	16.85	15.15cm	Average
DR	16.90	18.87	18.70	14.96	14.47	18.60	14.15	17.69	14.94	17.99	16.72cm	Average
HS	13.89	14.34	14.40	15.96	16.00	16.90	15.66	16.46	17.99	14.95	15.65cm	Average
DP	18.99	18.51	17.65	16.45	15.87	18.95	16.15	14.35	16.25	15.98	16.91cm	Average

DISCUSSION

To summarize the purpose of the 8-week periodized training program was to improve the physical fitness performance level of the Sri Lanka National Pool karate players. Statistical analysis of all research results showed an increase in the performance of all participants. In addition to this specific training program, all participants practiced their previous daily karate techniques and tactics.

CONCLUSION & RECOMMENDATION

The final result mentioned here helped to improve the physical fitness performance of national pool Karate players and their technical skills improved through this investigation. The exercises and training methods given during the 8 weeks have greatly contributed to the success of these tests and they can be shown here as evidence. Also, there is a significant difference in the various test data done for them. This improves the physical fitness performance of the players. Finally, this week's training has been proven to have contributed to the improvement of the physical fitness components of the national pool of Karate players. That way they can participate in the upcoming matches and win. More studies like this need to be studied in depth to further identify areas for improvement. Also, quality feedback on their experience with the training program should be collected at the end. It should give them an insight into the effectiveness of the program.

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GENDER-BASED HARASSMENT AND VIOLENCE IN SPORTS: EXPERIENCES OF NATIONAL WOMEN ATHLETES IN SRI LANKA

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ABSTRACT:

This study investigates the prevalence and forms of sexual harassment among national-level women athletes in Sri Lanka, focusing on gender harassment, unwanted sexual attention, and sexual coercion. Using a structured questionnaire adapted from the Sexual Experiences Questionnaire (SEQ), data were collected from 100 female athletes. Results highlight that GH5, with the lowest score of 313, is the most significant form of gender harassment, followed by GH3 (387) and GH2 (374). For unwanted sexual attention, USA2 (281) was the most prevalent, followed by USA5 (285) and USA6 (287). In the category of sexual coercion, SC13 (179) emerged as the most significant, with SC12 (258) and SC11 (283) closely following. The findings underscore the pervasive nature of sexual harassment in sports, exacerbated by power imbalances and cultural norms. These results call for immediate action, including robust policies, targeted awareness initiatives, and accessible reporting mechanisms to create a safer, more inclusive environment for female athletes in Sri Lanka.

Key Words**:** Female athletes, Sexual harassment, Sports industry.

INTRODUCTION

Sexual Harassment (SH)

Sexual harassment, defined as unwelcome sexual advances, requests for sexual favors, or other verbal or physical conduct of a sexual nature, undermines individuals' dignity and well-being ((Fasting et al., 2003). The three-dimensional model of sexual harassment includes gender harassment, unwelcome sexual attention, and sexual coercion (Fasting et al., 2004)

Gender Harassment (GH)

Gender harassment encompasses verbal and nonverbal actions that demean or express hostility toward women, including sexual slurs, taunts, gestures, and obscene materials, contributing to a toxic environment (Fitzgerald et al., 1995).

Unwanted sexual attention (UWA)

Unwanted sexual attention, such as leering, persistently asking someone out, or making uninvited sexual advances, can contribute to a hostile and uncomfortable workplace environment (Esacove, 1998)

Sexual coercion (SC)

Sexual coercion, the most extreme form of sexual harassment, involves pressuring individuals into sexual acts by offering employment-related benefits, making threats, or using force, and is aimed at extorting sexual cooperation.(Fitzgerald & Cortina, 2018)

2.5 Manifestations of Sexual Harassment and Gender-Based Violence in Sports

Sexual harassment and gender-based violence in sports can manifest in various forms, such as unwanted sexual attention, coercion, and verbal or physical harassment, which create hostile and unsafe environments for female athletes. In Sri Lanka, national women athletes are particularly vulnerable to these issues, which are often exacerbated by power imbalances within sports institutions and a lack of adequate protective measures.

PURPOSE OF THE STUDY

The purpose of this study to investigate the prevalence and forms of sexual harassment and gender-based violence in sports, focusing on the experiences of female athletes. It seeks to identify the factors that contribute to these issues and propose strategies to create safer sports environments for women.

METHODOLOGY

This study employed a cross-sectional design to examine the prevalence of sexual harassment among 100 national-level female athletes in Sri Lanka, selected through simple random sampling. Data were collected using a structured questionnaire adapted from the Sexual Experiences Questionnaire (SEQ) (Gutek et al., 2004), which measured three dimensions: Gender Harassment (GH-12 items), Unwelcome Sexual Attention (USA-14 items), and Sexual Coercion (SC-13 items) on a five-point Likert scale

(Fitzgerald et al., 1995). The questionnaire, validated through a pilot study with a Cronbach's alpha of 0.934, was distributed at training venues, and informed consent was obtained from all participants. Statistical analyses included descriptive and inferential methods to identify patterns and relationships across the identified dimensions.

This study used a single questionnaire to assess three types of harassment: Gender Harassment (questions used are labeled GH1–GH12), Unwanted Sexual Attention (questions used are labeled USA1–USA14), and Sexual Coercion (questions used are labeled SC1–SC13).

RESULT

Table 4: The score of Gender Harassments

Harassment Type	GH1	GH2	GH3	GH4	GH5	GH6	GH7	GH8	GH9	GH10	GH11	GH12
Total score	390	374	387	403	313	405	416	422	402	419	422	424
Rank	4	2	3	6	1	7	8	10	5	9	10	11

Table 5:The Score of Unwanted Sexual Attention

Harassment Type	USA1	USA2	USA3	USA4	USA5	USA6	USA7	USA8	USA9	USA 10	USA 11	USA 12	USA 13	USA 14
Total score	352	281	296	295	285	287	337	359	305	395	391	402	385	406
Rank	8	1	5	4	2	3	7	9	6	12	11	13	10	14

Table 6:The score of Sexual Coercion

Harassment Type	SC1	SC2	SC3	SC4	SC5	SC6	SC7	SC8	SC9	SC10	SC11	SC12	SC13
Total score	396	395	316	306	381	368	399	414	309	332	283	258	179
Rank	11	10	6	4	9	8	12	13	5	7	3	2	1

Table 1 prioritizes 12 types of gender harassment, identifying GH5, with the lowest score of 313, as the most significant and prevalent type of gender harassment. This highlights its critical impact within the category. It is followed by GH3 (387), GH2 (374), and GH1 (390), which also represent notable forms contributing to the overall prevalence of gender harassment. Table 2 emphasizes 14 types of unwanted sexual attention, where USA2, with the lowest score of 281, emerges as the most significant and prioritized type of unwanted sexual attention. This is closely followed by USA5 (285), USA6 (287), and USA3 (296), reflecting other critical contributors within this category. Table 3 focuses on 13 types of sexual coercion, with SC13, scoring 179, identified as the most significant and prioritized form of sexual coercion. SC12 (258) and SC11 (283) are also highlighted as major contributors to the prevalence of sexual coercion

DISCUSSION

This study highlights the significant prevalence of gender harassment, unwanted sexual attention, and sexual coercion faced by national-level women athletes in Sri Lanka, underscoring a hostile sports environment. Gender harassment, including sexist comments, crude remarks, and offensive jokes, reflects deep-seated cultural norms and power imbalances that harm athletes' well-being (Jahangir & Manzoor, 2018). Unwanted sexual attention, such as unwelcome advances and persistent requests, exposes a lack of boundaries and accountability within sports. Alarming findings on sexual coercion reveal authority figures exploiting power, with athletes fearing career repercussions and personal scrutiny. These issues demand urgent policy reforms, awareness programs, and robust reporting mechanisms to create a safer, more inclusive environment for female athletes.

CONCLUSION

This study sheds light on the pervasive issue of sexual harassment faced by national-level women athletes in Sri Lanka, focusing on its three primary dimensions: gender harassment, unwanted sexual attention, and sexual coercion. Gender harassment emerges as a deeply rooted problem, perpetuated by cultural norms and power imbalances, manifesting in behaviours that demean and undermine female athletes. Unwanted sexual attention further exacerbates this issue, reflecting a lack of accountability and respect within sports environments. Alarmingly, sexual coercion highlights misuse of authority, with athletes often fearing repercussions for reporting misconduct.

The findings emphasize the urgent need for comprehensive reforms, including targeted educational programs, effective reporting mechanisms, and stringent policies to prevent harassment and protect athletes. By addressing these challenges, sports organizations can foster a safer and more equitable environment that empowers female athletes and upholds their dignity and rights in the sports domain.

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EFFECT OF VITAMIN D DEFICIENCY AND SEASONAL VARIATION STATUS ON ATHLETE PERFORMANCE: A REVIEW

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ABSTRACT

Vitamin D, a fat-soluble vitamin, has gained significant attention in recent years due to its potential impact on athlete performance. As athletes strive for optimal performance, understanding the role of Vitamin D in various aspects of athletic ability is crucial. Athletes are concerned about vitamin D deficiency, which is common during some seasons because of less sunlight exposure. This review aims to explore the existing research on the effects of Vitamin D Deficiency and seasonal variation status on athlete performance, focusing on muscle function, bone health, immune function, and endurance capacity. Literature was performed using electronic database Google Scholar, PubMed. The search terms included “Vitamin D”, “athlete performance”, “muscle function”, “bone health”, “seasonal variation” and “Vitamin D deficiency”. The initial search yielded a large number of articles, which were screened based on their relevance to the topic. In this review twenty-eight articles were assessed. The influence of seasonal variations on Vitamin D levels adds another layer of complexity to this topic. Understanding the athletes Vitamin D status and effects of seasonal changes on Vitamin D status and subsequently on athlete performance is crucial for optimizing training and supplementation strategies throughout the year. In conclusion result underscore the intricate connection between Vitamin D status and athlete performance. Evidence suggests that seasonal reductions in sunlight exposure significantly lower vitamin D levels, negatively influence muscle function, bone health, immune function, and endurance capacity. Further research is needed to focus about the mechanisms behind these effects and establish optimal Vitamin D dosages for athletes according to the seasonal variation when considering the factors like individual variability, performance demand, training environment and dietary intake. Keywords: Athlete performance, Seasonal variation, Vitamin D

INTRODUCTION

Vitamin D levels differ across various continents and countries. Various factors influence the production of vitamin D, including geographical latitude, season, time of day, melanin content, use of sunblock, age, and extent of clothing (Cannell et al., 2009). Vitamin D can obtained from foods and supplements also (Halliday et al., 2011). Dark-skinned athletes may have difficulty getting enough vitamin D from sunlight. Because melanin acts as a natural sunscreen. Athletes are equally susceptible to low levels of vitamin D, with a significant proportion having concentrations below 20 ng/mL across various sports, particularly during the winter months (Yagüe et al., 2020). Vitamin D enhances the absorption of calcium and phosphate in the intestines and is crucial for skeletal mineralization, bone health, protein synthesis, cardiovascular function, cell growth, and musculoskeletal regulation, preserving neuromuscular function and preventing certain types of cancer. All of these impact athletic performance (Yagüe et al., 2020) (Bischoff et al., 2003).This review aim to examine the current research on the effect of Vitamin D deficiency and seasonal variations on athletic performance.

MATERIAL AND METHODS

To conduct this review, a comprehensive search of relevant literature was performed using electronic database Google Scholar. The search terms included “Vitamin D”, “athlete performance”, “muscle function”, “bone health”, “seasonal variation” and “Vitamin D deficiency”. The initial search yielded a large number of articles, which were screened based on their relevance to the topic. Studies that examined the effects of Vitamin D on muscle function, bone health, immune function, and endurance capacity in athletes were selected for further analysis. Special emphasis was given to studies that explored the relationship between Vitamin D status and athlete performance during different seasons. The extracted data were synthesized and analyzed to identify common themes, trends, and associations between Vitamin D status and athlete performance. The effects of seasonal variation on Vitamin D levels and its impact on athlete performance were also analyzed.

RESULT

Vitamin D Deficiency There is no universally agreed-upon standard definition for vitamin D deficiency, insufficiency, or sufficiency. The typical method for assessing vitamin D status is by measuring the concentration of 25(OH) D in the blood serum. Vitamin D deficiency is defined as having a serum 25(OH) D concentration below 50 nmol/L, while severe vitamin D deficiency is defined as a concentration below 30 nmol/L (Holick et al., 2011).

Vitamin D deficiency among athletes Recent studies have identified deficiencies in 25(OH) D among elite female Australian gymnasts and Finnish athletes. Young active Middle Eastern males have an alarmingly high prevalence of 25(OH)D deficiency (Hamilton et al., 2010).A study of National Basketball Association (NBA) players found that 79.3% of them had either vitamin D deficiency or insufficiency. 90 (32.3%) were deficient in vitamin D, 131 (47.0%) were insufficient, and 58 (20.8%) were sufficient(Fishman et al., 2016).A research by Valtueña et al. 2014 found that 82% of elite athletes had vitamin D levels below the optimal level of 75 nmol/L. The study's findings are consistent with previous research has shown that athletes, even those living in Mediterranean countries, are at risk of vitamin D deficiency. A study of young women found that 67% of them had vitamin D levels below 15 ng/mL during the winter. The mean level increased to 25 ng/mL at the end of a sunny summer, but then fell back to 16 ng/mL at the end of the yearlong study. Accordingly, it appears that many athletes in the world suffer from vitamin D deficiency due to various reasons.

Effect of seasonal variation for Vitamin D Winter season, the duration of sunlight is shorter when compared to the summer season. Regions located at higher latitudes experience weaker solar radiation compared to regions closer to the equator. Both winter and high latitude regions tend to have reduced solar radiation and shorter daylight hours compared to summer and low latitude regions (Valtueña et al., 2014).Based on the information provided, it can be inferred that adequate vitamin D status is typically achieved during the summer season. The concentration of 25(OH) D is significantly higher in summer compared to winter, spring, and autumn. Furthermore, notable decrease in 25(OH) D from autumn to winter, likely reflecting the reduced sunlight exposure and weaker solar radiation during the winter season. However, no significant change in 25(OH) D is observed between winter and spring, suggesting that sunlight exposure during spring may not be sufficient to replenish vitamin D stores after the winter period. Overall, these findings suggest a seasonal variation in vitamin D status, with lower levels observed in winter and higher levels achieved during the summer season when sunlight exposure is greater (Krzywanski et al., 2016).According to the study conducted by Morton et al. 2012, 65% of the athletes had insufficient vitamin D concentrations during the winter season. Similarly, Constantini et al. 2010 reported vitamin D insufficiency in 73% of the measured athletes. In another study by Galán et al. 2012, they proposed that 25(OH) D concentrations should be above 122.7 nmol/L in autumn to ensure adequate levels of vitamin D in spring. This suggests that maintaining higher vitamin D levels during autumn may help prevent deficiencies during the following seasons. These studies highlight the prevalence of vitamin D insufficiency among athletes, particularly during winter, and emphasize the importance of monitoring and addressing vitamin D status in order to support optimal health and performance (Cannell et al., 2009).

A study of 1835 mainly sedentary Norwegian men found that their cumulative work ability during maximal bicycle exercise tests showed an August peak, a wintertime nadir, and a sharp decline starting in the autumn. The study's findings suggest that there is a seasonal variation in cumulative work ability in men. This variation is likely due to changes in vitamin D levels, which are highest in the summer and lowest in the winter. Vitamin D is important for muscle function, so lower levels of vitamin D in the winter may lead to a decline in cumulative work ability(Valtueña et al., 2014). The findings indicate that vitamin D values are lower during the summer compared to the winter season.

Effect of Vitamin D for Athlete Performance Impact on Bone Health: Vitamin D plays crucial role in maintaining healthy bones and injury prevention. sportsmen has possibility of stress fractures and other bone problems (Lappe et al., 2007). A study conducted on female runners revealed a significant association between Vitamin D insufficiency and an increased risk of stress fractures. Review Daly et al. 2015 emphasize the importance of maintaining adequate Vitamin D levels in athletes to support optimal bone health and reduce the risk of injuries. Effects on Muscle Function and Strength: Relationship between Vitamin D levels and muscle strength in athletes revealed that individuals with higher Vitamin D levels demonstrated greater muscle strength compared to those with lower levels (Owens et al., 2018). These findings indicate that maintaining adequate Vitamin D levels may enhance muscle function and strength in athletes. Influence on Immune Function: Sufficient amounts of vitamin D contribute to reduced inflammation, boost immunity, and affect the immune response in skeletal muscle, it is crucial for immune health (Crescioli, 2022). Impact on Endurance and Exercise Capacity: Endurance performance refers to an athlete's ability to sustain prolonged physical activity without experiencing excessive fatigue. Koundourakis et al. 2014 reported improved exercise performance in athletes who were supplemented with Vitamin D. These findings suggest a potential link between Vitamin D and enhanced endurance performance (Koundourakis et al., 2014). This suggests that maintaining optimal Vitamin D levels may have a positive impact on various aspects of exercise performance, including endurance.

DISCUSSION

Primary source of vitamin D considerations are Sunlight exposure to the skin and other sources are foods and supplements. Vitamin D intake and levels can indeed fluctuate due to seasonal changes. During certain seasons or in regions with higher latitudes, sunlight intensity and duration may be reduced. This can lead to lower Vitamin D production in the skin and subsequently affect Vitamin D levels in the body. Other than seasonal variations various factors can contribute to Vitamin D deficiency, including the use of sunscreen (while essential for protecting the skin from harmful UV rays, can limit Vitamin D synthesis), higher body mass index (BMI)(Higher BMI may have lower Vitamin D levels due to its sequestration in adipose tissue). Identifying and preventing vitamin D deficiency and maintaining proper vitamin D levels cam improve athletic performance. Study on Milani et al., 2021showed total 25-OH-Vitamin D readings and anticipated physical fitness performance ratings for various seasons. Physical performance is vary according to the Vitamin D levels with the seasonality. In comparison to winter, spring, or autumn, the effect of vitamin D on physical fitness performance differs. Specifically, during seasons with milder climates, having higher levels of total vitamin D has been associated with a significant increase in physical fitness scores. This means that individuals with higher vitamin D levels tend to exhibit better physical performance during these seasons.

CONCLUSION

The existing body of review suggests that maintaining optimal Vitamin D levels is essential for athletes aiming to maximize their performance. Adequate Vitamin D levels positively influence muscle function, bone health, immune function, and endurance capacity. However, individual responses to Vitamin D supplementation may vary, and athletes should consult with healthcare professionals or sports nutritionists to determine personalized recommendations. The seasonal changes may effect to the Vitamin D level. Most research present in summer is the adequate vitamin D status achieve and the summer 25(OH) D concentration is significantly higher than in winter, spring and autumn. Further research is needed to focus about the mechanisms behind these effects and establish optimal Vitamin D dosages for athletes according to the seasonal variation when considering the factors like individual variability, performance demand, training environment and dietary intake. Vitamin D deficiency can have a number of negative health consequences. It can also impair athletic performance. It is important for athletes to be aware of the risk of vitamin D deficiency and to take steps to prevent it. In order to prevent this athletes, coaches, sport scientist, nutritionist can regularly monitor vitamin D levels particularly during low sunlight periods and to prevent deficiencies can be implementing suitable dietary or supplement.

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MORAL GROWTH AMONG SPORTS AND NON-SPORTS UNDERGRADUATE IN ABARAGAMUWA UNIVERSITY OF SRI LANKA

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ABSTRACT

Moral growth or moral development is a fundamental aspect of human maturation that encompasses the formation of an individual's ethical beliefs, values, and behaviors. This study explores the distinctions in moral growth between sports and non-sports undergraduates at Sabaragamuwa University of Sri Lanka (SUSL). Employing a cross-sectional design within a quantitative framework, a sample of 375 undergraduates was selected from eight faculties using a multistage sampling technique. Among the sampled population, 169 were involved in sports, while 206 were not. Data were collected through a standardized questionnaire measuring seven dimensions of moral growth: global morality, honesty, compassion, fairness, loyalty, purity, and respect. Statistical analyses, including general linear regression, Mann-Whitney U tests, and Kruskal-Wallis tests using R software, were conducted to assess the differences in moral characteristics between sports and non-sports undergraduates. The results indicate significant disparities ($p < 0.05$) in moral growth characteristics, including global morality, honesty, compassion, fairness, loyalty, purity, and respect, between the two groups. Furthermore, the relationship between these moral dimensions and experience also demonstrated significant differences ($p < 0.05$). Interestingly, purity and respect exhibited significant discrepancies across the eight faculties, while no significant differences were observed in global morality, honesty, compassion, fairness, and loyalty among faculties. These findings underscore the importance of sports participation in fostering specific dimensions of moral growth among university undergraduates, while also highlighting variations in moral development across different academic disciplines. **Keywords**: Moral Development, Ethical Beliefs, Academic Discipline, Behaviors

INTRODUCTION

The study examines the influence of sports and non-sports extracurricular activities on moral growth among undergraduates at Sabaragamuwa University of Sri Lanka, focusing on how sports foster teamwork, discipline, and resilience, while non-sports activities promote creativity, critical thinking, and societal awareness. Moral growth is the development of ethical values and behavior, encompassing principles like fairness, purity, empathy, loyalty, honesty, compassion, and respect for others. This study explores the impact of various activities on students' moral growth, aiming to inform the development of programs that promote holistic student development. Despite the potential benefits of sports participation, such as improved physical health and teamwork skills, sports participation at Sabaragamuwa University of Sri Lanka is relatively limited. The study aims to understand how sports participation influences moral growth in undergraduate students, highlighting the need for a comprehensive investigation. The research fills a gap in existing studies on the moral growth of sports and non-sports undergraduates in Sri Lankan universities, contributing to a deeper understanding of extracurricular activities. The variables used in this study include global morality, honesty, compassion, fairness, loyalty, purity, and respect. The purpose of the study is to examine moral growth differences between sports and non-sports undergraduates at Sabaragamuwa University of Sri Lanka, focusing on seven key dimensions and assessing the influence of sports participation on ethical beliefs and behaviors. The major objective is to investigate the differences in moral growth between sports and non-sports undergraduates at Sabaragamuwa University of Sri Lanka. Specific objectives include examining the relationship between sports experience and moral growth, as well as exploring moral growth differences across different faculties.

METHODOLOGY

The study uses a cross-sectional research design to compare moral growth among sports and non-sports undergraduate students. It focuses on undergraduate students from eight faculties at Sabaragamuwa University of Sri Lanka, with a sample of 375 students selected through a multistage sampling technique. Of the participants, 169 were involved in sports, while 206 did not participate in any sports activities. Data were collected using a standardized questionnaire that evaluates seven key dimensions of moral growth. The data were analyzed using statistical methods in R software, employing the following techniques: General Linear Regression Analysis to determine the relationship between moral dimensions and sports participation, Mann-Whitney U Test to compare differences in moral characteristics between

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sports and non-sports participants, and Kruskal-Wallis Test to assess variations in moral growth dimensions across the eight faculties.

RESULT

Main Objective

Variables	N		Median	P Value
Global Morality	S	169	4.33	0.000
	Ns	206	3.66	
Honesty	S	169	4.50	0.000
	Ns	206	3.75	
Compassion	S	169	4.16	0.000
	Ns	206	3.83	
Fairness	S	169	4	0.033
	Ns	206	4	
Loyalty	S	169	4	0.000
	Ns	206	3.66	
Purity	S	169	4.33	0.000
	Ns	206	4	
Respect	S	169	4	0.000
	Ns	206	3.66	

Variables	N		P Value	F Value
Global Morality	S	169	0.000	26.89
	Ns	206		
Honesty	S	169	0.000	36.8
	Ns	206		
Compassion	S	169	0.000	16.17
	Ns	206		
Fairness	S	169	0.002	10.06
	Ns	206		
Loyalty	S	169	0.001	12.13
	Ns	206		
Purity	S	169	0.000	13.6
	Ns	206		
Respect	S	169	0.001	11.02
	Ns	206		

* Mann-Whitney U Test

* General Linear Regression

S=Sports Participant

Ns= None Sports Participant

Specific Objective 02

Global morality, honesty, compassion, fairness, loyalty, purity, and respect were compared across faculties using the Kruskal-Wallis test. The faculties showed significant differences in respect (P=0.026) and purity (p=0.001), indicating that the atmosphere or academic concentration of the faculty may have an impact on how these moral qualities are developed or displayed. Other variables, including global morality, honesty, compassion, justice, and loyalty, showed no discernible variations, suggesting that moral qualities were more uniform among faculties.

DISCUSSION

Moral Development and Sport Experience(Shields, 1986) explored the concept of moral reasoning in athletes and found that sport participation can lead to both positive and negative outcomes in moral development. Their study indicated that while sports can promote teamwork and fairness, they can also encourage aggressive behaviors and win-at-all-costs attitudes. The current research aligns with these findings by demonstrating that specific moral dimensions, like purity and respect, are significantly influenced by sport experience, suggesting that certain moral traits may be more susceptible to the context of sports.

Faculty Differences in Moral Dimensions

(Haworth, n.d.)examined moral development across different academic disciplines and found that students in humanities and social sciences often displayed higher levels of moral reasoning compared to those in natural sciences and business faculties. The current research's observation of significant differences in purity and respect among faculties supports Sage's findings, indicating that the academic environment and the nature of study in different faculties can contribute to variations in moral development. However, the lack of significant differences in global morality and other moral dimensions suggests a more complex interplay of factors that warrant further investigation.

Moral Growth Characteristics

(Choi et al., 2019)developed the Defining Issues Test (DIT) to measure moral development and found that individuals' moral reasoning evolves with age and education. The current study's identification of significant disparities in moral growth characteristics resonates with Rest's findings, highlighting that moral development is not uniform and can be influenced by various experiences, including academic and sport-related activities.

CONCLUSION

The study explored the differences in moral growth between sports and non-sports students at Sabaragamuwa University in Sri Lanka, focusing on moral dimensions such as ethics, honesty, compassion, impartiality, loyalty, purity, and respect. The results revealed significant differences, particularly in purity and respect, showing the positive impact of sports participation on moral development. Differences were also observed across faculties, with purity and respect standing out, suggesting the influence of academic disciplines on these traits. However, other moral aspects, such as global morality, honesty, compassion, fairness, and loyalty, did not vary significantly across faculties, indicating potential influences from institutional or cultural factors. These findings highlight the need for tailored instruction and extracurricular programs to address discipline-specific moral growth and emphasize the role of sports in fostering ethical development. Future research should explore the underlying factors contributing to these differences and examine the long-term effects of academic and sports systems on moral development.

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EFFECT OF UNILATERAL STRENGTH TRAINING ON MAXIMUM STRENGTH AND JUMPING PERFORMANCE IN INTERMEDIATE TRIPLE JUMPERS AT SABARAGAMUWA UNIVERSITY OF SRI LANKA

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ABSTRACT

The triple jump is a demanding track and field event, requiring strength, explosive power, and coordination. Bilateral asymmetry (BA), characterized by strength imbalances between limbs, is common among athletes and can obstruct performance. This study examines the effect of unilateral strength training (UST) on maximum strength and jumping performance in intermediate triple jumpers. The primary objective was to determine if UST reduces inter-limb asymmetry and enhancing athletic performance by evaluating changes in maximum lower body strength, explosive power and jumping distance. Two athletes (n=2) from the 2024 Inter-University Athletics Championship in Sri Lanka were selected. One athlete (age 22 years, height 1.73 m, weight 62 kg) was assigned to the treatment group (TG) and followed a structured UST program consisting of five exercises performed three days per week over 08 weeks. The control group (CG) athlete (age 22 years, height 1.65 m, weight 65 kg) maintained their regular workout schedule during the same time period. Performance was evaluated using pre-and post-tests including different types of tests such as; Bulgarian split squat (BSS), standing board jump (SBJ), standing triple jump (STJ), and full approach triple jump (FATJ). The TG showed significant improvements in strength (right leg: 30.00 %, left leg: 44.44 %) and explosive power (27.88 %), with notable gains in jumping performance (STJ right leg: 7.50 %, left leg: 20.59 %). In contrast, the CG exhibited only minor improvements. The findings indicate that UST effectively reduces inter-limb asymmetry and improves performance in triple jumpers. Further research should investigate the long-term implications of UST across other athletic disciplines. **Keywords:** Bilateral Asymmetry, Inter-Limb Asymmetry, Lower-body strength, Triple jump, Unilateral training

INTRODUCTION

The triple jump, a highly technical track and field event, requires strength, explosive power, coordination, and balance across its hop, step, and jump phases. Performance is often impacted by bilateral asymmetry (BA), reflecting strength and functionality imbalances between the limbs. Such asymmetries powerfully deter the qualities of explosive power, stability, and overall athletic performance. Intermediate triple jumpers face the challenge of enhancing overall strength while addressing limb imbalances to remain competitive. Although the overall equalizing effect of conventional bilateral strength training (BST) programs has been sufficient, they often fail to eliminate inter-limb disparities (Bogdanis et al., 2017). Conversely, Unilateral strength training (UST) has emerged as a promising method for improving muscular symmetry, neuromuscular coordination, and explosive power. This training works on one limb at a time, focusing on tools such as; the Bulgarian split squat (BSS), full approach triple jump (FATJ). Some critical measures to assess such training will be the BSS for estimation of unilateral lower-body strength and the full approach triple jump test since it covers performance in the triple jump sequence (Lockie et al., 2017). However, there is a relative lack of studies investigating the complete understanding of how UST affects jumping performance that has been tested with a comprehensive suite of tests. Some studies may have examined individual tests of Bulgarian split squat strength or the performance-specific assessments of standing board jump (SBJ) and standing triple jump (STJ), but these are all relatively understudied (Thotwaththa & Chandana, 2023). Using the BSS and the full-approach triple jump, it aims to provide practical insights to improve training methods for athletes in this event.

PURPOSE OF THE STUDY

The study investigates the effect of UST on improving maximum strength and jumping performance in intermediate triple jumpers. Specifically, this study aims to examine the impact of UST on maximum lower-body strength and its role in reducing inter-limb asymmetry through specific training programs. The objective was to enhance maximum lower-body strength and explosive power and improve jumping performance across specific tests including BSS, SBJ, STJ, and FATJ.

METHODOLOGY

This study utilizes a pre-post experimental design and intends to find the effects of UST on maximum strength and jumping performance among intermediate triple jumpers involving two (02) athletes who represented the University at the 2024 Inter-University Athletics Championship. The purposive sampling method is employed in this study. The interviews were conducted to understand their training preference and needs. Based on their inputs, one athlete was assigned to the TG, while the other served as the CG. The CG athlete (age 22 years, height 1.65 m, weight 65 kg) followed his regular workout schedule for 08 weeks, while the TG athlete (age 22 years, height 1.73 m, weight 62 kg) followed 08 weeks structured unilateral training program focusing on five (05) unilateral strength exercises with progressive overload (Table 7).

Table 7: Unilateral Exercises and Progressive Overload

Exercise	Week 1 - 2		Week 3 - 4		Week 5 - 6		Week 7 - 8	
	Left	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**
Single leg squat	50 %-55 %	45 %-50 %	55 %-60 %	50 %-55 %	60 %-65 %	55 %-60 %	65 %-70 %	60 %-65 %
Single leg curl	55 %-60 %	50 %-55 %	60 %-65 %	55 %-60 %	65 %-70 %	60 %-65 %	70 %-75 %	65 %-70 %
Bulgarian split squat	50 %-55 %	45 %-50 %	55 %-60 %	50 %-55 %	60 %-65 %	55 %-60 %	65 %-70 %	60 %-65 %
Single leg deadlift	60 %-65 %	55 %-60 %	65 %-70 %	60 %-65 %	70 %-75 %	65 %-70 %	75 %-80 %	70 %-75 %
Single Leg press	50 %-55 %	45 %-50 %	55 %-60 %	50 %-55 %	60 %-65 %	55 %-60 %	65 %-70 %	60 %-65 %

Both groups followed a series of pre-tests on the first day to establish baseline performance metrics. The tests included the BSS to evaluate maximum strength, SBJ to assess explosive power, STJ to assess jumping distance for each leg, and FATJ to evaluate overall triple jump performance (Thotawaththa & Chandana, 2021).

Results

Table 8: Performance improvement (TG)

Test	Pre-Test	Post-Test	Differences	Improvement %
SBJ	2.26 m	2.89 m	0.63 m	27.88 %
FATJ	13.17 m	13.68 m	0.51 m	3.87 %
STJ (Right leg)	6.53 m	7.02 m	0.49 m	7.50 %
STJ (Left leg)	5.78 m	6.97 m	1.19 m	20.59 %
BBS (Right leg)	100 kg	130 kg	30 kg	30.00 %
BBS (Left leg)	90 kg	130 kg	40 kg	44.44 %

Table 9: Performance improvement (CG)

Test	Pre-Test	Post-Test	Differences	Improvement %
SBJ	2.16 m	2.24 m	0.08 m	3.70 %
FATJ	13.06 m	13.23 m	0.17 m	1.30 %
STJ (Right leg)	6.13 m	6.86 m	0.73 m	11.91 %
STJ (Left leg)	5.35 m	6.43 m	1.08 m	20.19 %
BBS (Right leg)	105 kg	130 kg	25 kg	23.81 %
BBS (Left leg)	95 kg	120 kg	25 kg	26.32 %

The above Table 2 shows the pre-test, post-test results, and percentage of performance change in the treatment group and table 3 shows the pre-test, post-test and percentage of performance change in the control group.

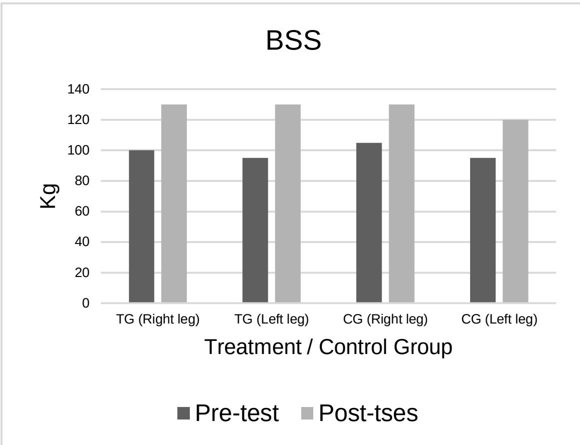

Figure 1: Bulgarian split squat (BSS) Results

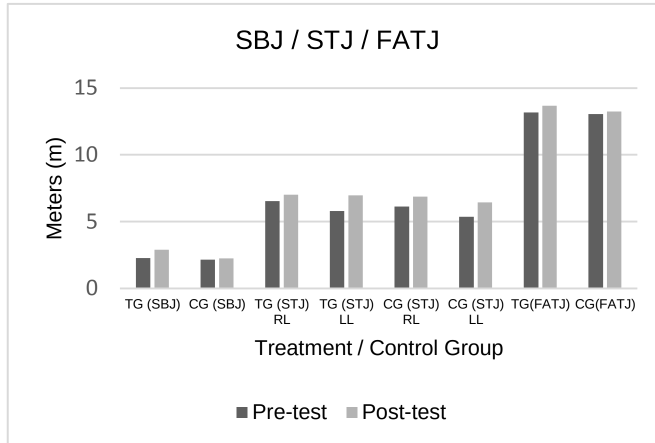

Figure 2: SBJ/STJ/FATJ Results

DISCUSSION

These findings from the study show that UST can improve the maximum strength and jumping performance of intermediate triple jumpers. A comparison of the pre-and post-test results shows significant improvements in the TG and provides valuable information on the role of unilateral exercises in optimizing athletic performance. The most striking findings were in the BSS, where the right leg of the TG became stronger by 30.00 %, and the left leg strength was improved by 44.44 % (**Error! Reference ource not found.**). This finding emphasizes that unilateral strength exercises, a key limiting factor in triple jump performance, effectively improve inter-limb asymmetry. This form of training, therefore, was positive in enhancing neuromuscular coordination and force generation in each limb. Accompanied by this was a 27.88 % increase in the result of the SBJ, reflecting improved explosive power. The STJ indicated an increase in the right and left leg by 7.50 % and 20.59 % in distance, hence a better use of lower-body strength and coordination in sequential jumps. Changes were smaller but still significant for the FATJ, improving by 3.87 %, respectively (Figure 2). These findings suggest that, while unilateral training has a direct effect on strength and explosive power, the translation of these gains into more complex movement patterns may require additional skill-based practice (Thotawaththa & Chandana, 2021). In contrast, the CG's gains were modest, emphasizing the superiority of structured UST over conventional training. Although FATJ improvements were less pronounced, they highlight the need for additional skill-based practice to translate strength gains into complex movement patterns. These results align with existing literature, confirming the efficacy of UST in addressing biomechanical and neuromuscular demands in athletic performance.

CONCLUSION

This study confirms that UST effectively reduces inter-limb asymmetry and enhances maximum strength, explosive power, and jumping performance in intermediate triple jumpers. The TG's significant improvements underscore the importance of individualized training programs. Future research should explore the long-term effects of UST and its applicability to other athletic disciplines. These findings emphasize the importance of addressing inter-limb asymmetries to maximize performance in technical events like the triple jump. This study demonstrates that UST is a valuable intervention for improving athletic performance. Further research should be done on the effects of long-term unilateral training and its generalization to other track and field events.

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GENDER-SPECIFIC MOTOR SKILL DEVELOPMENT AMONG PRESCHOOL GIRLS: A PILOT STUDY

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ABSTRACT

Motor skills are pivotal in the holistic development of preschool children, particularly in building a foundation for physical, cognitive, and social growth. This study examines the gross motor skill proficiency of 60 preschool girls, aged 3-5 years, in the Ratnapura District, Sri Lanka. Using the Test of Gross Motor Development, Second Edition (TGMD-2), locomotor skills namely running, galloping, hopping, leaping, horizontal jumping, and sliding. Object control skills namely striking, dribbling, catching, kicking, throwing, and underhand rolling were assessed. Findings revealed that 76% of the participants performed within the "Above Average" or "Average" categories in locomotor skills, indicating strength in movement-related activities. Conversely, object control skills demonstrated variability, with 42% rated as "Below Average." Height and weight were found to correlate with skill proficiency moderately, highlighting the need for tailored interventions. This study underscores the importance of gender-sensitive physical education programs, emphasizing the need to enhance object control capabilities while leveraging strengths in locomotor skills. It provides evidence-based insights to guide curriculum development and policy recommendations for inclusive motor skill training in preschool settings. **Keywords:** Gross Motor Skills, Preschool Girls, TGMD-2, Physical Attributes, Physical Education

INTRODUCTION

Motor skills are essential for early childhood development, contributing to physical activity, cognitive functions, and social interaction. While boys and girls exhibit distinct motor skill patterns, gender-specific studies are scarce in Sri Lanka. Locomotor skills typically develop faster in girls, whereas boys often excel in object control skills (Gallahue et al., 2012). This study focuses on preschool girls in the Ratnapura District, aiming to fill this research gap.

PURPOSE OF THE STUDY

The purpose of this study is to explore and evaluate the gross motor skill proficiency of preschool girls aged 3-5 years in the Ratnapura District, Sri Lanka, with a focus on identifying both strengths and developmental gaps. Recognizing the significance of early childhood as a critical period for motor skill development, the study emphasizes understanding gender-specific trends and challenges.

KEY OBJECTIVES:

1. **Assessing Locomotor and Object Control Skills**: The study evaluates locomotor skills and object control skills using the TGMD-2 assessment tool.
2. **Highlighting Developmental Gaps:** By analyzing motor skill performance levels, the study aims to pinpoint specific deficiencies, particularly in object control skills, which often receive less emphasis in traditional preschool activities.
3. **Understanding the Role of Physical Attributes**
4. **Informing Curriculum Development:**
5. **Providing Evidence-Based Recommendations:**

The study seeks to contribute to educational policies and practices by offering actionable insights into motor skill development for preschool girls. This will support early interventions and structured physical activities to ensure balanced development.

METHODOLOGY

The study was conducted over two weeks. During the first week, baseline assessments were performed for each participant. Trained researchers administered the TGMD-2 in controlled environments to ensure consistency and accuracy. Each child's performance was observed and scored according to standardized criteria. In the second week, a structured observation was conducted to validate findings and address variability.

DATA ANALYSIS

Quantitative data were analyzed using descriptive and inferential statistics. Frequencies and percentages were calculated to categorize performance levels (Very Superior, Superior, Above Average, Average, and Below Average, Poor). Pearson correlation coefficients were used to explore the relationship between physical attributes and motor skill proficiency.

RESULTS

The study assessed the gross motor skills of 60 preschool girls aged 3-5 years using TGMD-2, focusing on locomotor and object control skills. The findings are presented in the table below:

Table 1: Summary of Gross Motor Skill Performance

Skill Type	Above Average (%)	Average (%)	Below Average (%)
Locomotor Skills	46%	30%	24%
Object Control Skills	25%	33%	42%

Locomotor Skills

A significant majority (76%) of participants performed within the "Above Average" or "Average" categories in locomotor skills. Girls exhibited strengths in running, hopping, and jumping, reflecting natural coordination and movement efficiency. However, 24% scored "Below Average," indicating a need for interventions to improve specific skills like galloping and sliding.

Object Control Skills

Performance in object control skills was more variable. Only 25% achieved "Above Average" ratings, while 42% were classified as "Below Average." Skills such as catching and throwing posed particular challenges, likely due to limited exposure to structured physical activities focusing on these tasks.

Correlation with Physical Attributes

Pearson correlation analysis revealed moderate positive correlations between height, weight, and motor skill performance ($r = 0.45$ for locomotor skills; $r = 0.37$ for object control skills). Taller and heavier children showed slightly better proficiency, suggesting that physical growth supports motor skill acquisition.

The results highlight a clear strength in locomotor skills among preschool girls, aligning with existing research that girls often excel in movement-based tasks during early childhood. Object control skills, however, represent an area needing significant attention. Limited opportunities for structured training in preschool settings may contribute to these gaps

DISCUSSION

Results align with existing literature emphasizing locomotor dominance in girls. However, challenges in object control skills suggest the need for targeted interventions. Tailored physical education programs focusing on skill-specific training can bridge this gap.

CONCLUSION

This study highlights strengths in locomotor skills and challenges in object control among preschool girls in Ratnapura. Evidence-based recommendations include gender-sensitive curricula and resources to enhance motor skill training.

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THE DIFFERENTIAL MAGNITUDE OF RESILIENCE BETWEEN EMOTIONAL INTELLIGANCE AND LIFE SATISFACTION AMONG LIFE SARVERS IN SRI LANKA

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ABSTRACT

The field of life saving has quick decision making, face unexpected challenging situation for rescue other's life. Emotional intelligence and resilience refer to the adaptive capacity that can be developed after facing challenging situation. This study investigates the relationship between resilience, emotional intelligence and life satisfaction among life savers in Sri Lanka. This was quantitative cross-sectional study. 350 male life savers participated from Sri Lanka lifesaving association. The resilience scale (RS 14), wrong law emotional intelligence scale (WLEIS) and satisfaction with life scale (SWLS) questionnaires were used. The prime aim of this study was to find the effect of resilience (personal competence) on emotional intelligence and life satisfaction among life savers in Sri Lanka. Data analyze with SmartPLS software and Structural Equation Model (SEM) used to determine the path coefficient value. The result revealed a significant positive relationship between emotional intelligence with both resilience dimensions; personal competence (H1) ($\beta1$ =0.906, $p<0.001$, R^2 = 0.820) and acceptance self and life (H2) ($\beta2$ = 0.173, p=0.001, R^2 = 0.027). Additionally, emotional intelligence revealed positive relationship with life satisfaction (β= 0.642, $p<0.001$, R^2 = 0.106). Moreover, personal competence exhibited a negative relationship with life satisfaction (H3) ($\beta3$ = -0.454, $p <0.001$) while the acceptance of self and life, and life satisfaction shown a non-significant positive relationship (H4) ($\beta4$ = 0.123, p = 0.101). In conclusion, the hypotheses H1, H2 and H4 were supported to the result and H3 was not supported. **KeyWords:** Emotional Intelligence, Life Satisfaction, Resilience, Life Savers

INTRODUCTION

1.1.Resilience

Resilience is a complex idea that refers to a person's capacity to deal with and bounce back from stress, setbacks, or challenges(Ward et al., 2021).

1.2.Emotional intelligence

The ability to sense, comprehend, control, and regulate one's own emotions as well as identify and skillfully handle the emotions of others is referred to as emotional intelligence. Emotional intelligence is widely recognized as an important construct relating to health and well-being(Pacheco et al., 2019).

1.3.Life Satisfaction

A person's overall opinion of and contentment with several facets of their life, representing a subjective appraisal of their well-being, is known as life satisfaction. Subjective well-being is the study of an individual's overall life assessment, emotional experiences, and level of satisfaction in several important domains(Sadewa et al., 2023).

1.4.Relationship between resilience, emotional intelligence and life satisfaction.

Life satisfaction, emotional intelligence and resilience are deeply interconnected. EI is the ability to manage emotions supports resilience, while life satisfaction reflects overall well- being. Exploring these relationship offers valuable insight insights into psychological health, for stress professions like lifesaving.

PURPOSE OF THE STUDY

The purpose of this study to find the effect of resilience (personal competence and self and life acceptance) on emotional intelligence and life satisfaction in life savers in Sri Lanka and to assess the emotional intelligence level and resilience level.

METHODOLOGY

The study utilized a sample of 350 life savers in Sri Lanka, determined based on Krejcie and Morgan’s (1970) sample size calculation. Data were collected using three standardized questionnaires: the RS-14 Resilience Scale to measure resilience(Damásio et al., 2011), the Satisfaction with Life Scale to assess life satisfaction(Apply et al., 2016), and the Wong and Law Emotional Intelligence Scale (WLEIS)(Pacheco et al., 2019) to evaluate emotional intelligence. Data analysis included descriptive statistics to calculate means and standard deviations. The reliability and validity of the instruments were assessed using Cronbach's alpha and McDonald's omega coefficients. To explore the relationships between the variables, Structural Equation Modeling (SEM) was conducted using SmartPLS software, while SPSS was used for additional statistical analyses.

Hypothesis 1 (H1): EI will be positively related to the dimension of resilience (Personal competence).

Hypothesis 2 (H2): EI will be positively related to the dimension of resilience (Acceptance of self and life).

Hypothesis 3 (H3): The resilience dimension (personal competence), as a potential of EI, will be related to life satisfaction.

Hypothesis 4 (H4): The dimension of resilience (the acceptance of self and life) as a potential of EI will be related to life satisfaction.

RESULT

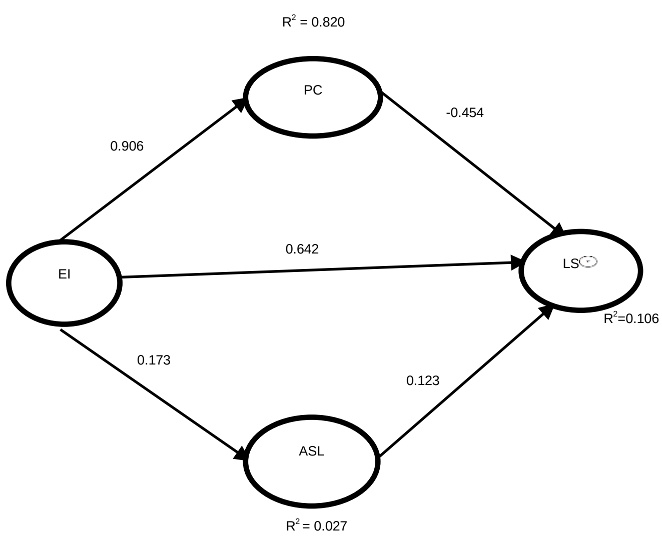

Figure 3: Structural Model with Values

Relationship Between Variables	β	SD	t	p	Result
1.Acceptance of self and life (ASL) -> Life satisfaction (LS)	0.123	0.075	1.641	0.101	Supported
2. Emotional Intelligence (EI) -> Acceptance of self and life (ASL)	0.173	0.053	3.272	0.001	Supported
3. Emotional Intelligence (EI) -> Life Satisfaction (LS)	0.642	0.129	4.981	< 0.001	Supported
4. Emotional Intelligence (EI) -> Personal competence (PC)	0.906	0.012	74.396	< 0.001	Supported
5. Personal competence (PC) -> Life satisfaction (LS)	-0.454	0.126	3.621	< 0.001	Non-Supported

Table 10:Parth Coefficient (standardized regression coefficient)

The findings (Figure 1) showed a strong positive correlation between life satisfaction (LS) and emotional intelligence (EI) (coefficient = 0.642, R2 = 0.106) and between EI and personal competence (PC) (coefficient = 0.906, R2 = 0.820). In contrast, there was a negative association between LS and PC (coefficient = -0.454, R2 = 0.106). Additionally, a positive correlation was found between LS and ASL (coefficient = 0.123, R2 = 0.106) and between EI and acceptance of self and life (ASL) (coefficient = 0.173, R2 = 0.027). These results demonstrate the complex relationships between resilience-related concepts.

The result (Table 1) presented indicated the relationship between variables in items of their t- values, SD, beta coefficient (β). Life satisfaction (LS) and acceptance of self and life (ASL) while the path coefficient (β= 0.123) suggested a positive correlation, the relationship was not statically significant (p= 0.101). Acceptance of self and life (ASL) and Emotional Intelligence (EI) statically significant positive relationship was observed (β = 0.173, p < 0.001), indicating higher EI is linked to stronger self-acceptance. LS and EI relationship was significant and positive (β = 0.642, p < 0.001), suggesting higher EI is associated with greater LS. Personal competence (PC) and EI had a very strong positive correlation

was found ($\beta = 0.906$, $p < 0.001$), highlighting EI's substantial impact on PC. PC and LS had significant negative relationship was observed ($\beta = -0.454$, $p < 0.001$), indicating higher PC is associated with lower LS. These findings show the complex interplay between emotional intelligence, personal competence, and life satisfaction among
life savers in Sri Lanka.

DISCUSSION

This study investigates the relationship among Sri Lankan life savers between life satisfaction, emotional intelligence (EI), and resilience. It shows that life satisfaction and resilience are positively correlated with emotional intelligence (EI), with resilience serving as a mediator. Additionally, personal competency is essential for improving resilience, emotional intelligence, and general well-being.

The findings align with prior research(Euliss et al., 2008)(Mayer & Salovey, 1995) highlighting how resilience and life pleasure are fostered by increased EI. These interactions are further shaped by contextual elements including cultural norms and professional obligations. In order to enhance psychological well-being and coping strategies, the study recommends integrating resilience-building and emotional intelligence training into lifesaver programs.

CONCLUSION

According to this study, emotional intelligence (EI) and resilience play important roles in determining life satisfaction among Sri Lankan life savers. The relationship between EI and life satisfaction is mediated by resilience, which highlights its significance in addition to social skills and emotional regulation. Important conclusions emphasize the necessity of interventions to improve well-being and resilience in this line of work. In order to improve support tactics and gain a deeper understanding, future study should increase variables and address contextual elements

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EFFECT OF CORE TRAINING ON SELECTED HEALTH RELATED FITNESS VARIABLES AMONG COLLEGE WOMEN BASKETBALL PLAYERS

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ABSTRACT

The College basketball players were studied to determine how core training affects certain physical variables. The ages ranged between 17 and 23 years from the JAIN (Deemed-o-be-university), School of Sports Education and Research, Bangalore India were randomly selected for this study. Each group had fifteen participants. During the eight weeks that Gathering-1 underwent the core training, Gathering-2 acted as a control bunch, undergoing no additional training beyond their routine. Abdominal strength were the dependent variables. Sit-up tests were used to test abdominal strength, respectively. The study used random group design pre-and post-tests. Following the training period of eight weeks, the collected data were statistically analyzed by ANOVA. Based on the study on core training, college basketball players showed improvements in the physical variables. **Keywords:** Core Training, Abdominal Strength basketball Players etc.

INTRODUCTION

Since the early 1980s, research on core strengths has been conducted. These processes are beneficial for people with back pain who are carrying out everyday activities. There has been less research on the benefits of core training for elite athletes and how this training can be optimized to optimize sporting performance. Stabilizing muscles are developed and strengthened by performing specific exercises. Your abs are actively used throughout the day. Stabilizing your core has a positive impact on athletic performance. You require the muscles in your midsection to keep you stable and supported in nearly every movement that you make, whether you're walking, reaching, balancing, getting up from a chair, or simply standing upright. The body's focal point of gravity is found and all the more significantly, from which all developments are started. Muscles are answerable for supporting stances, making movement, organizing muscle activities, taking into account dependability, engrossing power, producing power, and communicating powers all through the body.

The center assumes such a huge part during the movement, that it's a good idea to guarantee its solidarity and security. Profoundly. Center muscular build works uniquely in contrast to the appendage muscular structure in that center muscles frequently contract, solidifying the middle to such an extent that all muscles become synergists.

METHODS

In this investigation, the subjects were taken from the JAIN (Deemed-o-be-university), School of Sports Education and Research, Bangalore India, 15 women basketball players are implemented in this study and their age range is between 17 to 23 years. They are divided into two groups namely, gathering –1 as the core training bunch and gathering- 2 as the control bunch. The gathering-1 was treated as an experimental bunch for 8 weeks. The training protocol was given in the morning section of alternate days of the week for 8 weeks. Before and after the training protocol of 8 weeks the data of subjects was collected for analysis of their performance. The instructor gave the proper warming up before the training program gave all the explanations about the training and clarified the doubts. The core training exercises are Forearm Plank, Panther Shoulder Tap, Russian Twist, Butterfly Sit-Up, Dead Bug, Half-Kneeling Wood Chop, High Boat to Low Boat, Forearm Plank Rock, Body Saw, and Side Bend.

Tests and statistical data analysis

Information was dissected utilizing the SPSS Statistics (SPSS Statistics for Windows: IBM Corporation, adaptation 26.0) Means + SD were determined. Pre and post proportions of abdominal strength estimated utilizing (sit-ups) and Analysis of variance.

Table 1

Analysis of variance in abdominal strength and control group

ABDOMINAL STRENGTH						
Tests	**GP-1**	**GP-2**	**S.O.S**	**D.F**	**MS**	**F-Ratio**
Pre-Test	35.46	36.33	5.63	1	5.63	1.56
			101.06	28	3.61	
Post-Test	39.73	34.73	187.50	1	187.50	**35.99***
			145.86	28	5.21	

*Significant at 0.05 level table value 4.17 df 1.28

The pre-test averages and values of the core training and control groups are 35.46 and 36.33, respectively, as shown in Table I. The F-ratios produced were 1.56, which were lower than the table value of 4.17 for df 1 and 28 that was necessary for significance at the 0.05 level of confidence.Furthermore, the core training and control groups' post-test mean abdominal strength scores are 39.73 and 34.73, respectively. The F-ratios obtained are 35.99*, which are greater than the table value of 4.17 for df 1 and 28 necessary for significance at the 0.05 level of confidence.

CONCLUSION

This research suggests that core training improves the women basketball players abdominal strength due to the eight weeks of the training protocol.

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CONSEQUENCE OF KETTLEBELL INTERVENTION ON CORE STRENGTH AND MUSCULAR STRENGTH AMONG FEMALE BASKETBALL PLAYERS

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ABSTRACT

The perseverance of the revision was to find out the consequence of kettlebell intervention of core strength and muscular strength among female basketball players. For this revision 30 female basketball players between the ages of 17 and 25 from the JAIN (Deemed-o-be-university), School of Sports Education and Research, Bangalore, India They are divided into two groups. That is, bundle A is the kettlebell bundle and bundle B is the control bundle, each group being her 15 subjects. The kettlebell group received the log of her 8-week workout. Core strength was measured by plank, muscle endurance measured in the push-up test. Collect data from the subject to check performance before the training protocol and after her 8 weeks. After the collection of the data should be analysed by IBM (SPSS Version 26.0) statistical technique Anova. Consequences showed significant improvements in core strength and muscle endurance in female basketball players due to the 8 weeks kettlebell training.
Keywords: kettlebell training, core strength, muscle endurance, female basketball players.

INTRODUCTION

In basketball players, the primary metabolic demand is from the phosphates energy pathway, making it an anaerobic activity. A rapid rearward arm swing is combined with a maximum vertical jump to prepare for a basketball players' primary follow-up strike. The majority of their practice and skill development as basketball players involves high-intensity jumping. Therefore, particular care should be taken to make the addition of jump as effective for these athletes as possible. To exercise more strenuously while using cutting-edge tools and training regimes.

Strength and conditioning workouts are beneficial for improving daily living skills in leisure exercisers. Improvements in power, strength and other performance indices are elicited by powerlifting exercises both individually and in combination, and these improvements have been shown to be directly related to training adaptations. The kettlebell is an alternate training technique that will be researched and used to enhance performance and function. A kettlebell is a cast-iron weight with a handle that resembles a cannonball and is frequently used to improve strength, power, and general conditioning. The design of a kettle bell enables its centre of mass to go beyond the hand. Swings, raises, and presses using a kettlebell are performed unilaterally and bilaterally in all planes.

METHODOLOGY

The study randomly selected 30 female basketball players between the ages of 17 and 25 from the JAIN (Deemed-o-be-university), School of Sports Education and Research, Bangalore, India . They are divided into two groups. That is, group- A is the kettlebell group and control group- B is the control bundle, each group being her 15 subjects. The kettlebell group received the log of her 8-week workout. Collect data from the subject to check performance before the training protocol and after her 8 weeks. Core strength was measured by plank, muscle endurance measured in the push-up test. The difference between the initial and final means of the reference variables was considered the effect of treatment on subjects.

TRAINING PROTOCOL

The test group performed kettlebell exercises three times a week on Mondays, Wednesdays, and Fridays for eight weeks. The workout consisted of 10 minutes of warm-up and stretching, 40 minutes of selected kettlebell exercises, and a 15-minute cool down. The initial intensity of the kettlebell exercise was set at 50-55%. I gradually increased the intensity of my kettlebell exercises each week. The intensity was set at 55%, 60% at 3 weeks and 65% at 4 weeks. Based on pilot studies, initial kettlebell intensity was set at 65-70%. Exercise intensity was gradually increased every two weeks. The intensity was set at 70% to 75% at week 6 and 80% at week 8.

STATISTICAL TECHNIQUE

After the collection of the data should be analysed by IBM (SPSS Version 26.0) and the 2 groups were analysed by the statistical technique of ANOVA the confidence level is maintained at 0.05**.**

Table 1: ANOVA OF EXPERIMENTAL BUNCHES AND CONTROL BUNCH ON CORE STRENGTH AND MUSCULAR ENDURANCE

<table>
<tr><th colspan="7">Core Strength</th></tr>
<tr><th>Tests</th><th>Kettlebell bunch</th><th>Control bunch</th><th>S.O.S</th><th>D.F</th><th>MS</th><th>F-Ratio</th></tr>
<tr><td rowspan="2">Pre-Test</td><td rowspan="2">1.21</td><td rowspan="2">1.25</td><td>0.03</td><td>1</td><td>0.03</td><td rowspan="2">1.36</td></tr>
<tr><td>0.59</td><td>28</td><td>0.022</td></tr>
<tr><td rowspan="2">Post-Test</td><td rowspan="2">1.93</td><td rowspan="2">1.24</td><td>2.47</td><td>1</td><td>2.47</td><td rowspan="2">61.75*</td></tr>
<tr><td>1.24</td><td>28</td><td>0.04</td></tr>
<tr><th colspan="7">Muscular endurance</th></tr>
<tr><td colspan="7"></td></tr>
<tr><th>Tests</th><th>Kettlebell bunch</th><th>Control bunch</th><th>S.O.S</th><th>D.F</th><th>MS</th><th>F-Ratio</th></tr>
<tr><td rowspan="2">Pre-Test</td><td rowspan="2">33.84</td><td rowspan="2">33.87</td><td>0.04</td><td>1</td><td>0.04</td><td rowspan="2">0.015</td></tr>
<tr><td>73.57</td><td>28</td><td>2.62</td></tr>
<tr><td rowspan="2">Post-Test</td><td rowspan="2">42.08</td><td rowspan="2">33.89</td><td>72.11</td><td>1</td><td>72.11</td><td rowspan="2">5.81*</td></tr>
<tr><td>347.21</td><td>28</td><td>12.40</td></tr>
</table>

***Significant at 0.05 level df 2, 27 table value 3.23**

Pre-test F ratio values for core strength (1.36) and muscle endurance (0.015) according to the ANOVA shown in Table 1. The F-ratio values obtained are smaller than those in the table, indicating no significant difference between the experimental and control bundles for core strength and muscle endurance in female basketball players. Her F-ratio for core strength after testing is **61.75*** and muscle endurance is **5.81***. The obtained F-ratio values were found to be larger than those in the table. This indicates that there is a significant difference between experimental groups in terms of core strength and muscle endurance in female basketball players.

CONCLUSION

Through applied statistical treatments, the researchers found that, after evaluation and analysis, the study participants' results showed significant improvements in core strength and muscle endurance in female basketball players as a result of kettlebell training.

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INTEGRATIVE TRAINING APPROACHES FOR FOOTBALL: ASSESSING PLYOMETRIC AND SWISS BALL TECHNIQUES

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ABSTRACT

Background: To develop the physical performance of football players by practicing plyometric and Swiss ball training.

Purpose: The perseverance of this investigation was to find out the effect of plyometric training and Swiss ball training on agility, explosive power, and muscular strength among inter-college football players. For this study, 45 football players from JAIN (Deemed -To-Be-University), and their ages ranged between 18 and 23 years.

Methods: 45 football players were divided into three groups of 15 each for groups. Group A as plyometric training, group B was swissball training, and group C was an untraining group. The training was given for twelve weeks 3 alternate days a week. The pre-test was taken 2 days before the training starting period and the post-test was taken after the day of the closing period of the training protocol. Agility was measured by t-test, explosive power was measured by Sargent jump test, and muscular strength was measured by push-ups.

Results: Interpretation data using the analysis of variance agility pre-data F-ratio P> 0.42 post data F-ratio P<7.25*, explosive power pre-data F-ratio P>0.36 post data F-ratio P< 45.93*, muscular strength pre-data F-ratio P> 0.40 post data F-ratio P<11.60*. it causes 12 weeks of training agility, explosive power and muscular strength should improve their performance level.

Conclusion: Due to the 12 weeks of plyometric training and Swissball training agility, explosive power, muscular strength get significant and improve the performance of the inter-college football players.
Keywords: Plyometric Training, Swiss ball Training, Football Players

INTRODUCTION

Plyometric preparing methods are utilized by competitors in a wide range of sports to increase strength and explosiveness. PL comprises rapid stretching of a muscle quickly followed by a concentric or shortening activity of a similar muscle and connective tissue (Grieco, 2012). PLY bouncing, jumping, and jumping practices that utilization the stretch-shortening pattern of the muscle unit has reliably been displayed to work on the development of muscle force and power (Thomas, 2009). PT has been applied in various examinations and there is consent that it further develops sport-explicit like agility (Vaczi, 2003).

Agility requires significant degrees of neuromuscular effectiveness to have the option to keep up with one's focal point of gravity over their base of help while taking an alternate route at a different speed (Rameshkannan, 2014). The capacity to create maximal strength levels in a short time frame is important to acquire high games enactment levels (Arazi, 2014). Pl comprises of fast extending of a muscle quickly followed by a concentric or shortening activity of a similar muscle and connective tissue and this peculiarity is called stretch-shortening cycle (Asadi, 2013). The stored elastic energy inside the muscle is utilized to create more power than can be given by a concentric activity alone (Miller, 2006).

PLT comprises of bodyweight jumping works out, utilizing stretch-shortening cycle muscle activity. This cycle improves the capacity of the brain and musculotendinous systems to create maximal power in the shortest conceivable time (Maciejczyk, 2021). PL has been upheld for sports that require explosives to build abilities like vertical jumping capacity (Lundin, 1985). The vertical jump is the essential standard measure and the most revealed variable to survey vertical jump capacity. Hop performance capacity is represented by a singular's ability to use the flexible and neural advantages of the stretch-shortening cycle (Fischetti, 2019).

Muscular strength and power are viewed as basic components for profitable athletic performance, as well concerning completing day-by-day exercises and occupational undertakings (Rahimi, 2005). The improvement of maximal strength execution as this neuromuscular quality seems to support most different spaces of human physical limit. The lower body includes utilization of bounce, hopping and jumping preparation. Plyometric practices establish a characteristic piece of most games developments as they include hopping, jumping and skipping (De Villarreal, 2010).

The Swiss ball(SB) practices helped at re-establish the prosthetic hip quicker the accommodation of the nearby incendiary cycle and further developing strength and hip portability and in this manner its security and the subject's motor control and coordination (Stanton, 2004). SBT practices represent a charming a simple method for playing out the physical therapy sessions and to that end, it has a positive mental effect (Calota, 2020). Muscle action during exercise performed on steady and temperamental surfaces is significant for molding of athletic gatherings and in restoration from injury (Duncan, 2009)

SB in the standing position could further develop balance, muscle strength, walk, and fall adequacy (Lim, 2021). SB is a tremendous inflatable ball ready by extreme flexible elastic utilized for physical exercise and physiotherapy to upgrade the neuro-advancement (Lee, H.K. 2013). SBT is a ball that is loaded up with air and it has a portable stage that gives a fun impact to the body by the body ought to adjust and keep up with balance while performing an activity (Heggond,2020). Core steadiness is a fundamental part of working on athletic execution and injury anticipation. Practices on a Swiss ball and the mat are two unique approaches to further developing core dependability (Marshall, 2013).

Core steadiness helps in working on athletic execution by aiding in force development during the complex athletic movement's core strength and endurance there are sure muscles that should be checked (Srivastav, 2016). SBT is a well-known type of restorative and intentional exercise. Despite their fame, few experimental explorations examined the benefits of SBT comparable to sports exercises execution (Marshall, 2010). SBT are probably going to bring about better coordination of synergistic and stabilizer muscles. Dynamic and explosive games are described by higher stroke and serve speeds and require remarkably higher physical requests (Marquina, 2020)

METHODS

For the perseverance of this research to invention the effect of plyometric training and Swissball training on agility, explosive power and muscular strength among football players. For this research 45 football players from JAIN (Deemed -To-Be-University) at the age range between 18 to 23 years.

Participating and setting The 45 subjects were dividing into 3 groups. Group-A (PLYG=15 N), Group-B (SBTG=15 N) and group-C (UNG=15 N). they were treated as experiment for 12 weeks, they doing experimentation of alternate 3 days of a week. Pre and post data was collected before and after the treatment period. The agility was measured by using T-Test, explosive power was measured by Sargent jump test muscular strength should be measured by push ups. The data were analysed by IBM (SPSS Version 26.0) was used for interpretations. Significance was set at $p < 0.05$.

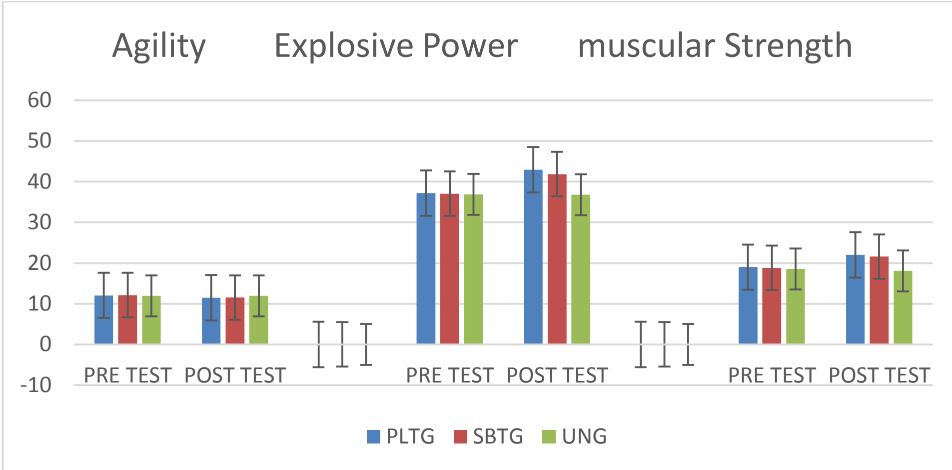
Analysis of Variance on Agility, Explosive Power and Muscular Strength of Experimental Groups and Untraining Group

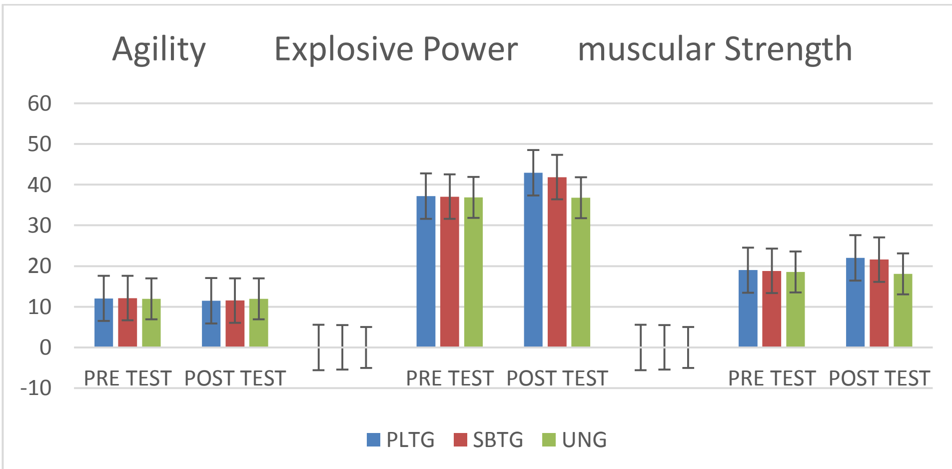
AGILITY							
TESTS	PLYG	SBTG	UNG	SOS	DF	MS	F-RATIO
Pre test	12.05	12.11	11.98	0.120	2	0.060	0.42
				6.004	42	0.142	
Post test	11.48	11.53	11.96	2.06	2	1.03	**7.25***
				5.97	42	0.142	
EXPLOSIVE POWER							
TESTS	PLYG	SBTG	UNG	SOS	DF	MS	F-RATIO
Pre test	37.20	37.06	36.86	0.84	2	0.42	0.054
				321.06	42	7.64	
Post test	42.93	41.86	36.80	322.13	2	161.06	**23.40***
				289.06	42	6.88	
MUSCULAR STRENGTH							
TESTS	PLYG	SBTG	UNG	SOS	DF	MS	F-RATIO
Pre test	19.00	18.80	18.53	1.64	2	0.82	0.366
				94.13	42	2.24	
Post test	22.00	21.60	18.06	140.57	2	70.28	**45.93***
				64.53	42	1.53	

Significant at 0.05 level table value 3.22 df 2,42

According to the investigation of ANOVA pre-test worth of agility f-ratio, 0.42, explosive power f- f-ratio 0.054, muscular strength f- f-ratio 0.366 it was lesser than the table value 3.22 and be irrelevant P>0.05 of confidence level. The Post-test worth of agility was 7.25*, explosive power f- f-ratio esteem

23.40* and muscular strength f- f-ratio esteem 45.93* it was more noteworthy than the table value 3.22 and to be significant of confidence P<0.05 level.





DISCUSSION ON FINDINGS

The speed particularity guideline of preparing, all things considered, the ground-contact times were not short to the point of inspiring an expanded capacity to produce explosive ground-response powers during sprinting (Thomas, 2009). PT involving both unilateral and reciprocal maximal force activities would create upgrades in power, strength and agility in male soccer players the preparation program essentially further developed profundity vertical jump execution, agility and isometric knee extensor strength (Vaczi, 2003).

PT show further developed execution in agility tests either in light of better motor enlistment or brain transformations. Agility inspired that 0.61sec (4.91%) improvement was seen in PT is an effective training strategy to further develop male handball players agility (Rameshkannan, 2014). 6-week in-season PLT the consequence of this study features the capability of utilizing in-season PLT to further develop power and agility, particularly in youthful male basketball players (19-20 years old) (Asadi, 2013).

PL to break the tedium of preparing however work on their strength and explosiveness while working that enhancements in agility can happen in 6weeks of plyometric preparing which can be helpful in-season competition (Miller, 2006). Agility ($p = 0.003$, $ES = 0.7$) was noted in the PLY the short PLY preparing, critical improvement in jump execution and agility was noted in the PLY bunch. SPT methodology can likewise be effectively utilized during the multi-week (Maciejczyk, 2021).

PLT worked on the agility of college co-educational program badminton players and plyometric preparing is suggested for preparing in further developing agility in different games (Heang, 2012). Speed increase for both horizontal plyometric gathering and vertical plyometric fitness experts as powerful exercise modalities for safeguarding or further developing jumping execution, accelerations, speed, and agility in youthful soccer players during the in-season period (Manouras, 2016).

PL bunch showed critical enhancements ($p<0.001$) The short-term plyometric preparing with agility stepping stool is by all accounts inadequate and not time-productive to improve actual wellness in youth soccer players (Padron-Cabo, 2021). PL can work on explosive strength in female soccer players and in particular, these upgrades concern the jump capacity and sprint pace with bearing changes, power-related parts of soccer remembered to be vital for progress.

There was critical improvement found in the sporting competitors performing practices on SB. (Pre values: 3.6 ± 2.06; Post values: 8.3 ± 3.02; p-esteem: <0.05) and Group B (Pre values: 2.1 ± 2.4; Post values: 4.3 ± 2.5; p-value<0.05), SBE can be remembered for the pre-habitation and rehabilitation phases of athletic preparation to preclude injury (Srivastav, 2016). The information uncovered that there was a huge enhancement for the chosen factors specifically leg explosive power and agility by the utilization of PL, own body resistance and SBT (Srinivasulu, 2018).

The SBT bunch had shown critical improvement in every one of the chosen physical factors among handball players in the undergoing through SBT bunch for a time of twelve weeks (Heggond, 2020). The SBT program presented in this report obliges the physical wellness speed, muscular endurance and flexibility imperative for powerful tennis execution. The SBT positively affects physical wellness (Marquina, 2020). Lower extremity practices regardless of an SB could be successful intercessions to further develop muscle strength, balance, walk, and fall viability (Lim, 2021).

SBE is particularly intended for the coxo-femoral joint recuperation, with the expanding of muscular tonicity, hip portability and stability. Fitness ball, stability ball, or balance ball, made by soft elastic and having different distances across is an incredible instrument to further develop strength, balance and cardio-endurance overall (Calota, 2020). Muscle action can be affected by the expansion of surface shakiness anyway an increment in muscle movement connection between the member's focal point of mass, the area of the unsteady surface and the body part reaching the Swiss ball (Lehman, 2006). Muscle action was greater when activities were performed on a Swiss ball in contrast with a steady surface and LRA muscle action was augmented during the Swiss ball jack-knife (Duncan, 2009)

CONCLUSION

The disclosures of this examination show that plyometric training and Swissball training huge increases in agility, explosive power and muscular strength of JAIN (Deemed-To-Be-university) football players. Our results support the football players to develop their physical wellness and encourage their ability execution. This audit offers an experimentally taken stab at preparing programs that coaches can straightforwardly utilize preparing to both school and college male/female football players and that requires limited gears can be appropriated with adequate heading and direction from qualified specialists.

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EFFECTS OF FARTLEK TRAINING AND CONTINUOUS RUN ON SELECTED PHYSICAL FITNESS VARIABLE AMONG MEN ATHLETES

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ABSTRACT

This study aims to determine how fartlek training and continuous running affect a few physical fitness metrics in male college students. For the study, 30 male college students were chosen from the School of Sports Education and Research at JAIN (Deemed-To-Be-University) in Bangalore, India. They were between the ages of 18 and 25. Every subject was physically fit and had played a regular role in college athletics. The two groups were split equally: experimental group II ran continuously, and experiment group I trained with fartlek. Tests of cardio-respiratory endurance and speed endurance were administered to the chosen subjects. Before the practice time, a pre-test was administered, and six weeks into the training period, a post-test was measured. The mean of the experimental group's pre- and post-test data was examined using the "t" ratio statistical method. The outcomes showed that fartlek training and continuous running differed significantly. **Keywords:** Fartlek training, Continuous run, cardiorespiratory endurance, speed endurance, pre –test and post-test.

INTRODUCTION

Continuous running at a steady pace or intensity where the heart rate lies between 130 and 160 beats per minute. Cardio-respiratory adaptations, permitting significant functional improvement. The duration of such running will be over 30 minutes for the young athlete and from 60-120 minutes for the mature. [2]Lower-intensity continuous endurance training. This method is recommended especially for the long-distance endurance athlete. Aerobic function resulting from continuous training. Fartlek training, with the speed of successive stretches alternating according to a plan. Training methods based on performance requirements should be implemented. At the simplest level, one might have a slow pace (HR -130 -150 beats /minute) for alternating with a fast pace (HR ₋ 170- 180 beats /minute. This method is used extensively middle distance runner. Fartlek exercise is considered one of the most important training methods that work on developing the player's aerobic and anaerobic capacities Fartlek, a Swedish term that means "speed play," is a form of interval or speed training that can be effective in improving your running speed and endurance. Fartlek running involves varying your pace throughout your run, alternating between fast segments and slow jogs.

CARDIO-RESPIRATORY ENDURANCE

Cardio-respiratory endurance is the ability of the heart and lungs to absorb transport and utilize oxygen over an extended period of physical exertion. Cardio-respiratory fitness is associated with high-risk mortality and improvements in fitness. As one of the four primary components of physical fitness role of endurance training. It is an important measure of overall health and fitness. Cardio-respiratory endurance is a function of both genetic potential and physical adaptation. Enacting an aerobic training program can increase endurance by strengthening the heart muscle and increasing long volume. With an enhanced ability to take in oxygen and deliver it to working muscles, the muscles can continue activity longer without fatigue.

SPEED ENDURANCE

Speed endurance is the ability to prolong the amount of time where a near-maximal speed can be maintained. Speed endurance training consists of exercise bouts at near-maximal intensities. During activity such as this, the accumulation of blood lactate disturbs the excitation-contraction coupling and cross-bridge formation. Speed endurance training on muscle oxidative capacity.

The muscles' mechanical properties are disturbed, resulting in a decrease in force production and peak force and velocity.

Speed endurance training on performance and muscle adaptations. Speed endurance training can improve the clearance rate of lactate and reduce early lactate formation.

METHODOLOGY

The purpose of the present investigation is to find out the effects of fartlek training and continuous run on selected physical fitness among college men students. To achieve the purpose of the study, 30 College men students were selected from JAIN (Deemed-To-Be-university), School of Sports Education and Research, Bangalore, India. Their age ranged from 18 to 25 years. All the subjects had good physical fitness and have been participated in regular college sports activities. They were equally divided into two groups experiment group –I underwent fartlek training and Experimental group –II underwent continuous run. The selected subjects were tested on cardio–respiratory endurance and speed endurance. The pre-test was taken before the practice period and the post-test was measured after the week's training period.

Selection of Variables:

Table I

S.NO	VARAIABLES	TEST	Score
1	Cardio-Respiratory Endurance	12min Copper Run and Walk Test	Meters
2	Speed Endurance	300Mts	Seconds

STATISTICAL TECHNIQUE

The ‘t’ ratio was used to analyse the mean of the pre-test and post-test data of experimental groups. The results revealed that there was a significant difference found in fartlek training and continuous running. The test was used to analyse the significant difference if any, in between groups respectively. The 0.05 level of confidence was fixed to test the level of significance which was considered as appropriate.

ANALYSIS OF THE DATA

The significance of the difference among the means of the experimental group was found out by pre-test. The data were analysed and the dependent ‘t’ test was used 0.05 levels of confidence.

Table – II

Analysis of t – ratio for pre and post-test Mean Value of Continues run and Fartlek training on cardiorespiratory endurance. (Cooper 12min run/walk test mean value count in meters)

Groups	Mean		Mean Difference	S.D	Standard &Error	‘t’ ratio
	Pre	Post				
Continuous Run	1996	2201.3	203.3	112.1	26.10	7.2*
Fartlek training	1994	2110.7	114.6	69.88	16.71	6.4*

*Significant at 0.05level degrees of freedom 28, Table value 2.05

The Table-I shows that the mean values of pre-test and post-test of continues training group on cardio respiratory endurance were 1996 and 2201.3 respectively. The obtained ‘t’ ratio was 7.1*, since the obtained ‘t’ ratio was greater than the required table value of 2.05 for the significant at 0.05 level with 28 degrees of freedom it was found to be statistically significant. The mean values of pre-test and post-test of experimental group on fartlek training were 1994 and 2110.7 respectively. The obtained ‘t’ ratio was 6.4* since the obtained ‘t’ ratio was greater than the required table value of 2.05 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant difference between continuous training group compare better than the fartlek training group in cardio respiratory endurance. It may be concluded from the result of the study that two experimental groups improved in cardio respiratory endurance due to six weeks of continuous training and fartlek training.

Table III

Analysis of t – ratio for pre and post-test Mean Value of Fartlek training and Continuous run on speed endurance. (300Mts test mean value count in seconds)

Groups	**Mean**		**Mean Difference**	**S.D**	**Standard & Error**	**‘t’ ratio**
	Pre	**Post**				
Fartlek training	41.10	39.73	3.379	2.70	.71	4.640*
Continuous run	44.14	42.06	2.362	2.05	.41	4.524*

*Significant at 0.05level, degrees of freedom 28, Table value 2.05.

The Table-II shows that the mean values of pre-test and post-test of fartlek training group on speed endurance were 41.10 and 39.73 respectively. The obtained ‘t’ ratio was 4.650 *, since the obtained ‘t’ ratio was greater than the required table value of 2.05 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The mean values of pre-test and post-test of experimental group on continuous training were 44.14 and 42.06 respectively. The obtained ‘t’ ratio was 4.524* since the obtained ‘t’ ratio was greater than the required table value of 2.05 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant difference between fartlek training group compare better than the continuous training in cardio respiratory endurance. It may be concluded from the result of the study that two experimental groups improved in speed endurance due to six weeks of fartlek training and physical training.

CONCLUSION

With the limitation imposed by the experimental conditions, the following conclusion was drawn.

* The fartlek training was significant better than continuous run in speed endurance due to six weeks training.

* The continuous run was significant better than fartlek training in cardio-respiratory endurance due to six weeks training.

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THE IMPACT OF ZUMBA ON CARDIOVASCULAR HEALTH, FAT LOSS, AND WELL-BEING

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ABSTRACT:

Zumba is a type of cardiovascular exercise that involves dance movements with varying intensity. Zumba can provide several positive impacts, particularly on heart health. Its rhythmic movements help the heart pump and circulate oxygen more efficiently throughout the body. This specifically indicates that Zumba not only improves overall fitness but also strengthens the heart. At the upcoming International Conference, a 30-40 minute session will be presented, featuring a series of Zumba dance routines. The Zumba dances that will be showcased were used in a study, which demonstrated significant improvements, particularly in optimizing heart function, burning calories that contribute to weight loss, as well as enhancing mental and emotional well-being. A 30-minute daily Zumba session can engage multiple major muscle groups and is effective in strengthening core muscles. From a mental and emotional health perspective, this dance workout is considered to serve as an effective mental escape that increases enthusiasm, as moving to the rhythm of the music provides an outlet for self-expression while simultaneously reducing stress and improving mood. The joy of dancing together in a group, accompanied by energizing music and a dynamic class atmosphere, makes Zumba an effective method for reducing stress and achieving happiness, thus significantly improving mental well-being. Finally, Zumba is a fun activity for people of all ages and genders. This workout is universally known for combining fun and fitness, and welcomes individuals from all backgrounds. Zumba provides a space to achieve fitness. This dance is popular among women because it is fun and effective for maintaining fitness. Recently, Zumba has also attracted the interest of men, as it has been proven effective in aiding weight loss, making it an inclusive and enjoyable routine for all genders, groups and ages.

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EFFECT OF PHYSICAL EXERCISES ON HEALTH REALATED VARAIBLES AMONG COLLEGE STUDENTS

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ABSTRACT

The study was to examine the application of various types of physical exercise on muscular endurance and cardiovascular endurance. Total N=25 (twenty-five) college healthy and active students participated and their age period ranged from 18 years to 25 years as per subject's school records. The selected students underwent various types of physical exercises for duration of 12-weeks, four sessions in a week and 60-minutes each session. The measurement of muscular endurance and cardio vascular endurance scores was collected through bend knee sit up test and Cooper 12 minutes continues run and walk test before and after the completion of specific training. The collected scores were analyzed through paired 't' test and level of significant was restricted at 0.05 levels. The study found that sixteen weeks of various types of physical exercises found effective for significant improvement in muscular endurance and cardiovascular endurance of college students. **Keywords:** – physical, exercises, endurance, cardiovascular, muscular and sit ups

INTRODUCTION

Health related fitness is to do with the efficiency of the human body whereas skill related fitness is related to playing sports. Health related fitness is to do with the strength of student's muscles and the movement of student's body. Health related components are cardio respiratory endurance, muscular strength, muscular endurance, and flexibility and body composition.

The various types of physical exercises are aerobic exercises, anaerobic exercises, isometric exercises, isotonic exercises, iso-kinetic exercises, therapeutic exercises, resistance exercises. Physical exercises increase in shape of muscles, formation of new capillaries, muscles remain in tone position, increase in activeness of fibers, correct body posture, improves reaction time, reduction in extra fat, increase in strength of connective tissues, efficiency in muscles movements delay fatigue, enhance body figure and exercise prevent disease.

STATEMENT OF THE RESEARCH PROBLEM:

To analyze the "Influence of physical exercises on health related variables among college students".

OBJECTIVES OF THIS RESEARCH STUDY

1. To evaluate the 16-weeks influence of various type of physical exercises on muscular endurance among college students.
2. To evaluate the 16-weeks influence of various type of physical exercises on cardio vascular endurance among college students.

RESEARCH HYPOTHESIS

- There will be a significant improvement in score of muscular endurance performance of college students after the sixteen weeks impact of various physical exercises when compared between pre-test and post test scores.
- There will be a significant increase in score of cardiovascular endurance performance of college students after the sixteen weeks impact of various physical exercises when compared between pre-test and post test scores.

METHODOLOGY

The study was to measure the application of various types of physical exercise on muscular endurance and cardiovascular endurance. Total N=25 (twenty-five) college healthy and active students participated and their age period ranged from 18 years to 25 years as per subject's school records. The selected students underwent various types of physical exercises for duration of 12-weeks, four sessions in a week and 60-minutes each session. The measurement of muscular endurance and cardio vascular endurance scores was collected through bend knee sit up test and Cooper 12 minutes continues run and walk test before and after the completion of specific training. The collected scores were analyzed through paired't' test and level of significant was restricted at 0.05 levels. The study found that sixteen weeks of various types of physical exercises found effective for significant improvement in muscular endurance and cardiovascular endurance of college students

Table: I

Descriptive statistics of mean, standard deviation and calculated paired 't' test values muscular endurance and cardio vascular endurance of the college students

Training Groups	Pre test		Post test		't' Ratio
	Mean	SD	Mean	SD	
Muscular endurance	23.600	2.466	44.560	3.594	22.537*
Cardio vascular endurance	2062.00	184.436	2284.00	163.120	16.008*

Table't' book value at 0.05 level (df) 24 = 2.064, * Significant & NS: Not Significant)

In Table-I, shows the pre-test mean values on the muscular endurance and cardio vascular endurance are 23.600 and 2062.00 respectively. Post-test mean values on the muscular endurance and cardio vascular endurance are 44.560 and 2284.00. The calculate 't' ratio values are 22.537 and 16.008 and the corresponding table 't' value at 0.05 confidence level degree of freedom book value at 24 is 22.537 and 16.008. Comparison of pre-test and post test scores as there 't' ratio numbers are greater than tabular value Therefore statistical analysis noted significant changes occurred in paired sample t-test.

The muscular endurance and cardio vascular endurance of pre-test and post test results presented in bar diagram figure: 1 and 2

Figure: 1 The pre-test and post-test mean values of muscular endurance presented in bar diagram

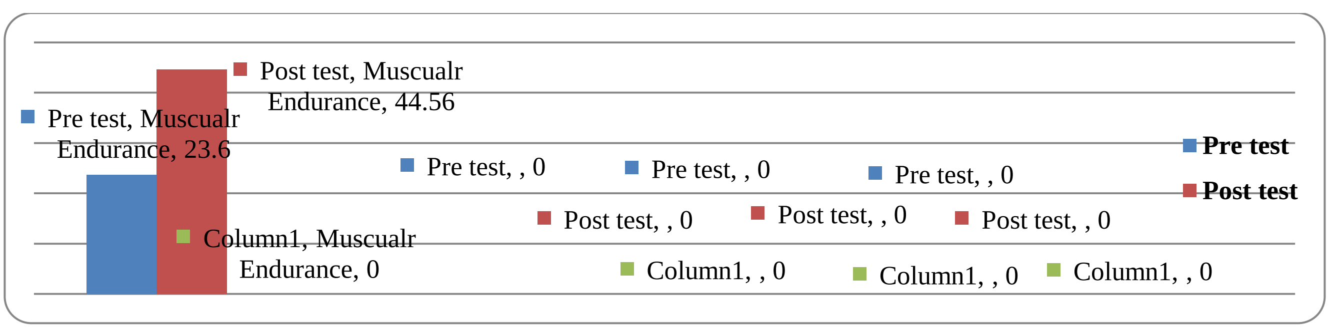
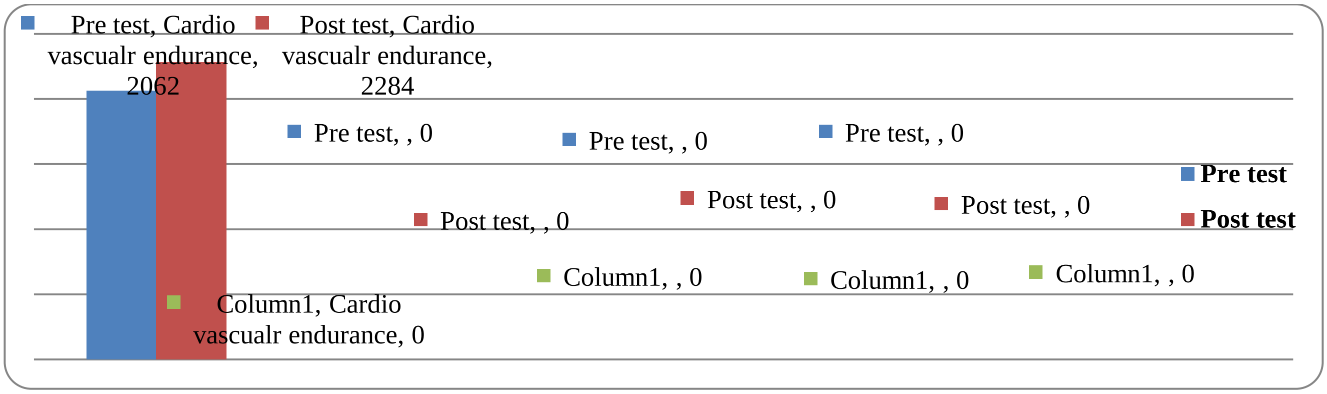


Figure: 2 The pre-test and post-test mean values of cardio vascular endurance presented in bar diagram



DISCUSSION ON HYPOTHESIS:

- The first hypotheses stated that there will be a significant improvement in score of muscular endurance performance of college students after the sixteen weeks impact of various physical exercises when compared between pre-test and post test scores. The statistical analysis proved that various types of physical exercises significantly increased the muscular endurance post scores. Hence research first hypothesis accepted.
- The second hypotheses stated that that there will be a significant improvement in score of cardio vascular endurance performance of college students after the sixteen weeks impact of various physical exercises when compared between pre-test and post test scores. The statistical analysis proved that various types of physical exercises significantly increased the cardio vascular endurance post scores. Hence research second hypothesis accepted.

DISCUSSION AND FINDINGS

The impact of 16-weeks physical exercises enhanced the muscular endurance and cardio vascular endurance performance of college students. The studies connected with muscular endurance and cardio vascular endurance performance results are Suthakar and Asha (2017) result proved that combination of strength training and endurance training effective for increasing of muscular endurance players. Pratheep and Kalaiselvi (2019) showed that aquatic based circuit plyometric training and sand based circuit plyometric training is effective for development of muscular endurance. Advita et al., (2019) proved that aquatic plyometric training is powerful training for increase muscular endurance. Afework (2018) proved that interval and circuit training is beneficial to improve the cardio respiratory endurance of player. Sunita and Ashok (2017) result shows that circuit training is effective in increasing cardiovascular endurance. Somappa and Bhairaddy (2017) demonstrated aerobic exercises and yoga practice increased the cardio vascular endurance of players.

CONCLUSIONS:

Tester determined that impact of 16-weeks of various types' physical exercises enhanced the muscular endurance and cardio vascular endurance performance of college students. Therefore, author suggest all physical education profession working in colleges and school to implement various types of physical activities for enhancing physical fitness level of students.

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"INDIAN SPORTS AND POLITICS - A HISTORY"

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ABSTRACT:

India has hosted and co-hosted several international sporting events, such events include the 1951 Asian Games and the 1982 Asian Games, the 1987 Cricket World Cup and 1996 Cricket World Cup, the 2003 Afro-Asian Games, the 2010 Hockey World Cup, the 2010 Commonwealth Games, and the 2011 Cricket World Cup, the 2014 Commonwealth Games, the 2015 Cricket World Cup, the 2018 Commonwealth Games and 2019, 2023 Cricket World Cup. Major International sporting events annually held in India include the Chennai Open, Mumbai Marathon, Delhi Half Marathon, and the Indian Masters. India also hosted its first Indian Grand Prix at the Buddh International Circuit, an Indian motor racing circuit in Greater Noida, Uttar Pradesh in India. Cricket has a long history by a wide margin in India and is often considered as an unofficial religion in India. **Keywords:** Indian, History, Politics, Sports and Games.

INTRODUCTION:

It is played on local, national and international levels and enjoys consistent support from people in most parts of India. Its development has been closely tied up with the history of the country, mirroring many of the political and cultural developments around issues such as caste, gender, religion, and nationality. The Indian cricket team played its first official match (a Test) in 1932 against England and its performance since then has generally been mixed, sometimes enjoying stupendous success and sometimes suffering outright failure. The highest profile rival of the Indian cricket team is the Pakistani cricket team, though in recent times it has gained other rivals like Australia, South and England. Field hockey is considered the national sport in India, and the country has won eight Olympic gold medals in field hockey, though cricket is the most popular sport. Recent RTI revealed that India has no national game.

After the 1982 Asian Games hosted in New Delhi, the capital city (New Delhi) now has modern sports facilities, and similar facilities are also being developed in other parts of the country. Besides sports and games included in the international sporting agenda, there are many which have developed indigenously and continue to be popular. A wide variety of sports is played throughout the country.

These include kabaddi, kho –kho, pehlwani, and gilli-danda. British rule brought many popular sports in India including football, rugby union, cricket, golf, tennis, squash, field hockey, boxing, snooker, and billiards. Although cricket is the most popular sport in India, it is not the nation's official national sport (a distinction held by field hockey). The governing body for cricket in India, the Board of Control for Cricket in India (BCCI), was formed in December 1928 and is blessed in Mumbai. Today, BCCI is the richest sporting body in the world.

India has hosted or co-hosted a large number of multi-nation major international cricket tournaments viz. the 1987 Cricket World Cup (co-hosted with Pakistan), the 1996 Cricket World Cup (co-hosted with Pakistan and Sri Lanka), the 2006 ICC Champions Trophy and the 2011 Cricket World Cup (co-hosted with Sri Lanka and Bangladesh), the 2015 Cricket World Cup hosted by Australia and the 2019 Cricket World Cup co-hosted by England and New Zealand. The India national cricket team has won major tournaments like the 2011 Cricket World Cup in England, the 2007 ICC World Twenty20 in South Africa, the 2011 Cricket World Cup which they won by beating Sri Lanka in the final at home, and has shared the 2002 ICC Champions Trophy with Sri Lanka.

It had also briefly held the position of the No. 1 team in Tests. The domestic competitions include the Ranji Trophy, the Duleep Trophy, the Deodhar Trophy, the Irani Trophy, and the Challenger Series, all of which are not widely followed, despite cricket's popularity in the country. This parallels the global situation in cricket, whereby the international game is more widely followed than the domestic game in all major cricketing countries. In addition, the BCCI conducts the Indian Premier League, a domestic franchise-based Twenty20 competition, during March-April every year and is extremely popular.

Sports are one area where India lags behind even some of the poorest nations in the world. This despite the huge pool of the talented sports person that exists in all parts of India. At the junior levels, our boys and girls can compete with the best in the world in almost every sport. However, when it comes to the senior levels. Where the actual capabilities of our sportsperson are tested, we fail miserably. This shows that it is not the lack of talent that bogs down our athletes but somewhere along the line; it is the lack of proper training that lead to their poor performances in the international arena.

The fact that professional sportsperson in our country face of lot of hardships cannot be denied. There are usual problems of lack of infrastructure and funds, lethargic approach on the part of government agencies and indifference of the corporate sector in providing sponsorships. However, the fundamental problem lies in the absence of a sporting culture in India. Sports in India are considered a secondary and supplementary activity.

This explains to a large extent, the apathy on the part of the government machinery towards sports. The corporate indifference too stems from the fact that they are not sure that the sponsorship money will be efficiency used in promoting the game and for the welfare of the players. An international sport is highly competitive where only the best and the brightest can hope to reach the top position. Past experience has shown that the government run organizations like the Sports Authority of India (SAI) have consistently failed to produce athletes who can compete at the international level. Hence government should withdraw itself from the administration and running of sports at the senior levels.

The corporate sector should be encouraged to take full control of the management of games and training of athletes. This only will ensure greater accountability on the part of the players and the coaches to show results. It should restrict its role to promoting sporting activities at the school and college levels and in providing jobs to meritorious sportsperson. It should make all efforts to encourage young boys and girls to take up sports as a full time profession and not as a secondary.

CONCLUSIONS:

I would like to say that it is not we who are averse to sports. In fact, in urban areas, our Generation has already turned to basketball and football and not just stuck to cricket. It would be optimistic to consider that this change will soon affect the rural areas too. However, the nature with which sports is handled in the country has made our interaction with it mainly restricted to television viewings and video games.

A more integrated approach to Sports Education in the country would perhaps drive us from our living rooms into the nearby playgrounds. It may go a long way in converting the potential interest of the Youth of India into a physical reality.

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COMPARATIVE STUDY BETWEEN PRICE AND PEACE & LOVE METHODS

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ABSTRACT:

One of the most enduring methods of treating muscle, bone and joint injuries is PRICE (Protection, Rest, Ice, Compression, Elevation). While this method has been around for quite some time, it has recently been updated with a more contemporary approach, namely PEACE & LOVE. This research will discuss the concept of PEACE & LOVE, how it differs from PRICE, and how PEACE & LOVE can be applied by athletes and the general public. PEACE & LOVE is an innovative approach to managing musculoskeletal injuries that emphasizes a holistic and proactive strategy. This method not only focuses on immediate care but also promotes long-term healing and prevention. Here's a breakdown of the PEACE & LOVE approach:

PEACE:

P for Protection: Initially, protect the injured area to prevent further damage. This involves reducing movement or avoiding activities that could exacerbate the injury.

E for Elevation: Elevate the injured area above heart level to reduce swelling and inflammation.

A for Avoid anti-inflammatories: Contrary to traditional methods, PEACE recommends avoiding anti-inflammatory medications in the initial stages, as inflammation is a natural part of the healing process.

C for Compression: Apply a compression bandage to the injured area to help control swelling and provide support.

E for Education: Educate yourself about your injury and the healing process. Understanding your injury can empower you to make informed decisions about your recovery.

LOVE:

L for Load: Gradually reintroduce movement and load to the injured area as tolerated. This helps to stimulate tissue repair and regain strength.

O for Optimism: Maintain a positive outlook towards recovery. A positive mindset can significantly influence healing and rehabilitation.

V for Vascularisation: Engage in pain-free cardiovascular activities to promote blood flow and enhance healing.

E for Exercise: Incorporate exercises that restore strength, flexibility, and balance as you recover. Tailor these exercises to your specific injury and progress gradually.

The PEACE & LOVE approach encourages active participation in the recovery process and emphasizes the body's natural healing abilities. By focusing on education, optimism, and carefully managed activities, individuals can experience a more effective and sustainable recovery. This method is not only beneficial for athletes but also for anyone who wants to recover from musculoskeletal injuries more efficiently, whereas the PRICE (Protection, Rest, Ice, Compression, Elevation) approach that has been used for decades has a primary focus on rest and reduction of swelling with the use of ice. However, recent studies have shown that too much rest or overuse of ice can hinder the body's natural healing process.

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"A COMPARATIVE STUDY OF SPEED AMONG LONG JUMPERS AND TRIPLE JUMPERS OF HYDERABAD IN TELANGANA"

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ABSTRACT:

The aim of the present study to compare the speed among Long Jumpers and Triple Jumpers of Hyderabad. 20 Male Long Jumpers and 20 Male Triple Jumpers those who have participated in the Hyderabad District Athletics Championships for the year 2023-2024 were taken for the study. The 50 Meters Run Test is used to measure the speed among Long Jumpers and Triple Jumpers. The study is limited to the Male Long Jumpers and Male Triple Jumpers of the Jumpers. This study shows that the Long Jumpers are having good speed compare to triple jumpers. This study show that the speed training is god among Long Jumpers as they are doing only one jump compare to triple jump as they are doing three jumps i.e. Hop, Step and Jump.

Keywords: Speed, Long Jump, Triple Jump, Speed training etc.

INTRODUCTION:

The long jump is a track and field event in which athletes combine speed, strength and agility in an attempt to leap as far as possible from a takeoff point. This event has been an Olympic medal event since the first modern Olympics in 1896 and has a history in the ancient Olympics.

Long Jump is divided into the following phases:

Approach, Takeoff, Flight and Landing.

APPROACH PHASE:

Objectives: To achieve optimum speed.

Characteristics: The Approach length varies between top class jumpers and medium class jumpers. Top Class Jumpers take 15 to 25 strides. Running technique is similar to sprinting. Speed increases continuously until the takeoff Board.

TAKE OFF:

Objectives: To maximize vertical velocity and to minimize loss in horizontal velocity.

Characteristics: Foot plant is active and quick with a down and back motion. Take off time is minimized, minimum bending of the takeoff leg. Thigh of the free leg is driven to horizontal position, ankle, knee and hip joints are fully extended.

FLIGHT PHASE:

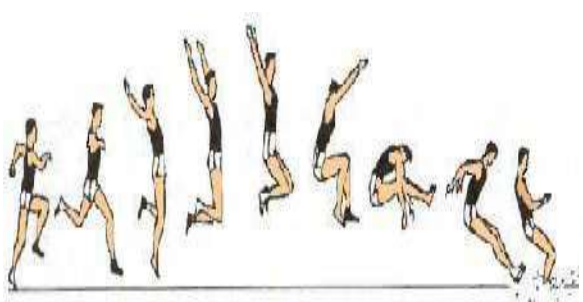
Objectives: To prepare for an efficient landing.

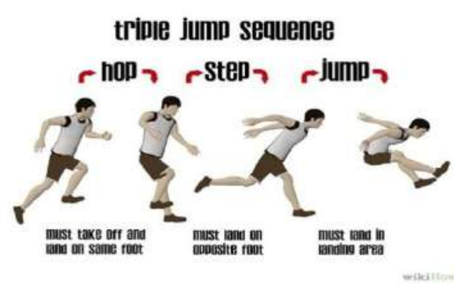
Characteristics: Running action continues in the air supported by arm swing. Stride rhythm of the approach should not be changed. Running action must be finished at landing with both legs extended forward. In Hitch kich technique the Variation 1.5, 2.5, 3.5 steps during the flight. It varies for each jumper.

LANDING PHASE:

Objectives: To Minimize the loss of distance.

Characteristics: Legs are almost fully extended. Trunk bent forward. Arms are drawn backwards; Hips are pushed forwards toward the touchdown point.





Long Jump Sequence **Triple Jump Sequence**

The triple jump sometimes referred to as the Hop, Step and Jump is a track and field sport, similar to the long jump, but involving a "hop, bound and jump" routine, whereby the competitor runs down the track and performs a hop, a bound and then a jump into the sand pit. The triple jump has its origins in the Ancient Olympics and has been a Modern Olympics event since the Games' inception in 1896. The triple jump is divided into the following phases: Approach, Hop, Step, Jump. The Hop, Step and Jump can each be divided into take off, flight and landing. In the approach phase the jumper accelerates to a maximum controllable speed. In the hop phase the jumper executes the movement quickly and flatly, covering about 35% of the overall distance. In the step phase the jumper coves about 30% of the overall distance. The step is the most critical part of the triple jump. Its duration should be equal to the hop. In the jump phase the jumper takes off with opposite leg and covers about 35% of the overall distance.

APPROACH PHASE:

Objectives: To reach maximum velocity and to position the body for the take off.

Characteristics: Approach length varies between 10 strides to 20 strides.

HOP PHASE:

Objectives: To achieve a long, flat flight with a minimal loss of horizontal velocity.

Characteristics: Thigh of the free leg is driven to the horizontal position. Take off direction is forward, not forward. Free leg is drawn forwards upwards than extended forwards to prepare for touch down.

STEP PHASE:

Objectives: To equal the duration of the hope i.e. to achieve the same height as in the hop.

Characteristics: Foot plant is active and quick. Free leg is almost completely extended. Double arm swing is used if possible.

JUMP PHASE:

Objectives: To take off powerfully at an optimum take off angle.

Characteristics: Foot plant is active and quick with a down and back motion. Double arm action is used. Hang or sail technique are used in the air. Legs are almost fully extended at landing.

METHODOLOGY:

AIM: To find out of the Speed between Male Long Jumpers and Male Triple Jumpers.

SAMPLE: The sample for present study consists of 20 Male Long Jumpers and 20 Male Triple Jumpers between the age group of 19 to 22 years of Hyderabad. District those who have participated in the Hyderabad District Athletics Meets during the year 2023-2024.

TOOLS: 50 Meter Run is used to collect the data for speed.

Limitations: The study is limited to students of the Osmania University and 50 Meters Run is chosen for the study to find out the speed among Long Jumpers and Triple Jumpers.

RESULTS AND DISCUSSION:

Table – I is showing the speed among the Long Jumpers and Triple Jumpers.

Table – 1:

Test Item	Group	Number	Mean	Std. Deviation	Std. Error Mean	T	Df	Sig.(2tailed)
50 M Run	Long Jumper	20	7.00	0.24	0.08	-1.81	38.00	0.09
50 M Run	Triple Jumper	20	7.28	0.46	0.15			

It was found that the average speeds of Long Jumpers are 7.00 and Triple Jumpers are 7.28.

Long Jumpers are having good speed compare to the Triple Jumpers because the Long Jumpers are going for only one jump with high speed and triple jumpers are going to perform hop, step and jump. The standard deviations of Long Jumpers are 0.24 and Triple Jumpers are 0.46. The t-ratio is -1.81 and there are significant relationships of 0.09 between Long Jumpers and Triple Jumpers.

CONCLUSIONS:

It is concluded that Long Jumpers are having good speed compare to the Triple Jumpers. Speed Training must be given to all Long Jumpers and Triple Jumpers to enhance the performance.

RECOMMENDATIONS: The similar studies can be conducted on different sports and games.

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EFFECT OF PLYOMETRIC TRAINING AND CIRCUIT TRAINING ON LEG STREGNTH VARAIABLES AMONG SCHOOL LEVEL MALE FOOTBALL PLAYERS

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ABSTRACT

The study was to examine the isolated and combined plyometric training and circuit training on leg strength among school level male football players. Total recruited randomly N=48 (forty eighty) school level football players their age period ranged from 13 years to 16 years as per subject's school records and, who at least participated school level football games competitions. The chosen football players was randomly recruited into four groups each group n=12 football players i.e. empirical groups I football players underwent isolated plyometric exercises (PTFG = 12), empirical group II football players underwent isolated circuit training (CTFG = 12), empirical group III underwent: football players underwent combined plyometric exercises and circuit training (PCFG = 12) and control group football players (NTFG = 12) . NTFG was practiced only their respective specialization game. The training period was fixed for 12- week's duration and four sessions in a week. The measurement of leg strength scores was collected through dynamometer test before and after the completion of specific training. The collected scores were analyzed through ANCOVA and level of significant was restricted at 0.05 levels. The study found that isolated, combined plyometric exercises and circuit training program had positive significant impact to gain leg strength performance of football players of three empirical group's players comparative to control group. Keywords: – plyometric, circuit, Exercises, Combination and strength

INTRODUCTION:

Circuits vary widely as the possible combinations of exercises are infinite. However, each circuit will use a mix of cardio- and weight-based exercises that target different areas, for a full-body workout. Circuit-training exercises include: weight based exercises are push-ups, planks, lunges, sit-ups, crunches, squats, dumbbell exercises, kettlebell exercises and band exercises. Cardio-based exercises: running, jogging on the spot, cycling, skipping, running up and down stairs, mountain climbers, side-to-side hops and jumping jacks. The benefits of circuit training are weight loss, improved flexibility, increased strength and power, more muscle tone and boosted endurance

Plyometric activities usage of jumps, hops, bounds, and/or skips. This form of exercsies is governed by the stretch-shortening cycle, otherwise known as the reversible action of muscles. Both land- and aquatic-based plyometric training appears to be a potent stimulus for improving athletic qualities. plyometric training has been shown to improve the following physical qualities in both youth and adult athletes strength, speed, power, change of direction speed, balance, jumping, throwing, kicking and bone density. Plyometric activities require athletes to produce high levels of force during very fast movements. Best example of this is sprinting. Maximal speed sprinting demands the athlete moves their body and limbs at the very pinnacle of their ability – making it an extremely fast movement.

STATEMENT OF THE RESEARCH PROBLEM:

To analyze the "Impact of plyometric training and circuit training on leg strength among school level boys football players".

OBJECTIVES OF THIS RESEARCH STUDY

1. The primary objective of this research study is to evaluate the 12-weeks influence of plyometric training and circuit training on leg strength among school level boys football players.
2. The secondary objective of this research are
   - To compare the selected training methods between isolated and combined training on explosive strength among school boy's football players.
   - To judge the best suitable training program among selected three treatments for enhancement of leg strength of football players.

RESEARCH HYPOTHESIS:

- There will be a significant improvement in score of leg strength performance of empirical group's football players after the twelve weeks impact of isolated and combined plyometric training and circuit training when compared with control group football players.
- The combined plyometric training and circuit training will be more effective than the isolated training program.

METHODOLOGY:

The study was to measure the isolated, combined examine the isolated and combined plyometric training and circuit training on leg strength among school level male football players. Total recruited randomly N=48 (forty eighty) school level football players their age period ranged from 13 years to 16 years as per subject's school records and, who at least participated school level football games competitions. The chosen football players was randomly recruited into four groups each group n=12 football players i.e. empirical groups I football players underwent isolated plyometric exercises (PTFG = 12), empirical group II football players underwent isolated circuit training (CTFG = 12), empirical group III underwent: football players underwent combined plyometric exercises and circuit training (PCFG = 12) and control group football players (NTFG = 12). NTFG was practiced only their respective specialization game. The training period was fixed for 12- week's duration and four sessions in a week. The measurement of leg strength scores was collected through dynamometer test before and after the completion of specific training. The collected scores were analyzed through ANCOVA and level of significant was restricted at 0.05 levels.

Table : I

Analysis of Covariance for Leg strength – Dynamometer Test (Kgs) of the PTFG, CTFG, PCFG and NTGP groups for Football players

Groups	PTFG	CTFG	PCFG	NTGP	SOV	Sum of squares	df	Mean Square	F' Ratio
Pre-test mean	48.416	49.916	45.833	49.666	B	125.750	3	41.917	
SD	4.926	3.528	4.802	4.097	W	842.167	44	19.140	2.190^{NS}
Post-test mean	72.833	60.667	74.916	46.916	B	6000.500	3	2000.167	
SD	10.844	9.393	5.822	4.640	W	2874.167	44	65.322	30.620*
Adjusted mean	72.869	60.411	77.176	45.876	B	6619.475	3	2206.492	42.168*
					W	2250.032	43	52.326	
Mean difference	+24.417	+10.751	+29.083	-2.75	-	-	-	-	-

Note: Table F-ratio value at 0.05 level of confidence for 3 and 44 (df) =2.82, 3 and 43 (df) =2.82 *Significant & NS: Not significant.

PTFG: Plyometric exercises football players group.

CTFG: Circuit training football players group.

PCFG: Combined plyometric and circuit training football players group.

NTGP: Non training group football players.

The above table-I shows that there is a significant difference on leg strength performance among the four groups such as isolated plyometric exercises (PTFG), isolated circuit training (CTFG), combined plyometric exercises and circuit training (PCFG) and control group football players (NTFG). Since the 'F' value required being significant at 0.05 level for 3, 44 d/f and 3, 43 are 2.82, but the computation values of leg strength post and adjusted posttest 'F' values are 30.620 and 42.168 respectively. Which are greater than the tabulated value, it shows that training is effective for positive changes in leg strength performance. Since the obtained 'F' ratio is found significant.

TABLE: 2

THE SPRINT ABILITIES RESULTS OF SCHEFFE'S METHOD TEST MEAN DIFFERENCES BETWEEN PTFG, CTFG, PCFG AND NTGP GROUPS FOR FOOTBALL PLAYERS

PTFG	CTFG	PCFG	NTGP	MD	CI
72.869	60.411	-	-	13.458^{NS}	14.422
72.869	-	77.176	-	4.307 ^{NS}	
72.869	-	-	45.876	26.993*	
-	60.411	77.176	-	17.765*	
-	60.411	-	45.876	14.535 *	
-	-	77.176	45.876	31.300 *	

Note: * Significant & NS: No significant

PTFG: Plyometric exercises football players group.

CTFG: Circuit training football players group.

PCFG: Combined plyometric and circuit training football players group.

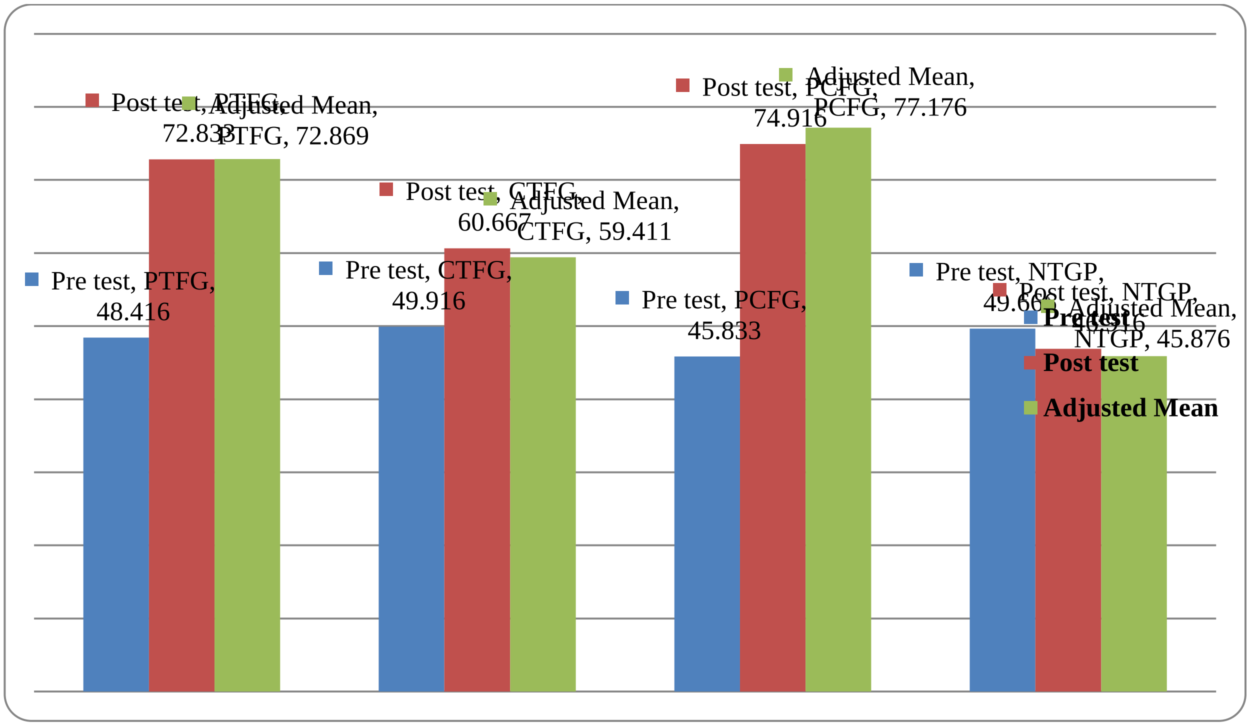
NTGP: Non training group football players.

In above table 2 presented the adjusted final mean variations between the Plyometric exercises football players group [PTFG] and Circuit training football players group [CTFG], Plyometric exercises football players group [PTFG] and Combined plyometric and circuit training football players group [PCFG] are 13.458 and 4.307. These computations adjusted final mean variations values are smaller than calculated formula CI value 14.422. Hence investigator recorded no significant variations resulted between training groups football players after completion of empirical period.

Therefore the adjusted final mean variations between the Plyometric exercises football players group [PTFG] and Non training group football players [NTGP], Circuit training football players group [CTFG] and Combined plyometric and circuit training football players group [PCFG], Circuit training football players group [CTFG] and Non training group football players [NTGP] & Combined plyometric and circuit training football players group [PCFG] and Non training group football players [NTGP] are 26.993, 17.765, 14.535 and 31.300. These computations adjusted final mean variations values are larger than calculated formula CI value 14.422. Hence investigator recorded significant variations resulted between training groups and control groups, isolated and combined training group football players after completion of empirical period.

The prior, final and adjusted post scores results mean of the PTFG, CTFG, PCFG AND NTGP football player groups for leg strength – dynamometer test (kg) clearly represented in bar diagram figure: 1.

FIGURE: 1 THE SPRINT ABILITIES PRE POST AND ADJUSTED POST TEST MEAN NUMBERS OF PTFG, CTFG, PCFG AND NTGP GROUPS FOR FOOTBALL PLAYERS PRESENTED IN BAR GRAPH



PTFG: Plyometric exercises football players group.

CTFG: Circuit training football players group.

PCFG: Combined plyometric and circuit training football players group.

NTGP: Non training group football players.

DISCUSSION ON HYPOTHESIS:

- The first hypotheses stated that there will be significant improvement in score of leg strength performance of empirical group's football players after the twelve weeks impact of isolated and combined plyometric training and circuit training when compared with control group football players. The statistical analysis proved that isolated, combined plyometric exercises and circuit training program significantly improved the leg strength performance of football players. Hence research first hypothesis accepted.
- The second hypotheses stated that combined plyometric training and circuit training will be more effective than the isolated training program. The statistical analysis proved combined training is not superior to isolated training method. Hence research second hypotheses rejected.

DISCUSSION AND FINDINGS:

The impact of isolated and combined plyometric training and circuit training are constructive for building leg strength performance of football players comparative with non-training group football players. The studies connected with leg muscles strength results are Shahnaz et al., (2021) found that resisted sprint and plyometric training are equally effective for increasing lower limb functional performance in collegiate male football players. Kuncoro Aji Laksono and Suharjana (2024) plyometric training methods on the sand was more effective than the those on the land for obtaining higher results for increasing leg muscular strength. Georgios et al., (2023 Plyometric exercise, whether applied with or without blood flow restriction, improved leg muscle strength and functional capacity in male amateur football players

CONCLUSIONS:

Tester determined that impact of isolated and combined plyometric training and circuit training are constructive for building leg strength performance of football players comparative with non-training group football players. Hence combined plyometric and circuit training is more constructive for legs strength of football players comparative with isolated circuit training. Finally, isolated plyometric and isolated circuit training are equally effective for developing leg muscles strength of football players. Shahnaz Hasa et al., (2021) findings suggest that, during a short-term training period, resisted sprint and plyometric training are equally capable of enhancing the lower limb functional performance of collegiate football players. Sakthivel and Vaithiyanathan (2022) the result concluded that there was significant positive gain on muscular strength and leg explosive power level due to the impact of circuit training than the control group among players. Gopinathan (2019) the result of the study that the experimental group significantly improved the and explosive muscular strength due to six weeks circuit training. Aditya (2014) found that 12-weeks of complex training with core exercises program resulted positive impact for gaining lower body muscular strength of football players

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EFFECT OF 6 WEEKS PRANAYAMA PRACTICE ON HEART RATE AND BLOOD PRESSURE AMONG PRE METRIC BOYS HOSTEL RAICHUR

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ABSTRACT

Purpose: The Purpose of the study was to find out the effect of 6 weeks Pranayama Practice on selected physiological variables Heart Rate and Blood Pressure. Selection of Subject: For the present study thirty male children from Dr. B. R Ambedkar pre metric boys hostel Raichur 584104, Karnataka were selected randomly as the subjects for the study. The age of the subjects was ranging from 13 - 16 years. Selection of Variable: The variables selected for the present study were pranayama practice (independent variable) heart rate and blood pressure (dependent variables). Methodology: The data was collected through the pre and post-test. For the study single group design was used in which the pre-test was taken prior to the pranayama practice and post-test was taken after eight weeks of pranayama practice. Statistical Technique: For comparing pre and post-test means of heart rate and blood pressure, descriptive analysis and paired t-test were applied at 0.05 level of significant. Result: The result of the study showed that there was significant difference between pre and post-test of heart rate and blood pressure. Conclusion: On the basis of the findings it was concluded that the pranayama practice may be responsible for the improvement of selected physiological variables like heart rate and blood pressure. **Keywords:** Pranayama, Pranayama Practice, physiological variables, heart rate and blood pressure.

INTRODUCTION

Pranayama is an exact science. It is the regulation of breath or control of prana which is the stoppage of inhalation and exhalation that follows after securing that steadiness of posture or seat, Asana. As the Bible states, "Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living being. The Sanskrit word prana means 'vital force' or 'cosmic energy'. It also signifies 'life' or 'breath', Ayama means the control of the prana. Hence pranayama means control of the vital force by concentration and regulated breathing. It is physical, mental, spiritual and cosmic energy. All forms of energy are prana. Prana is usually translated as breath; which moves in the thoracic region absorbing vital energy; yet, this is the only one of its many manifestations in the body. (Ayama means control). So pranayama is the science of breath control. The movements of the thoracic organs include vertical ascension, horizontal expansion and a circumferential movement.

Pranayama is appreciated and enjoyed by children of all ages, however a children's Pranayama session is vastly different to an adult's class. The presentation of yoga is crucial to its success when it comes to teaching kids. Children benefit from pranayama because it improves their physical coordination, strength, and focus., Pranayama is an ancient practice that helps create sense of union in body, mind and spirit. Since then, breathing and meditation have become commonplace worldwide as part of the Pranayama system of mental and physical training. Frequent daily application of these Pranayama structures results in a strong, capable body and a clear, brilliant mind. As long as the breath is never held, children can safely engage in basic breathing techniques and meditation. These methods can significantly aid kids in learning to calm down, focus, and control their impulsivity. Children who receive these strategies are better equipped to handle stressful situations and emotional outbursts.

1.1 Objectives of the study

- To find out the significant difference between pre and post-test of heart rate.
- To find out the significant difference between pre and post-test of systolic blood pressure.
- To find out the significant difference between pre and post-test of diastolic blood pressure

METHODOLOGY

2.1 Selection of Subjects

For the present study was total 30 male students with age ranging between 13-16 years were randomly selected as subject from Dr. B.R Ambedkar pre metric boys hostel Raichur 584104, Karnataka.

2.2 Selection of Variables

Keeping the feasibility criterion in mind, the researcher selected the following variables for the present study:

Independent variables - Pranayama practice

Dependent variables - Heart rate and Blood Pressure

2.3 Criterion Measures

· Heart rate was taken by gently pressing over the radial artery for one minute by using stop watch.

· Blood pressure was measured by sphygmomanometer is an instrument used for measuring blood pressure and is measured in millimeters of mercury (mmHg).

2.4 Experiment Design and Training Schedule

For the study single group design was used in which the pre-test was taken prior to the Pranayama Practice and post-test was taken after eight weeks of Pranayama Practice.

Selected Pranayamas were given to subjects on Six days six sessions per week. Each yoga session consisted of 15 minutes of Anulom viloma Surya bedana and Chandra bedana Pranayama practice with dynamic berthing practice. 20 minutes of brhamari pranayama, bramara pranayama, bastrika pranayama and kapalabati pranayama practice. Then 10 minutes anuloma viloma pranayama practice. Every participant was assessed pranayamas practiced the study design was explained to participants and their signed informed consent was obtained. The Pranayama technique was clearly demonstrated and explained to the study participants.

First, everyone has to sit comfortably in Sukhasana keeping the head, neck, and trunk straight, with eyes closed. All should keep the body still during the breathing practice. Then first Anuloma-viloma (Alternate nostril breathing) Pranayama practice the subject was asked to relax 5secs before starting and instructed to inhale through the left nostril while keeping the right nostril closed with the thumb of right hand. Retain the breath for a few seconds and exhale from the right nostril with the middle and ring fingers closing the left nostril. Then, once again inhale through the right nostril. Finally, exhale out through the left nostril while closing your right nostril with the thumb. This is one round anuloma-viloma Pranayama and practiced for 15 minutes. Then observe the normal breathing pattern. Bhramari Pranayama first directed the study group to Inhale deeply through both nostrils, Exhale slowly while making a humming sound like a bee. Focus on the sound after exhaling, close your eyes and focus on the sound echoing within. Repeat the exhalation a few times.

2.5 Statistical Procedure

The data were analyzed by applying descriptive statistical and paired t-test. The level of significance was set at 0.05

2.6 Result and Findings of the Stud

Table 1: Descriptive and comparative statistics of pre and post-test of Systolic blood pressure

Variables	Test	N	Mean	Std. Error Mean	Paired Differences Mean	Paired Differences Std. Error Mean	t	df	Sig. (2-tailed)
Systolic blood pressure	Pre	30	103.4000	2.23997	23.90000	2.47626	-9.652	29	.000
	Post	30	127.3000	.89590					

According to Table 1, the mean and standard error mean of the systolic blood pressure test before and after are 103.4000±2.23997 and 127.3000±.89590, respectively. The t-value that was obtained, -5.611, is significant at the 0.05 level. This demonstrates that the means of the pre and post-tests differ significantly with respect to systolic blood pressure.

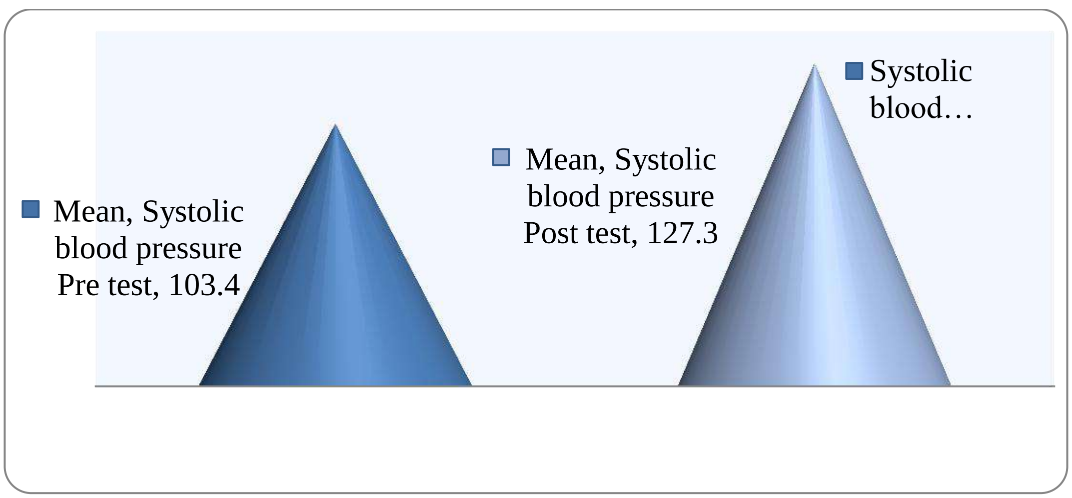


Table 2: Descriptive and comparative statistics of pre and post-test of diastolic blood pressure

Variables	Test	N	Mean	Std. Error Mean	Paired Differences		t	df	Sig. (2-tailed)
					Mean	Std. Error Mean			
Diastolic blood pressure	Pre test	30	69.7333	2.43628	-14.56667	2.59606	-5.611	29	.000
	Post test	30	84.3000	1.05607					

Table 2 shows that the diastolic blood pressure test mean and standard error mean before and after were 69.7333±2.43628 and 84.3000±1.05607, respectively. At the 0.05 level, the obtained t-value of -5.611 is significant. This suggests that there is a significant difference between the pre and post-test values for diastolic blood pressure.

Fig 2: graphical representation mean values of pre and post-test in relation to diastolic blood pressure

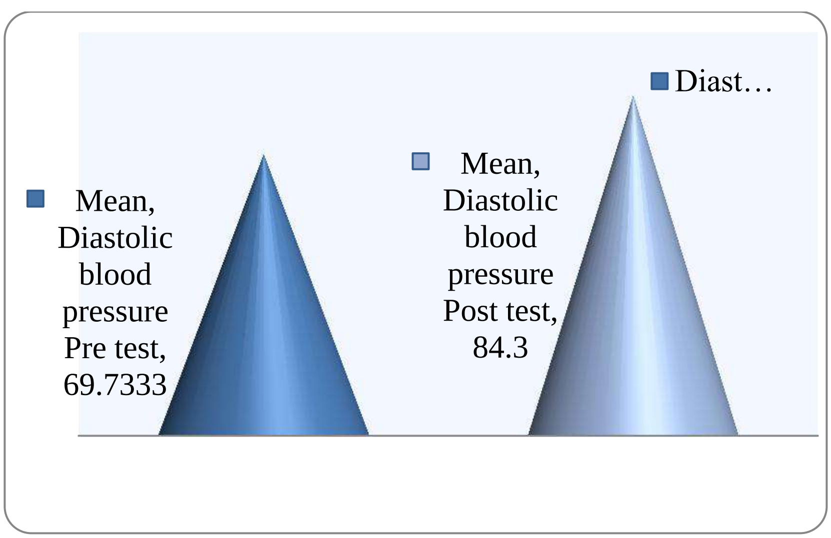
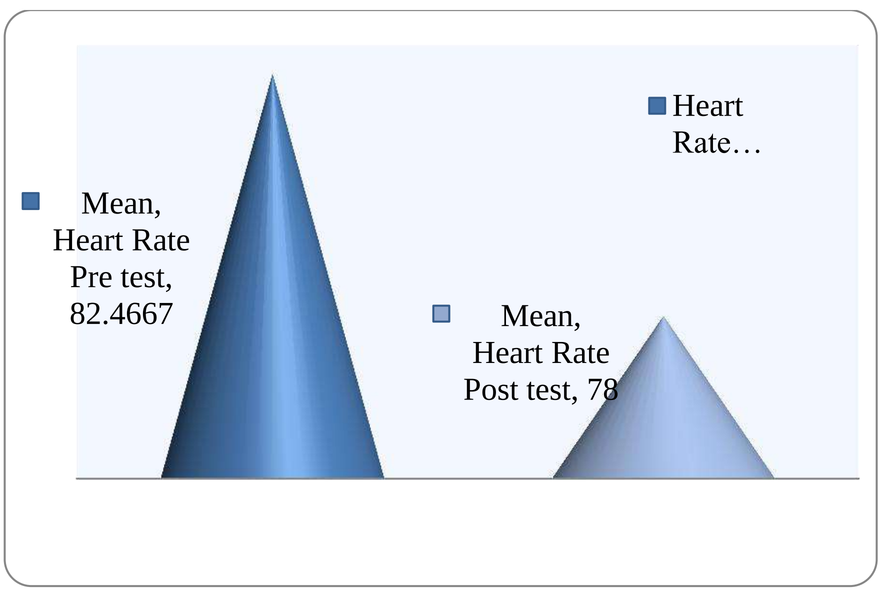


Table 3: Descriptive and comparative statistics of pre and post-test of heart rate

Variables	Test	N	Mean	Std. Error Mean	Paired Differences		t	df	Sig. (2-tailed)
					Mean	Std. Error Mean			
Heart rate	Pre test	30	82.4667	1.73916	4.46667	1.97963	2.256	29	.032
	Post test	30	78.0000	1.51164					

Table 3 revels that the mean was 82.46671 and Std. Error mean was 1.73916 of pre-test of the heart rate and post-test mean was 78.0000 Error mean was 1.51164 shows respectively. The obtained t-value -5.611 is a 0.05 level of significance. This confirms that significant difference exists between the means of pre and post-test in relation to heart rate.

Fig 3: graphical representation mean values of pre and post-test in relation to heart rate.



ANALYSIS OF THE RESULTS

The study's findings showed that the chosen group's systolic blood pressure diastolic blood pressure and heart rate significantly improved as a result of 6 weeks Pranayama Practice. When comparing the pre and post-tests, the group that participated in Pranayama Practice showed a substantial improvement in a few physiological indicators, including systolic blood pressure diastolic blood pressure and heart rate.

CONCLUSIONS

The study's findings allow for the following deductions to be made:

1. The study's findings show that there was a substantial change between the systolic blood pressure test conducted before and after.

2. The study's findings show a substantial difference between the diastolic blood pressure test conducted before and after.

3. The study's findings show that there was a substantial change between the heart rate test conducted before and after.

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"A STUDY ON COORDINATIVE ABILITIES AMONG MALE SOFTBALL PLAYERS AND CRICKET PLAYERS OF GURU NANAK ENGINEERING COLLEGE IN HYDERABAD"

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ABSTRACT:

Softball and Cricket are the best known members of a family of related bat and ball games, despite their similarities, the two sports also have many differences. Though these games are similar in nature and are both derived from England, they have various differences among them including rules, regulations, game play, bat, ball etc. while the principle is same, the two games differ in their rules, terminology, playing equipment, number of players, field size etc.

Key words: Softball Players, Cricket Players, Bat and Ball, Sports and Games, Rules and Regulations, Communication Skills, Speed and Coordination, Sports Equipment.

INTRODUCTION:

In sports today best performance can only be achieved through accurately planned, executed and controlled training system loosed on scientific knowledge, theoretical and methodical fundamental of sports training. A sportsman can compete effectively only by a certain coordinative mastery of the technique. Coordination ability means an ability to quickly and purposefully perform difficult spatiotemporal movement structure. Within this context, coordination abilities are understood as an externally visible manifestation of the control and regulation process of motor activity of central nervous system. Coordinative abilities enable the sportsman to do a group of movements with better quality and effect. The speed of learning of skill and its stability is directly dependent on level of various coordinative abilities. Coordinative abilities are needed for maximal utilization of conditional abilities, technical skills and tactical skills. In different sports requirement of coordinative abilities are different and these abilities ensures higher movement efficiency and movement economy, where as in sports events they help in higher movement frequency and high explosiveness and force application. In sports seven Coordinative abilities are of key importance.

In different sports the relative importance of these abilities is however different. Differentiation ability enables the sportsman to perceive micro difference regarding the temporal, dynamic, spatial aspect of movement execution and differentiation can be in regards to an implement or movement. Orientation permits the sports man to determine the position and movement of his own body and of a moving object with regard to space. Coupling and combination move mental lows the sports man to coordinate partial movement of his body with regard to space, time, and dynamics. Reaction ability permits the sportsman to effective action quickly and purposes fully according to assign a land for a sudden change in situation. Rhythmic ability enables the sportsman to perceive the externally given rhythm and to reproduce it in a motor action. It also denotes the ability to reproduce a rhythm, existing in motor memory in motor action. The optimally developed coordinative ability especially in childhood is an individual set for learning of complex technique in advancement stage is dependent upon the level of required Coordinative ability. They are prerequisite of sports and game performance.

OBJECTIVE OF THE STUDY:

The study was determining the comparative study on coordinative abilities among males of softball players and cricket players of Guru Nanak Engineering College, Hyderabad in Telangana.

HYPOTHESIS:

There may not be any significant difference between softball players and cricket players of Guru Nanak Engineering College, in relation to coordinative abilities.

MATERIAL AND METHODS:

Selection of subjects 50 male subject aged between 18-25 years, who participated in inter university competitions from Guru Nanak Institutions, Hyderabad were selected for this study. The purposive sampling technique was used to attain the objectives of the study. They were further divided into two groups of 25 each (i.e., 25 cricket players and 25 softball players).

Table Showing the Sample of the study:

Sl. No.	**Guru Nanak Institution players**	**Number of subjects**
1.	Cricket players	25
2.	Softball players	25
	Total:	**50**

Tools used:

- **Reaction ability:** reaction ability was the distance measured in centimeters from the top of the planks to the point where the subjects top of the ball. Three trials were given and the best was recorded as the score.
- **Orientation ability:** Orientation ability was noted in seconds. Three trials were given and the best was recorded as the score.
- **Differentiation ability:** Differentiation ability judged through 1kg medicine ball touching the mat- 1 point, 1 kg medicine ball touching the circle line- 2 points, 1kg medicine ball touching inside the circle-3 points, 1 kg medicine ball touching the 2kg medicine ball – 4 points.
- **Rhythmic ability:** Rhythmic ability was scored as difference between the timing of the first and second attempt was taken as a score.

RESULTS & DISCUSSIONS:

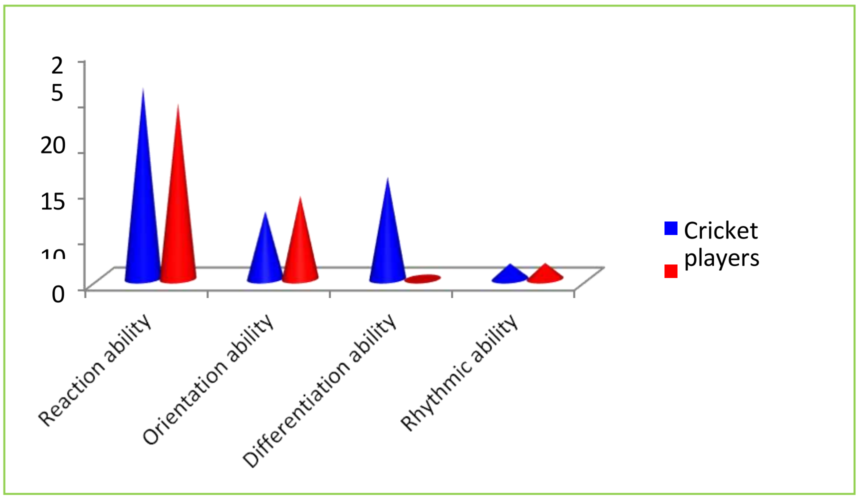
The results pertaining to significant difference between cricket players and softball players were assessed using the independent t-test and results are presented in table-1

Variables	Mean		SD		t-value	p-value
	Cricket players	Softball players	Cricket players	Softball players		
Reaction ability	20.97	19.21	3.52	2.54	2.31*	0.20
Orientation ability	7.45	9.13	0.87	0.78	2.48*	0.24
Differentiation ability	11.20	10. 16	1.95	2. 43	2.39*	0.29
Rhythmic ability	1.712	1.77	0.19	0.29	1.05	0.28

It is evident from table-1 that significant differences was found in reaction ability be twenties inter university level cricket players and softball players of Guru Nanak Engineering College, since the calculated ‘t’ value 2.31 was greater than tabulated ‘t’ value 2.021 at 0.05 level of significance. The table shows the results of inter university level cricket players and softball players of Guru Nanak Engineering College, with regards to orientation ability. The descriptive statistics shows the calculated ‘t’ value 2.48 was greater than tabulated ‘t’ value 2.021 at 0.05 level of significance. Thus it was found statistically significant. The study reveals that the cricket players have demonstrated significantly better on orientation ability than the softball players.

The results of inter university level cricket players and softball players of Guru Nanak Engineering College, with regards to differentiation ability. The descriptive statistics shows the calculated 't' value 2.39 was greater than tabulated 't' value 2.021at 0.05 level of significance. Thus it was found statistically significant. Observed that cricket players have demonstrated significantly better on differentiation ability than the softball players.

Fig: graphical representation of reaction ability, orientation ability, differentiation ability and rhythmic ability between cricket players and softball players.



CONCLUSION:

It is concluded from above finding that significant difference was found in reaction ability, orientation ability and differentiation ability the cricket players had better reaction ability, orientation ability and differentiation ability in comparison to softball players. The in significant difference was found in rhythmic ability softball group had better rhythmic ability in comparison to cricket group.

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STATE ANXIETY AMONG MALE INTER-UNIVERSITY LEVEL SPORTS PERSONS OF DIFFERENT GAMES

By

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ABSTRACT

The present study was to analysis the state anxiety among male interuniversity level sportspersons of different games. 448 male players of Basketball, Volleyball, Kabaddi, Kho-Kho and Hockey were randomly selected as subjects. State Anxiety variable namely Cognitive State Anxiety, Somatic State Anxiety, Self Confidence Anxiety, Total State Anxiety assessed by using Questionnaire for Sports Anxiety Test, University of Minnesota, Mories. ANOVA followed by Scheffe's post-hoc test was administrated where ever f- ratio found significant.

Among male sports persons, f-ratio found to be significant at 0.05 level of confidence. Post hoc test revels that, in Cognitive State Anxiety the male Basketball players were inferior to other four game players. In Somatic State Anxiety the Kabaddi players found significantly superior to Basketball, Volleyball, Kho-Kho and Hockey players. In Self Confidence Anxiety male Hockey players found to be significantly inferior to rest of the game players. The Total State Anxiety among male interuniversity sportspersons reveals the Basketball players are significantly inferior to rest of the game players. Based on the findings, one can interpret that, the State Anxiety is not similar in all the sports and games. The difference which occurred can be attributed to the technicality and tactics, and the nature of the sports.

INTRODUCTION

A complete mental and physical preparation is the result of sacrifice and self-discipline. It is easy to be average, but tough to be the best. Sporting arena at present acknowledges and appreciates sportspersons who can consistently exhibit superior performance, who is focused to be at his/her best and emerge successful. Contemporary sports and exercise psychologists play a number of different roles including research, teaching and consultation services to athletes. The sports psychologists play a vital role in the preparation of the athlete, especially at high level. Psychological factors are frequently the crucial conditions or causes, which transform strength into weakness and vice versa. The practical sports psychology program is a holistic approach for peak performance. It includes deep relaxation and visualization, techniques for concentration, positive attitude, nutrition, stress management and meditation.

Anxiety is one of the most prevalent topics in sports and exercise psychology. It is a state of mind in which the individual responds with discomfort to some events that have occurred or going to occur. The person's worries about event, their occurrences and consequences in general are the sources of anxiety. Anxiety is related to emotional stability, tough mindedness and self-confidence.

Spiel Berger (1971) introduced the terms state anxiety that trait anxiety. He defined state anxiety as an immediate emotional state that is characterized by apprehension, fear and tension accompanied by physiological arousal. State anxiety is a temporary, ever changing emotional state. At the same time, trait anxiety is a feature of personality. It is a predisposition to perceive certain environmental situations as threatening and to respond to these situations. It is an acquired behavioural disposition.

METHODOLOGY

The purpose of the study was to analysis the State Anxiety of interuniversity level male sportspersons. Total 448 male players from Basketball, Volleyball, Kabaddi, Kho-Kho and Hockey game were randomly selected as subjects. State Anxiety was assessed by using Questionnaire for Sports Anxiety Test, University of Minnesota, Mories.

The questionnaires were distributed to the subjects for answering two hours prior to the start of scheduled matches. To analyze the differences if any which may exist between the sports persons of selected sports discipline, one-way analysis of variance (f-ratio) was administered LSD post- hoc test was carried out, where ever f-ratio found significant.

FINDINGS OF THE STUDY

Finding pertaining to analysis of variance on the variables of state anxiety in male sportsperson of selected five games namely Volleyball, Basketball, Kho-Kho, Kabaddi, and Hockey is given below.

Table – 1 One-way ANOVA on variables of state anxiety in inter-university level male sportspersons of selected games.

Variables	Source	Sum of Squares	df	Mean Square	F
Cognitive State Anxiety	Between Groups	373.631	4	93.408	5.155*
	Within Groups	8027.289	443	18.120	
	Total	8400.920	447		
Somatic State Anxiety	Between Groups	988.872	4	247.218	13.980*
	Within Groups	7834.048	443	17.684	
	Total	8822.920	447		
Self Confidence Anxiety	Between Groups	332.593	4	83.148	3.335*
	Within Groups	11046.262	443	24.935	
	Total	11378.855	447		
Total	Between Groups	1532.673	4	383.168	5.544*
	Within Groups	30614.896	443	69.108	
	Total	32147.569	447		

*Significant at 0.05 level of confidence.

F 0.05 (4.443) = 2.40

Table–1 reveals that state anxiety among male sportsperson playing Volleyball, Basketball, Kho-Kho, Kabaddi and Hockey was found to be with significant difference as F-ratio was more than table 'F' value of 2.40 at 0.05 level.

Table – 2 Post-hoc Analysis of Cognitive State Anxiety of Male University Sportsperson of selected Games

Volleyball	Basketball	Kho-Kho	Kabaddi	Hockey	Mean Difference
21.1429	19.8690				1.27381
21.1429		20.6429			0.50000
21.1429			22.7381		1.59524
21.1429				20.9018	0.24107
	19.8690	20.6429			0.77381
	19.8690		22.7381		2.86905*
	19.8690			20.9018	1.03274
		20.6429	22.7381		2.09524*
		20.6429		20.9018	0.25893
			22.7381	20.9018	1.83631

*Significant at 0.05 level of confidence.

Table – 2 Depicts that the post-hoc analysis of Cognitive State Anxiety was with significant difference between the male sportspersons of Basketball and Kabaddi, Kho-Kho and Kabaddi game. Whereas there was no significant difference between Volleyball and Basketball, Volleyball and Kho-Kho, Volleyball and Kabaddi, Volleyball and Hockey, Basketball and Kho-Kho, Basketball and Hockey, Kho-Kho and Hockey, Kabaddi and Hockey male players. (**Graph- 1)**

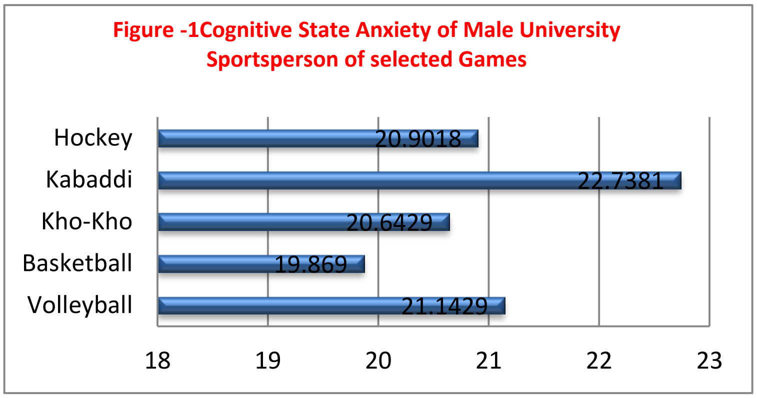


Table – 3 Post-hoc Analysis of Somatic State Anxiety of Male University Sportsperson of selected Games

Volleyball	Basketball	Kho-Kho	Kabaddi	Hockey	Mean Difference
19.7976	17.3929				2.40476*
19.7976		19.4643			0.33333
19.7976			22.2262		2.42857*
19.7976				19.7857	0.01190
	17.3929	19.4643			2.07143*
	17.3929		22.2262		4.83333*
	17.3929			19.7857	2.39286*
		19.4643	22.2262		2.76190*
		19.4643		19.7857	0.32143
			22.2262	19.7857	2.44048*

*Significant at 0.05 level of confidence.

Table – 3 reveals that the post-hoc analysis of Somatic State Anxiety was with significant difference between the male sportspersons of Volleyball and Basketball, Volleyball and Kabaddi, Basketball and Kho-Kho, Basketball and Kabaddi, Basketball and Hockey, Kho-Kho and Kabaddi, Kabaddi and Hockey players Whereas there was no significant difference between Volleyball and Kho-Kho, Volleyball and Hockey, Kho-Kho and Hockey male players. (**Graph- 2)**

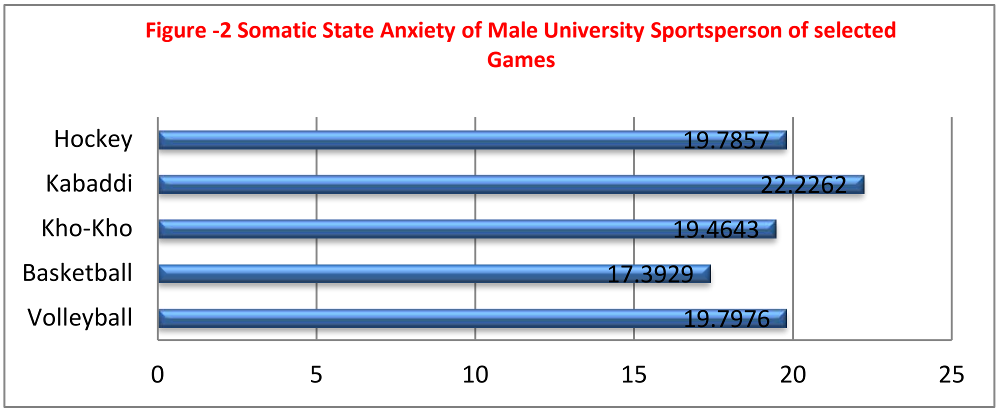


Table – 4 Post-hoc Analysis of Self Confidence Anxiety of Male University Sportsperson of Selected Games

Volleyball	Basketball	Kho-Kho	Kabaddi	Hockey	Mean Difference
24.0595	25.1429				1.08333
24.0595		24.2262			0.16667
24.0595			23.0357		1.02381
24.0595				22.8036	1.25595
	25.1429	24.2262			0.91667
	25.1429		23.0357		2.10714
	25.1429			22.8036	2.33929*
		24.2262	23.0357		1.19048
		24.2262		22.8036	1.42262
			23.0357	22.8036	0.23214

*Significant at 0.05 level of confidence.

Table – 4 reveals that the post-hoc analysis of Self Confidence Anxiety was a significant difference between the male sportspersons of Basketball and Hokey game male players. There was no significant difference between other game players. (**Graph- 3).**

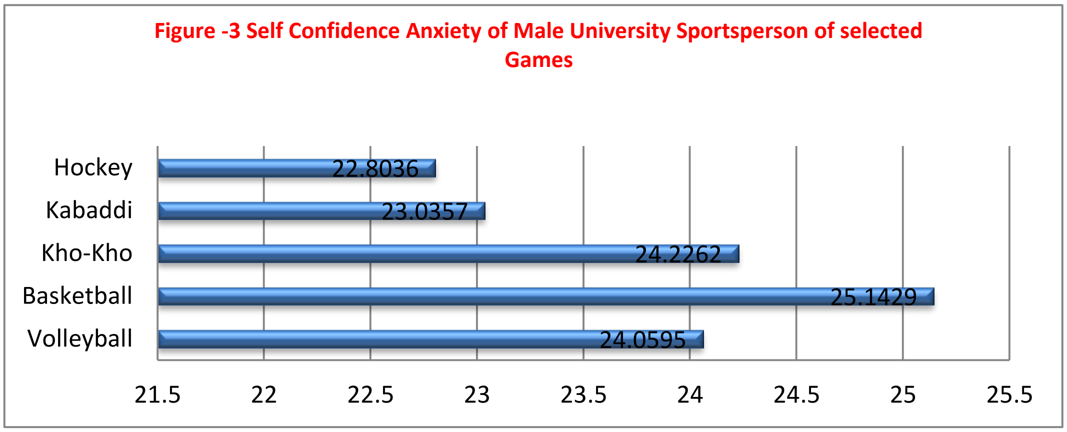
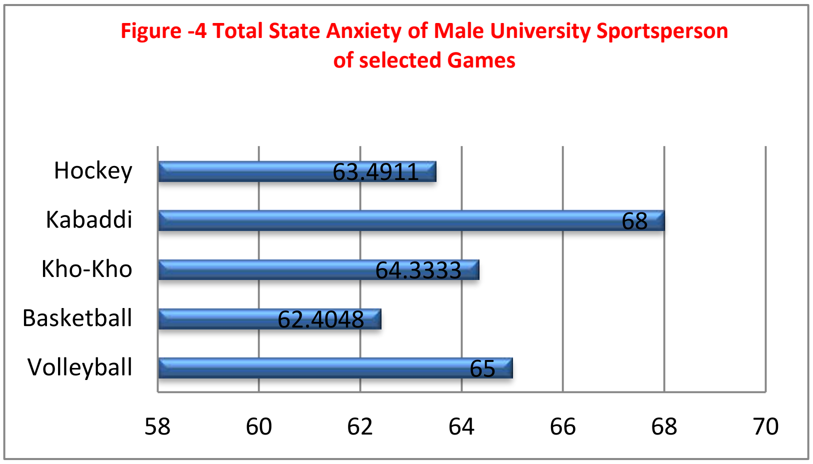


Table – 4 Post-hoc Analysis of Total State Anxiety of Male University Sportsperson of Selected Games

Volleyball	Basketball	Kho-Kho	Kabaddi	Hockey	Mean Difference
65.0000	62.4048				2.59524
65.0000		64.3333			0.66667
65.0000			68.0000		3.00000
65.0000				63.4911	1.50893
	62.4048	64.3333			1.92857
	62.4048		68.0000		5.59524*
	62.4048			63.4911	1.08631
		64.3333	68.0000		3.66667
		64.3333		63.4911	0.84226
			68.0000	63.4911	4.50893*

*Significant at 0.05 level of confidence.

Table – 4 reveals that the post-hoc analysis of Total State Anxiety was a significant difference between the male sportspersons of Basketball and Kabaddi, Kabaddi and Hockey game male players. Whereas there was no significant difference between Volleyball and Basketball, Volleyball and Kho-Kho, Volleyball and Kabaddi, Volleyball and Hockey, Basketball and Kho-Kho, Basketball and Hockey, Kho-Kho and Kabaddi, Kho-Kho and Hockey game male players. (**Graph- 4).**



CONCLUSIONS

Within the limitation of the present study and on the basis of the findings the following conclusions were drawn.

In this age of science, it is our duty to scientifically measure and evaluate those mental aspects of players, which are considered more significant so that further improvement can be made in teams of performance. A great deal of research has been devoted by the researchers to assess how state anxiety affect performance and the results.

i. State Anxiety among the male players of different games male interuniversity level differs significantly in all variables.

ii. Variations and similarity in the various parameters of state anxiety which was observed in this study can be attributed to the psycho-somatic demand of the game, and pattern, regulations and the strategy of the game.

iii. The experiences of the players along with physical potentialities, technical and tactical abilities can also hold its stake in describing the level of various parameter of state anxiety.

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STRATEGIZING EXCELLENCE: ANALYZING POLICIES AND ORGANIZATIONAL FRAMEWORKS IN SPORTS PLANNING

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ABSTRACT

Imagination and years of organized planning have consistently formed the foundation of success for countries like the USA, USSR, UK, and others in the realm of sports. While it may not be practical or feasible to replicate these nations' sports systems entirely, no matter how successful they may be, they undoubtedly offer valuable insights and guidelines for achieving success in sports. The methods of sports promotion and organization in these advanced nations vary significantly, reflecting the societal structures they operate within. However, one universal principle they all share is the emphasis on identifying and nurturing talent from a young age, a concept so widely accepted that it requires little elaboration.

In socialist countries, the sports framework typically emphasizes mass participation and streamlined organization, aiming to engage as many people as possible. In contrast, in other nations, excellence in sports is often driven by sports associations and social groups, where the pursuit of fame, fortune, and recognition serves as a powerful motivator for sustained success.

Strategizing excellence in sports planning requires a multidimensional approach that integrates robust policies, effective organizational frameworks, and stakeholder collaboration. By learning from global successes and addressing current challenges, nations can build sustainable sports ecosystems that foster talent, inspire participation, and deliver excellence on and off the field. **Keywords:** Sports Policy, Organizational Frameworks, Strategic Planning, Sports Development

INTRODUCTION:

The All India Council of Sports has developed a Draft National Sports Policy with three primary objectives. Firstly, it aims to foster a culture of sports and health awareness among the masses, encouraging regular participation in sports and physical activities to build a healthier and stronger nation. Secondly, it seeks to elevate the country's performance in sports and games, ensuring India earns a prominent position in international competitions. Lastly, the policy emphasizes the necessity of providing adequate facilities and infrastructure to enhance standards and achieve better performances in sports and games.

At the core of this draft policy is the acknowledgment of every citizen's right to participate in and enjoy sports, games, and recreational activities.

The key highlights of the draft policy include:

1. Making sports and physical education a compulsory subject in all schools and colleges.
2. Integrating sports as a mandatory aspect of recreational activities in factories and industries.

PURPOSE OF THE STUDY

- ➢ Strategize the development of policies and organizational frameworks that ensure sustainable excellence in sports planning.
- ➢ **Analyze existing sports policies** to identify gaps, strengths, and areas for improvement.
- ➢ **Examine the role of governance and leadership** in shaping effective sports policies and programs.
- ➢ **Propose recommendations** for enhancing policy formulation and implementation in sports organizations.

METHODOLOGY

The study employs a descriptive methodology. It is primarily based on insights gained through personal observations and experiences in Sports Planning, secondary data collected through a review of literature, including journal articles.

Sports Centers in Rural

District Sports Councils should establish a network of rural sports centers, with the Panchayati Raj Department assisting in evaluating the needs and requirements of these centers.

Sports Clubs

The formation of large number of sports clubs should be encouraged. These will serve urban youth, Regular competitions should be arranged between such clubs within the same city and between the clubs in the various cities.

Sports Festivals

Sports festivals should be held at district headquarters once a year and in the state capital at regular intervals. These will help promote sports consciousness.

Indigenous and Traditional Sports

Emphasis should be given to indigenous, traditional, and rural sports such as kho-kho, kabaddi, wrestling, and the like. Yogic exercises should also be propagated and widely practices and included in the schools syllabus as part of physical education.

National Physical Fitness Programme

This program which at present has an annual participation of about 25 lakh people must bereoriented and implemented more meaningfully all over the country as a continuous program. Audio visual publicity and propagation through mass media would help in not only follow-up and feedback but in its further popularization.

Media Play an Important Role

Mass media, such as AIR, print media, and electronic media, must be effectively involved in promoting sports and health consciousness and inculcating the habit of physical exercises as a way of life. They must also consider devoting more time to games and sports TV and AIR may develop a policy. for popularization of games and sports. The firms division can help in these programmers by developing films libraries and in promoting the distribution of films on physical education, sports, and games.

Agencies Play a Role

A board base for sports can be established in the country by securing the assistance of private sports promoting agencies.

Sporting Talent

This should be the responsibility of the States Sports Councils, the District Sports Councils, and the Schools' Games Federation. At the national level, NIS, Patiala, should work in collaboration with the National Sports Federations in coordinating the developing this program. District and State Sports

Councils should be set up wherever they do now exist. They should undertake functions like organizing sports festivals at all levels starting with villages, districts, and the state level. The All India Council of Sports should be vested with more powers to make its role much more effective as a coordinating and supervising body for the promotion of sports in the country.

National Games

The Indian Olympic Association should hold national games once in every 2 year, that is, 6 months before the Olympics and 6 months before the Asian Games. The minimum facilities for the various sports and games should be provided at the village, and district, state, and national levels. These should include laying tracks for athletics and playfields for basketball, football, kho-kho kabaddi, wresting, or any other games popularly in the area the village and taluka levels. More facilities with large sized stadia must be set up both at the state and national levels.

Similar facilities must be made available at schools and colleges which should have separate cricket, hockey, and football fields and courts for basketball, volleyball, and other games along with swimming pools and gymnasia for multipurpose activities. These facilities must be enlarged at the university level.

Preparations for International Competitions

The various agencies should devote more resources primarily on games and sports at which India has a reasonably good chance of doing well with emphasis on hockey and athletics. Adequate training must be imparted at the various coaching institutes and camps much in advance of the competitions.

Sports for Women

The National Sports Festival of Women which should be preceded by state level and district level festivals for women to be arranged by the State Sports Councils and the District Sports Councils, respectively, should continue to be held regularly and should include more and more games and sports.

Special Programs for Tribal Areas

Disciplines which are more popular and in which the tribal belts have a long –standing tradition such as hockey, track, and field events may be assigned to tribal areas special programs for these areas should be planned by the concerned States' Sports Councils.

Separate Ministry / Department of Sports

It is necessary to set up a separate department of sports and physical education, both at the central and the states.

DISCUSSION

The pursuit of excellence in sports is heavily influenced by the effectiveness of policies and the robustness of organizational frameworks. This discussion explores the critical factors, challenges, and strategies associated with analyzing and improving these elements in sports planning.

1) IMPORTANCE OF STRATEGIC POLICIES IN SPORTS PLANNING

Policies are the backbone of sports development, guiding resource allocation, talent identification, infrastructure development, and inclusivity. Effective policies ensure:

Equity and Accessibility: Equal opportunities for athletes from diverse socio-economic and geographic backgrounds.

Talent Development: Frameworks for nurturing athletes from grassroots to elite levels.

Sustainability: Long-term planning for resource management and environmental considerations in sports.

2) ORGANIZATIONAL FRAMEWORKS: THE ROLE OF GOVERNANCE AND LEADERSHIP

Organizational frameworks define how sports institutions operate and deliver their objectives. Key aspects include:

Governance Structures: Transparent and accountable governance ensures fair decision-making and effective management of resources.

Inter-agency Collaboration: Partnerships between governments, sports federations, private sectors, and non-profits enhance coordination and maximize impact.

Leadership: Strong leadership is essential to inspire innovation, resolve conflicts, and drive policy implementation.

Challenges:

- Bureaucratic inefficiencies and corruption often undermine governance.
- A lack of clear role delineation among stakeholders can lead to duplication of efforts and conflicts.

3) ANALYSIS OF EXISTING POLICIES AND FRAMEWORKS

A critical review of existing policies reveals gaps in:

- **Grassroots Development:** Insufficient focus on talent identification and coaching at the community level.
- **Inclusivity:** Limited representation of women, differently-abled athletes, and underrepresented communities.
- **Infrastructure Development:** Inadequate funding and maintenance of sports facilities, especially in rural areas.

4) BEST PRACTICES FOR STRATEGIZING EXCELLENCE

Drawing from successful frameworks, several strategies emerge:

Integrated Policy Design: Aligning sports policies with national goals, such as health, education, and economic development.

Data-Driven Decision-Making: Using analytics to identify trends, monitor progress, and predict future needs.

Investment in Human Capital: Providing training for coaches, administrators, and support staff to improve the quality of sports programs.

Promotion of Technology and Innovation: Leveraging digital tools for talent scouting, athlete monitoring, and fan engagement.

5) RECOMMENDATIONS FOR FUTURE SPORTS PLANNING

To achieve sustainable excellence, the following recommendations are proposed:

IMPLEMENTATION OF THE POLICY

The central and the state government must draws up annual and five-year plans to implement in stage the suggestions made in the policy. They must also be asked to present the annual reports reviewing the implementation of the policy.

Review of national policy

The national policy on sports may be reviewed by the government after every 5 years in consolation with the all India Council of Sports.

Policy Reform: Revise outdated policies to reflect changing societal and global trends in sports.

Capacity Building: Strengthen institutions by providing resources and training to implement policies effectively.

Focus on Grassroots: Increase funding for community-level sports to build a strong talent pipeline.

Monitoring and Evaluation: Establish mechanisms to periodically review and refine policies and frameworks.

Inclusivity as a Core Principle: Ensure representation and opportunities for marginalized groups in all aspects of sports planning.

CONCLUSION:

The effective strategizing of excellence in sports requires a comprehensive approach that integrates well-structured policies with dynamic organizational frameworks. The analysis of global best practices reveals that nations achieving success in sports share common principles, such as early talent identification, strong infrastructure, and inclusive participation at all levels. A key take away from this study is the importance of creating policies that not only focus on elite performance but also prioritize mass participation, equity, and community engagement. Additionally, organizational structures should be flexible, collaborative, and adaptive to changing needs.

As the sports landscape continues to evolve, especially with technological advancements and growing focus on inclusivity, there is a need for constant innovation and dialogue among policymakers, sports organizations, and local communities. By fostering an integrated approach, nations can build strong resilient sports systems that support both individual and collective success, ensuring that sports become a central pillar of societal well-being, health, and global competitiveness.

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APPLICATION OF MODERN TECHNOLOGY IN PHYSICAL EDUCATION

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ABSTRACT

Contemporary information technology has by its very nature, been an agent of change in education institutions. This essay describes the benefits of utilizing technology in education by examining research from around the world which demonstrates that there is ample evidence for supporting the usage of technology in educational environments. Information technology applications in the sports venues in the increasingly wide range of modern venues and facilities, including not only the intelligent application of office automation systems, intelligent systems and sports facilities, communication systems for event management, ticket access control system, contest information systems, television systems , Command and Control System, but also in action including the use of computer technology, image analysis, computer-aided training athletes, sports training system and related data entry systems, decision support systems. At present, the multi-media technology, network technology and satellite transmission technology, as the representative of the information technology is developing very quickly. Modern educational technology based on information technology play a significant role in promoting the modernization of education. To conclude we can say that with the inclusion of technology, the concept of education is undergoing a modification, for the betterment of the students as well as the teachers. Key words: Modern Information technology, Physical education etc.

INTRODUCTION

Our world has been changed gradually form one condition to another. As the result, modern technology has been bringing people certain advantages such as ways for fast communication, the improvement of traveling, and good health care medical treatment. We can get the fast ways of communication through modern technology. Nowadays, people can get hot news from any parts of the world very quickly by using E-mail and Internet. Moreover, telephone-local and oversea is playing a key role for people to communicate to with each other.

The system of imparting education and learning is changing with changing times. Modern science and technology is being used in each and every field in today’s world. The internet has already enhanced the education and learning processes. There was a time when had no access to study materials outside their textbooks. However, internet has made information gathering an extremely easy task.

Students can now easily access and know the various developments taking place at their area of interest at the simple click of a button. Computer has now become part of the school curriculum and nowadays even small kids know how to make a presentation using particular software. In modern technology of today to the use of multimedia teaching physical education teaching methods can improve their understanding of action sports. Links to free download http://www.cn-articles.com is the main sources of information used in the educational system.

The birth of educational technology has proved to be a boon to students the world over. Technology plays a vital role in enhancing the learning process of students and also assists teachers in communicating with the students in an easy way. With the use of computers and software programs, which provide learning materials, technology has changed education to a great extent.

ADVANTAGES OF MODERN TECHNOLOGY IN PHYSICAL EDUCATION

There are a number of benefits of introducing technology in the field of education. There has been a positive impact of technology on education. Here are some of the benefits of educational technology.

TECHNOLOGY DEVELOPS LEARNING CAPABILITIES

One of the benefits of educational technology for students is that it helps them improve their learning capabilities. Since it is one field which is constantly changing, new updates can be easily introduced to the students and class plans can be prepared with the help of the software.

USE OF TECHNOLOGY IN CLASSES

In the Classes teachers use technological tools like Video, audio programs, graphics, images, CD and power point presentations to impart education to the students, which increase students' learning efficiency and quality of physical education.

TECHNOLOGY IMPROVES MOTIVATION OF STUDENTS

When students are given meaningful interaction with computers, software and the internet, they are more motivated, engaged, and involved in their own learning.

TECHNOLOGY IMPROVES CREATIVITY, PROBLEM-SOLVING SKILLS AND SELF-IMAGE

The latest digital tools can therefore serve as a vehicle to help students learn content knowledge as well as problem-solving and higher level thinking skills.

TECHNOLOGY IMPROVES THE QUALITY OF STUDENT WORK

With the introduction of the software which teaches students with special needs, the appropriate study materials are designed so that learning is comfortable.

TECHNOLOGY IMPROVES STUDENT ACHIEVEMENT ON TESTS

There is mounting evidence that technology improves student achievement on tests.

TECHNOLOGY BENEFITS STUDENTS WITH SPECIAL NEEDS

Improved writing is not the only area in which students with special needs benefit from technology. Additionally, students with learning disabilities who used speech recognition software to write essays performed significantly better than fellow students

TECHNOLOGY ACTS AS A CATALYST FOR CHANGE

Technology plays a role in being a catalyst for change in educational pedagogy.

TECHNOLOGY PREPARES STUDENTS FOR THE FUTURE

By having and working with technology in schools, students gain the skills that they will need to be marketable in the future workplace and to operate in a high-tech world.

TECHNOLOGY INCREASES KNOWLEDGE AND OPPORTUNITIES

Through the use of various digital tools, teachers and librarians can also offer students increased access to knowledge and innovative opportunities.

TECHNOLOGY REFLECTS OUR CURRENT LIFESTYLE AND THE WORKING WORLD.

By incorporating meaningful technology use into a curriculum, educators ensure that students will begin to learn these critical thinking skills such as creativity, collaboration and flexibility.

CONCLUSION

With the inclusion of technology, the concept of education is undergoing a modification, for the betterment of the students as well as the teachers. Hence, the introduction of technology is important in education. Thanks to information technology, now learning and teaching have become an enjoyable experience.

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EFFECT OF STRENGTH TRAINING AND COMBINATION OF STRENGTH AND PLYOMETRIC TRAINING ON GRIP STRENGTH AND EXPLOSIVE POWER

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ABSTRACT

The purpose of the study was to find out the effect of strength training and combination of strength and plyometric training on grip strength and explosive power. Forty-five male kabaddi players aged between 19 and 25 years were selected for the study. They were divided into three equal groups, each group consisting of fifteen subjects in which three experimental groups and one control group, in which the group I (n=15) underwent strength training, group II (n = 15) underwent combination of strength and plyometric training for three days (alternative days) per week for twelve weeks, and group III (n=15) acted as control, which did not participate in any training. The subjects were tested on selected criterion variables such as grip strength and explosive power at prior to and immediately after the training period. For testing the grip strength, the dynamometer was used, and to measure the explosive power, standing broad jump was administered. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups and control group on selected criterion variables separately. Since there were three groups involved in the present study, the Scheffé *S* test was used as post-hoc test. The selected criterion variables such as grip strength, and explosive power were improved significantly for the training groups when compared with the control group and the grip strength was improved significantly for strength training group and in explosive power, the combination of strength and plyometric training group was improved significantly. **Key Words:** Strength training, combination of strength and plyometric training, physical fitness, grip strength, strength endurance and explosive power.

INTRODUCTION

Physical training is focuses on mechanistic goals. The overall muscles and some specific skill will develop within particular period of time after the physical training. Physical fitness will be improved by the most of the physical training programme. [1] Dale S. Beach [2] defines training as 'the organized procedure by which people learn knowledge and/or skill for a definite purpose'. It is a process of teaching of particular skill to somebody, either human or animal and the aim is to improve the capacity, performance capacity or productivity of an individual. [3]

Physical training is the most important ingredient to achieve high level of performance of athlete. Its objectives are to increase the highest standards of an athletes' physiological potential and biomotor abilities. [4] Physical training should be given to the athlete on the basis of scientific principles and which, through systematic development of mental and physical efficiency, capacity and motivation, which help the athlete to produce outstanding and record breaking performances. [5]

During a specific period of time, an organized training which involves increasing cycle of training programme which enhance the performance of an individual is called as periodization. [6] During the periodization, the competitor gets optimum adaptation before an important event. Instead of performing the regular routing workouts month after month, the athlete changes his or her program with regular periods or interval to work harder with adequate rest. [7] A study was conducted at Human Performance Laboratory, Ball State University shown that there was a significant improvement in muscular performance was found in favour of periodized strength training programme than the non-periodized program. [8]

The strength training also refers as a type of physical exercise, uses of resistance which enhance the muscular contraction which contributes the strength, increase the size of skeletal muscle and anaerobic endurance. It can improve the overall health and well-being, including the size of muscle, tendon, strengthen and improves the toughness of ligament and joint function, reduced for injury [9] increased the bone density, fitness, metabolism and cardiac function. [10,11]

The Greek terms plio, which means more, and metric, which means to measure, are the roots of plyometrics, which aims to boost power generation. [12] It also increases early concentric force potential and increases the athlete's resistance to higher eccentric muscle stresses. When it comes to high-speed and high-power activities, plyometric training maximises an athlete's gains. [13] It uses the stretch shortening cycle, which is a rapid eccentric contraction followed by an instantaneous concentric contraction. [14,15]

MATERIALS AND METHODS

In this study it was aimed to find out the effect of strength training, and combination of strength and plyometric training on grip strength, and explosive power. To achieve the purpose forty-five male kabaddi players from various colleges around Hyderabad, Telangana State were selected as subjects at random from the total population of 143 kabaddi players. They were divided into three equal groups of fifteen each and further divided as two experimental groups and one control group, in which the group

I (n=15) underwent strength training, group II (n = 15) underwent combination of strength and plyometric training for three days (alternative days) per week for twelve weeks, and group III (n=15) acted as control which did not participate in any special training apart from the regular kabaddi playing activities.

For every training programme there would be a change in various structure and systems in human body. So, the researchers consulted with the experts and then selected the following variables as criterion variables: 1. Grip strength, and 3. Explosive power in terms of horizontal distance.

ANALYSIS OF THE DATA

Analysis of covariance was used to determine the differences, if any, among the adjusted post-test means on selected criterion variables separately. Whenever the 'F' ratio for adjusted post-test mean was found to be significant, the Scheffé *S* test was applied as post-hoc test. The level of significance was fixed at .05 level of confidence to test the 'F' ratio obtained by analysis of covariance.

Table – I

Analysis of covariance and 'f' ratio for grip strength and explosive power of strength training group, combination of strength and plyometric training group and control group

Variable Name	Group Name	Strength training Group	Combination of strength and plyometric training Group	Control Group	'F' Ratio
Grip strength (in Kgs.)	**Pre-test Mean ± S.D.**	35.00 ± 1.01	34.93 ± 0.80	34.98 ± 2.02	0.18
	Post-test Mean ± S.D.	36.07 ± 1.03	36.09 ± 0.89	34.60 ± 1.92	5.99*
	Adj. Post-test Mean	36.028	36.086	34.619	28.86*
Explosive power (in Meters)	**Pre-test Mean ± S.D.**	1.919 ± 0.02	1.910 ± 0.018	1.911 ± 0.027	0.822
	Post-test Mean ± S.D.	1.93 ± 0.019	1.925 ± 0.019	1.909 ± 0.028	4.01*
	Adj. Post-test Mean	1.924	1.926	1.911	27.88*

* Significant at .05 level of confidence. (The table value required for significance at .05 level of confidence with df 2 and 42 and 2 and 41 were 3.22 and 3.23 respectively).

RESULTS - I

Table – I shows that pre and post-test means 'f' ratio of strength training group, combination of strength and plyometric training group and control group on grip strength was 0.18, which is insignificant at 0.05 level of confidence. The post and adjusted post-test mean 'f' ratio value of experimental groups and control group was 5.99 and 28.86 which was significant at 0.05 level of confidence The pre-test means 'f' ratio of strength training group, combination of strength and plyometric training group and control group on explosive power were 0.822 which is insignificant at 0.05 level of confidence. The post-test and adjusted post-test mean 'f' ratio value of experimental groups and control group were 4.01 and 27.88, which was significant at 0.05 level of confidence. The overall study shows that there was a significant increase in grip strength, strength endurance and explosive power. Further, to find out which of the paired mean significantly differ, the Scheffě *S* test was applied and presented below.

Table - II

Scheffě S Test for the Difference Between the Adjusted Post-Test Mean of Grip strength and Explosive power

Strength training Group	Combination of strength and plyometric training Group	Control Group	Mean Difference	Confidence Interval at 0.05 level
Adjusted Post-test Mean Difference on Grip strength				
36.028		34.619	1.409*	0.57
36.028	36.086		0.058	0.57
	36.086	34.619	1.467*	0.57
Adjusted Post-test Mean Difference on Explosive power				
1.924		1.911	0.013*	0.006
1.924	1.926		0.002	0.006
	1.926	1.911	0.015*	0.006

* Significant at 0.05 level of confidence.

RESULTS - II

Table – II shows that the Scheffě *S* Test for the difference between adjusted post-test mean of strength training group and control group (1.409) and combination of strength and plyometric training group and control group (1.467) which were significant at 0.05 level of confidence. But there was no significant difference between strength training group and combination of strength and plyometric training group (0.058) on grip strength after the respective training programme.

Table – II shows that the Scheffẽ *S* Test for the difference between adjusted post-test mean difference in explosive power between strength training group and control group (0.013), and combination of strength and plyometric training group and control group (0.015). But there was no significant difference between strength training group and combination of strength and plyometric training group (0.002) were insignificant at 0.05 level of confidence.

CONCLUSIONS

The result of the present study shows that the grip strength has improved all the training groups except, combination of strength and plyometric training group. Findings of Thomas, Sahlberg and Svantesson (2008) [16] found that resistance training has improved the grip strength in grip strength after 24 weeks whole body vibration and standard fitness training programme (strength and cardio-vascular training). Kumar, (2019) [17] found that the combined training (Plyometric and strength) improved the explosive strength among male kabaddi players. Boyat, Singh and Sandhu, (2017) [18] found that there was a significant improvement in explosive strength after the combined plyometric and strength training programmes.

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EFFECTS OF KETTLEBELL TRAINING WITH AND WITHOUT LOWER LIMB PLYOMETRIC TRAINING ON ISOMETRIC HAND STRENGTH AND EXPLOSIVE POWER

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ABSTRACT

The purpose of the present study was to find the effect of effects of kettlebell training with and without lower limb plyometric training on isometric hand strength and explosive power in terms of vertical distances. For this purpose,forty-five male students from various colleges around Hyderabad, Telangana State, in the age group of 19 – 25 years were selected. They were divided into three equal groups (n = 15), in which group – I underwent kettlebell training with lower limb plyometric training group – II underwent kettle bell training alone and group – III acted as control group who did not participate in any special training. The training period for this study was three days in a week for twelve weeks. Prior to and after the training period the subjects were tested for isometric hand strength and explosive power. Isometric hand strength was assessed by using handgrip dynamometer and explosive power was assessed by administering Sergeant Jump. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental groups and control group on selected criterion variables separately. Since there were four groups involved in this study the Scheffẻ *S* test was used as pos-hoc test. It was concluded from the result of the study that the combined kettlebell training with lower limb plyometric training and kettlebell training alone groups has positively altered the criterion variables, such as, isometric hand strength and explosive power. The result of the study also shown that there was a significant difference occurred between the experimental groups, in favor of kettlebell training with lower limb plyometric training group, on selected criterion variables. **Key Words:** combined kettlebell and lower limb plyometric training, kettle bell training, isometric hand strength and explosive power.

INTRODUCTION

If exercise is paired with research or experience derived from scientific theories, it is more physically beneficial. Sports science is the study of the types of training that optimize the performance of athletes. Study from diverse fields enhances the philosophy and practices of coaching. The old school concept of the science of training has athletes working for their coach or sports scientist who have all the data possible

The mechanisms behind physical exercise arise from physiological, anatomical, biochemical, and psychological adaptations. The basis of this is to increase a person's performance through the length, intensity, speed, load, frequency, and repetition of workouts. Competition will demonstrate the functional and psychological traits, so the schedule during dynamic training should consider the guaranteed components. Although limiting the time spent training during a session or period leading up to a competition is required, such factors can be physiological, psychological or physical and can work in support of achieving the desired goal [Zatsiorsky, (1995)].

The primary goal of training is to encourage biological adaptation in order to enhance performance in a particular task. Certain training and loading must be done in order to hasten physiological progress and change. When a person exercises at a level that is close to normal, the body experiences a variety of training modifications that increase efficiency. Different training techniques are used at various levels to enhance various aspects of physical and motor fitness.

A kettlebell is a cannibal-shaped weight made out of iron or steel with a handle attached. It can be used for numerous workouts, including ballistic workouts that integrate strength, flexibility, and aerobic conditioning. They are the primary implements used in the weightlifting discipline of kettlebell lifting. It is widely accepted, however, that isolated muscle machines are dramatically less effective compared to kettlebell workouts which are built on complex full-body movement for increasing muscular tone, body composition and strength.

In the 2000s, Tsatsouline (2006) popularised hardstyle kettlebell training, which claims to improve health-related physical fitness measures. Its methods promote a unique combination of stress and relaxation. Trials involving younger participants have shown improvements in 1RM barbell deadlift [Maulit et al., 2017], standing long jump and grip strength [Elbadry, Alin, and Cristian, 2018], leg strength and trunk endurance [Beltz et al., 2013], upper limb endurance [Ambroży et al., 2017], dynamic balance and vertical leap [Jay et al., 2013], and VO2 [Falatic et al., 2015].

A profile of the kettlebell swing done by inexperienced older people shows that the peak net ground reaction force is higher during a swing with an 8 kg kettlebell than during a deadlift with a 32 kg kettlebell [Meigh, et al., (2021)]. The swing's potential application in exercise prescription is shown by this study. Anecdotally, older people may and do engage in kettlebell training, despite the fact that there is less data about the activity's impact on this demographic.

Kettlebell training has been credited by several with helping them define and shape their muscles. For example, Reifkind (2018), a certified kettlebell instructor, attributes her initial and subsequent muscular definition to kettlebell swings. A limited number of kettlebell usage variations have been shown to concurrently activate many muscles while placing unique demands on each muscle [Maulit et al., 2017].

It is crucial to concentrate on workouts that target the same muscles as those utilized when combining kettlebells and plyometrics. Goblet squats and kettlebell swings, for instance, may work the hamstrings, quadriceps, and glutes. Box leaps and lateral hops are examples of plyometric workouts that can assist increase explosive power and agility. It’s crucial to keep in mind that good form and technique are required for both plyometric and kettlebell training. In addition, the training intensity should be modified based on the fitness level of the individual.

METHODS

This study under investigation involves the experimentation of effect of kettlebell training with and without lower extremity plyometric training on isometric hand strength and explosive power. Only college male students from various degree colleges around Hyderabad, Telangana State, in the age group of 19 – 25 years were selected. They were divided into three equal groups (n = 15), in which group – I underwent kettlebell training with lower limb plyometric training, group – II underwent kettlebell training alone and group – III acted as control group who did not participate in any special training. The training programme was carried out for three days (Monday, Wednesday and Friday) per week during morning session only (6 am to 8 am) for twelve weeks. Isometric hand strength was assessed by using dynamometer and explosive power was assessed by administering Sergeant jump.

ANALYSIS OF DATA

The data collected prior to and after the experimental periods on isometric hand strength and explosive power of kettlebell training with and without lower extremity plyometric training groups and control groups were analysed and presented in the following table - I.

Table – I

Analysis of Covariance and 'F' ratio for Isometric hand strength and Explosive power for kettlebell training with and without lower extremity plyometric training and Control Group

Variable Name	Group Name	Kettlebell Training with Lower Limb Plyometric Training Group	Kettlebell Training Group	Control Group	'F' Ratio
Isometric hand strength (in Kg)	**Pre-test Mean ± S.D**	35.20 ± 2.18	35.21 ± 1.08	35.53 ± 1.84	0.179
	Post-test Mean ± S.D.	37.80 ± 2.21	37.53 ± 2.00	34.93 ± 2.12	8.45*
	Adj. Post-test Mean	37.912	37.645	34.709	35.32*
Explosive power (No/Min)	**Pre-test Mean ± S.D**	0.209 ± 0.019	0.208 ± 0.018	0.208 ± 0.015	0.028
	Post-test Mean ± S.D.	0.237 ± 0.021	0.260 ± 0.016	0.204 ± 0.011	15.86*
	Adj. Post-test Mean	0.237	0.226	0.204	79.11*

* Significant at 0.05 level of confidence. (The table value required for significant at 0.05 level with df 2 and 42 and 2 and 41 are 3.22 and 3.21 correspondingly).

Table – I displays the 'f' - ratio values of pre-test means of isometric hand strength for kettlebell training with lower limb plyometric training, and kettlebell training and control groups was 0.179which was less significant. The 'f' - ratio of post- adjusted post-test means was 8.45 and 35.32 were superior to the requisite table value of 3.22 and 3.21 for significance with df 2 and 42 and 2 and 41 at 0.05 level of confidence. The result of this study showed that there was a significant dissimilarity among kettlebell training with lower limb plyometric training group, and kettlebell training group and control group on muscular endurance.

The above table shows the 'f' - ratio values of pre- test mean of explosive power for kettlebell training with lower limb plyometric training, and kettlebell training and control groups was 0.028, which was not significant at 0.05 level of confidence. The 'f' ratio of post- and adjusted post-test means was 15.86 and 79.11 were superior to the requisite table value of 3.22 and 3.21 for significance with df 2 and 42 and 2 and 41 at 0.05 level of confidence. The result of this study showed that there was a significant dissimilarity among kettlebell training with lower limb plyometric training group, and kettlebell training group and control group on explosive power.

Further to determine which of the paired means has a significant difference, Scheffẽ *S* test was applied as post-hoc test. The result of the follow-up test is presented in Table - II.

Table - II

Scheffẽ S Test for the Difference Between the Adjusted Post-Test Means of Isometric hand strength and Explosive power among Experimental Groups and control group

Adjusted Post-test Mean of Isometric hand strength				
Combined kettlebell and plyometric training group	**Kettlebell training group**	**Control Group**	**Mean Difference**	**Confidence Interval at .05 level**
37.912	37.645	…	0.267	1.644
37.912	…	34.709	3.203*	1.644
…	37.945	34.709	2.936*	1.644
Adjusted Post-test Mean of Explosive power				
0.237	0.226	…	0.010*	0.006
0.237	…	0.204	0.032*	0.006
…	0.226	0.204	0.022*	0.006

RESULTS

After applying the analysis of covariance, the result of this study showed that there was a significant difference among kettlebell training with lower limb plyometric training group, and kettlebell training group and control group on the changes in isometric hand strength and explosive power after twelve weeks of training. The criterion variables such as, isometric hand strength and explosive power were improved for the kettlebell training with lower limb plyometric training group, and kettlebell training group. Basically the kettlebell training with lower limb plyometric training group, and kettlebell training group has tremendously improves the fitness variables.

CONCLUSIONS

Kettlebell training with lower limb plyometric training group, and kettlebell training group shown significant increases in isometric hand strength as compared to the control group. The results of the study show a significant improvement in hand grip strength after using a kettlebell alone plus lower limb plyometric exercise. Meigh et al. (April 2022), Beltz et al. (2013), and Kavikumar and Arumugam (2020) found that hand grip strength significantly improved with the kettlebell training alone program. Moreover, between the training groups a significant difference in hand grip strength was found in favor of kettlebell training with lower limb plyometric training group.

According to the results of the study, vertical leap was considerably increased by using a kettlebell in conjunction with plyometric training and a kettlebell training program. According to Kim, Jaber, and Yim (2024), a combination of plyometric and kettlebell training led to a notable improvement in vertical leap. Maulit et al. (2017) and Meigh et al. (2022) found that the vertical leap was greatly enhanced by the kettlebell program. Additionally, there was a notable difference between the training groups, particularly in favour of the group that mixed plyometric and kettlebell exercise.

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ASSESSING CORE MUSCLE STRENGTH AND FUNCTION IS KEY FOR PERFORMANCE IMPOVEMENT

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ABSTRACT

This paper presents our experience with the assessment of the strength and function of core muscles to increase the performance of athletes and possibly predict back problems in individuals with excessive spinal load, or on the contrary, with weakened back muscles due to a sedentary lifestyle. Tests assessing velocity and power produced during lifting tasks and trunk rotations can be used for this purpose. Our reseach showed that these tests are reliable and sensitive in differentiating individuals of various ages and performance levels, as well as in revealing the effectiveness of exercise programs focused on improvement of core muscle strength and function.

ASSESSING CORE MUSCLE POWER DURING LIFTING TASKS AND TRUNK ROTATIONS

In order to assess power during a lifting task, a deadlift to high pull exercise with stepwise increasing loads using either the Smith machine or free weights can be used (Zemková et al., 2016). Peak and mean power obtained from this test has been found to be reliable and sensitive in differentiating between physically active and sedentary young adults (Zemková et al., 2016).

In order to assess velocity and power produced during trunk rotations, torso isoinertial dynamometers can be used in laboratory conditions. However, the test adapted from the woodchop exercise, where diagnostic system is directly connected to the weight stack machine, is more suitable for fitness-oriented testing (Zemková et al., 2017a). The subjects perform single repetitions of the cable woodchop exercise in standing or in sitting position with increasing weights up to the weight at which maximal values of power are achieved. They can also perform a set of a pre-defined number of repetitions at a previously established weight to assess strength endurance of the trunk muscles. This test is reliable and sensitive in differentiating between physically active individuals with different performance levels, particularly when it is performed with higher weights (Zemková et al., 2017a). Another alternative is trunk rotations performed with free weights. Subjects perform trunk rotations with a bar over the shoulders with weights increasing from 1 kg by ~5 kg up to a max. of 50 kg. The equipment consisting of an inertia measurement unit (a combination of a three-axis accelerometer and three-axis gyroscope) is inserted in the bar axis. In practice, the power expressed relative to body weight should be used instead of its absolute values, namely for athletes performing standing trunk rotations in their sports. In addition, mean power rather than peak power should be used for data analysis, as it represents a more reliable parameter. In both cases, trunk rotations can be performed while sitting or standing. Standing body rotations allow for greater lower body engagement and contribution of thoracic and hip mobility than seated rotations. The greater range of rotational movement of the trunk in standing than in sitting allows the subject to accelerate the movement more forcefully at the beginning of the rotation. This results in higher velocity and power production in the acceleration phase of trunk rotation, as well as a respective angular displacement in standing than in sitting trunk rotation at weights ≥ 10.5 kg (Zemková et al., 2017b). Furthermore, the strong relationship between the power produced during the standing and seated trunk rotations with a weight of 5.5 kg suggests that these exercises are similar in terms of power production. However, low correlations between power produced during standing and seated trunk rotations at ≥10.5 kg suggest that these tests measure different qualities. While seated trunk rotations are suitable for sports such as canoeing, standing trunk rotations would be a more specific alternative for many other sports such as baseball, golf, tennis, hockey or karate and boxing.

ASSESSING CORE MUSCLE POWER IN ATHLETES OF VARIOUS SPORTS AND PERFORMANCE LEVELS

Our preliminary studies have shown that trunk rotational velocity and/or power are the highest in ice-hockey players and canoeists, followed by rock & roll dancers, judoists, wrestlers, tennis players, golfers, karateists, and finally ballroom dancers, with small differences depending on the additional load used (1 kg or 20 kg). A comparison of individual values also revealed higher trunk rotational velocity and/or power in a canoeist than a rower, a weightlifter than a bodybuilder, and an ice-hockey player than a karateist. These differences may be attributed to their training specificity involving trunk rotations at various velocities under various load conditions.

Further study showed that the highest power at higher weights is produced in grappling sports athletes (judo, wrestling) who require a great explosive power of upper and lower body to lift and throw the opponent and water sports athletes (canoeing, kayaking) who exert a great force against the water (Zemková et al., 2020). On the other hand, the highest power is produced at lower weights or at higher velocities in ball sports players (golf, hockey, tennis) and combat sports athletes (tae-kwon-do, thai-boxing, karate, boxing) who generate high force in a short period of time (Zemková et al., 2020). The highest values of power are achieved in combat sports athletes (max. at 10.5 kg), followed by water sports athletes (max. at 20.0 kg), grappling sports athletes (max. at 15.5 kg), and ball sports athletes (max. at 10.5 kg). Furthermore, angular velocity is the highest at higher weights in water sports athletes and at lower weights in combat sports athletes. Water sports athletes produce the highest force at lower velocities, whereas combat sports athletes produce the highest force at higher velocities. These between-group differences in force–velocity–power production during trunk rotations may be ascribed to the specificity of their training methods used (Zemková et al., 2020).

Trunk rotational velocity and power is also assessed in athletes of gymnastic (aerobic and acrobatic gymnastics) and dance sports (ballroom and rock & roll dancing). Their values are significantly higher in males than in females at weights ≥10.5 kg (Zemková et al., 2022). Alternatively, power and force are greater at higher velocities in females than in males. The highest power is usually produced at 15.5 kg in males and at 10.5 kg in females. These gender differences in trunk rotational power and velocity can be attributed mainly to the specificity of their acrobatic and dance elements including repetitive body rotations.

For athletes trained in asymmetric sports, it is also appropriate to assess side-to-side differences in trunk rotational velocity and power. Its values are higher on the dominant than non-dominant side in golfers (11.9%) and tennis players (9.4%), whereas there are no significant between-side differences in a control group of physically active subjects (6.2%). Similarly, power produced in the acceleration phase of trunk rotations is significantly higher on the dominant than the non-dominant side in golfers (~15%), ice-hockey players (~14%) and tennis players (~12%) compared to no significant between-side differences in a control group of physically active subjects (Zemková et al., 2019). As these asymmetries may represent an increased risk of low back pain and related injuries, a parameter expressed as a dominant/non-dominant power ratio could be considered specific for identifying the likelihood of back problems in athletes trained in sports such as golf, tennis, hockey and so on

Another group, in which trunk rotational velocity assessment can be applied, is wheelchair athletes. We found that paralympic table tennis players produce lower velocity in the acceleration phase of trunk rotations compared to able-bodied athletes (Zemková et al., 2018b). Additionally, lumbar inversion and pelvic retroversion were lower in para table tennis players compared to able-bodied athletes. However, values of thoracic kyphosis were similar in both groups. Furthermore, trunk rotational velocity correlated with angular displacement in both groups, while with lumbar curvature and pelvic tilt angle only in a group of para table tennis players. It is therefore very likely that slower velocity of trunk rotations in para table tennis players may be due to their limited range of trunk rotational motion. A reduced posterior concavity could also contribute to these lower values. However, other biomechanical factors may also play a role in the relationship between these variables.

Due to the fact that even middle-aged and older recreational athletes are engaged in sports such as tennis or golf, it is necessary to include the assessment of velocity or power produced during trunk rotations in their test battery. We found that velocity in the acceleration phase of trunk rotation and the respective angular displacement are significantly lower in older than young adults (Zemková et al., 2018a). A slower velocity of trunk rotations in older adults is most likely due to their limited range of trunk rotational motion. This was corroborated by the significant correlation between these variables, with older than young adults accounting for a higher proportion of variance. Increased trunk stiffness in the older adults could contribute to a significant interaction between age and trunk angular displacement in determining trunk rotation velocity.

ASSESSING CORE MUSCLE POWER AFTER VARIOUS TRAINING PROGRAMS

One study evaluated changes in trunk rotational power at different weights and velocities after 6-week preparatory and 6-week competitive periods in ice-hockey players, tennis players, and canoeists (Poór and Zemková, 2018). In tennis players, mean power in the acceleration phase of trunk rotations increased significantly at weights from 10 to 26 kg after the preparatory period and at 6 to 26 kg after the competitive period. In ice-hockey players, the trunk rotational power significantly increased at weights ≥12 kg after the preparatory but not after the competitive period. In canoeists, the values of power produced during trunk rotations significantly increased at weights ≥10 kg only after the preparatory period. These changes in trunk rotational power reflect the specificity of their training in preparatory and competitive periods and provide a basis for designing exercise programs for improvement of core muscle strength and function.

Another study investigated the effect of 12-week core strengthening and weight training on muscle strength, endurance and flexibility in school-aged athletes (Kumar and Zemková, 2022). Ninety male athletes aged 12 years were randomly divided into group one, which underwent core strengthening training, group two, which underwent weight training, and a third control group. The training was for 12 weeks, with three sessions per week (one hour per session). Both experimental groups improved more in abdominal strength, endurance, and flexibility compared to the control group. Furthermore, abdominal strength and endurance improved slightly more after the weight than core strength training, whereas flexibility increased slightly more after the core strength than weight training. This indicates that both core strengthening training and weight training are effective in improving physical fitness in school-aged athletes; however, the improvement is to differing extents regarding their endurance, flexibility, and abdominal strength.

Third study evaluated the effect of 3-month resistance training and 3-month aerobic training on power produced during a modified lifting task, in the form of deadlift high pull with increasing weights up to maximal power, in overweight and obese subjects (Zemková et al., 2017c). The power significantly increased during a lifting task with weights from 30 to 50 kg (~40%‾ 60% of 1 RM) after the resistance training but not after the aerobic training in the overweight and obese.

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PHYSICAL EDUCATION IS A PART OF EDUCATION AND ENHANCING BODY, MIND, AND CHARACTER THROUGH PHYSICAL ACTIVITIES

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ABSTRACT-

Physical education (PE) is a vital component of the education system, focusing on the holistic development of individuals. The primary objective of PE teaching is to nurture overall personality development, encompassing physical, mental, emotional, social, and spiritual growth. These aspects are systematically enhanced through participation in physical activities based on health and social norms, such as values, behaviour, and fair play. The method used in this research is descriptive method with survey techniques. The study aimed to assess the impact of physical education on students' personality development. A descriptive method with survey techniques was used, involving a population of 180 students. The focus was to observe how participation in physical activities contributes to various developmental aspects. **Keyword**–physical, education, character

INTRODUCTION:

In sport and physical activity can be established the positive traits of personality and social responsibility. [1] Thus, with the right strategy it is in line with the six pillars of character; trust, respect, responsibility, fairness, caring and good citizenship. [2] However, these character, sportsmanship and disciplines in sports cannot positively influence character development especially if 'winning' being emphasized. [3] Perhaps, the 'winning emphasize' implants for coaches and athletes by the administrators will invite inappropriate behaviour like cheating, overly aggressive or taking drugs for better performances. [4] Character education describes curriculum developed to teach children about essential traits needed to build good character. It is a deliberate effort to develop noble character and cultivate core virtues that are worthy for the individual and society as a whole. It requires careful, calculated planning for success. [5] It deals with teaching students to develop the ability to decide how to behave in an appropriate manner in various social situations with the purpose of developing individuals who are capable of understanding moral values and who choose to do the right thing.[6] defined character education as any overt or conscious attempt to affect the development of desirable individual traits or qualities. The value of cooperation can also be done. Physical education through cooperation with habituation team / group on sports games. The success of a team sports is determined by the cooperation of each team member. Attitude of cooperation in this sports game expected to be implicated in the life society in a broader field. The material in the form of games and physical education and sports terms with binding regulations. Habituation obey the rules in the game and this exercise is expected to be implicated in other areas of life more broadly. Obedience of the rules is one indication discipline and responsibility. To in still this value through physical education can be done with some the action of which is to familiarize participant's students help teachers prepare learning tools, in still a sense of empathy to a friend or foe play when it suffered an accident, visit a sick friend, to raise funds through the social event sport, exercise with sportsmanship, and a friendly match. Sensibility social on the sports field is expected to implemented in public life so bring a shared affection, mutual help, and empathy for the suffering other people. Although a number of definitions and interpretations of character education are found in the literature, the content of programs typically align with the core principles and values of generosity, kindness, honesty, tolerance, trust, integrity, loyalty, fairness, freedom, equality, and respect of and for diversity. [7] Experts in the field of character development recommend implementing a character education curriculum in the elementary and middle school years which includes the aforementioned traits to help students become responsible, respectful, contributing members of our democratic society. The value of cooperation can also be done in physical education through cooperation with habituation team / group on sports games. The success of a team sports is determined by the cooperation of each team member. Attitude of cooperation in this sports game expected to be implicated in the life society in a broader field. The material in the form of games and physical education and sports terms with binding regulations. Habituation obey the rules in the game and this exercise is expected to be implicated in other areas of life more broadly. Obedience of the rules is one indication discipline and responsibility. To instil this value through physical education can be done with some the action of which is to familiarize participant's students help teachers prepare learning tools, instil a sense of empathy to a friend or foe play when it suffered an accident, visit a sick friend, to raise funds through the social event sport, exercise with sportsmanship, and a friendly match. Sensibility social on the sports field is expected to implemented in public life so bring a shared affection, mutual help, and empathy for the suffering other people.

Character traits such as morality, self-esteem, self-efficacy and resilience have been associated with desirable life outcomes, including lower levels of stress, experiencing positive growth after stressful periods, fewer alcohol and drug related problems, Academic achievement, being willing to set challenging life goals, and pro social behaviour. [8] It is natural therefore that attempts are made to promote these positive character qualities in young people. While well-structured and implemented programs and interventions may positively influence elements of character, research in the area of physical education and character development remains scarce.

Physical fitness involves physical, organic freshness and freshness motor. Physical concerns the proportions of the body, the relationship between bone, fat, muscle, height and weight. While organic freshness includes equipment efficiency increase of the body such as the heart, lungs, liver, kidneys and so on. Agility, strength, balance and flexibility associated with motor freshness someone. [9] detailing the purpose of physical education as follows: (1) development of the individual, concerning the efficiency of physiological and physical balance; (2) address the environment that emphasizes the special orientation and manipulation of objects; and, (3) social interaction that includes: communication, interaction between groups and cultures.

II. RESEARCH METHOD

The approach used in this study is a qualitative approach, in which this approach is a research procedure that produces descriptive data with observed behaviour, an approach that describe or examine more deeply a situation exists in the field with a view to know the character building of students. This type of research is qualitative descriptive to gather various information about phenomena that are in the field of research. This research was 180 students conducted at Dr. B. R. Ambedkar School (Hyderabad). This school was chosen as field of research because the schools run the counselling in accordance with the procedure counselling and character education curriculum that has been set. This can be seen in the implementation of daily learning activities by teachers who implement character education lesson and guidance and counselling teachers who nurture students in accordance with character education. The subjects of this study were the teacher of guidance and counselling, the principal and subject teachers. Data collection techniques performed by the authors in this study were the observation, survey, documentation and interview with the respondent.

Research design and Method

The research process was conducted using qualitative methods by placing the researcher as its main instrument comes with using observation sheet related to the dimensions of character education in physical education at school. The use of qualitative methods to move from a phenomenological paradigm, which is a paradigm that seeks to understand the conditions and needs of the school physical education programs as part of the overall educational process. Through these qualitative methods, the research setting is not manipulated, but done in a situation where the phenomenon exists. In other words, the context in which human behaviour and social phenomena under study should occur naturally. Conditions studied appropriately left in a state, a background circumstances who require the facts as a whole that can't be separated from its context.

TABLE I. VALUES STUDENTS VARIABLE

Value Variable (Misbach, 2006:18)			
Conceptual	**Operational**	**Sub Variable**	**Indicator**
Anatomy	Knowledge (core value)	Intellectual Empathy	Honesty, Grace, Respect discipline, respect the rules
Heteronomy	Discipline	Culture	
Sociology	Community	Behaviour	
Autonomy	Sociable Environment	Self-control	

TABLE II. CHARACTER STUDENTS' VARIABLE

Character Variable (Misbach, 2006:19)			
Conceptual	**Operational**	**Sub Variable**	**Indicator**
Cognitive	Moral	Rational Knowledge	Cooperation, problem solving
Affective	Ethic judgment	Ethic	
Volition	Commitment	Good and bad commitment	
Behaviour	Knowledge of the value	Habit	

III. RESEARCH FINDING AND DISCUSSION

The result of research indicating there are some characters that are owned by physical education (PE) that can form a positive character in children include:

First, PE tend to use or utilize the equipment or facilities in our environment without having to buy so need imagination and creativity.

Second, increase problem solving ability in children, stimulate the development of language and verbal skills, develop social skills, and a container of emotional expression.

Third, the games learning materials in physical education means foster social skills in children. Play allows children to interact with their social environment to teach children to recognize and respect other people.

Fourth, the games learning materials in physical education means to develop the capabilities and potential of children and can allow the child to recognize different kinds of objects, recognize its nature, as well as the events that occur in the environment.

Fifth, the games learning materials in physical education view the noble values and moral messages such as shared values, honesty, responsibility, attitude gracefully (if you lose), and obey the rules.

The sport participation has been a major part of our life in the societies. Studies on sports participation have found that sports have both positive and negative influence on character buildings.

The essential for learning character through sport players will respond by playing by the rules as long as values are consistently and relentlessly made central to how games are played. Character is not automatically built through sports. It can only be achieved through the efforts of parents, teachers, and coaches to demonstrate sportsmanship and other positive values. These examples of programs and strategies for teaching character put an emphasis on values. Bed on the research results, it can be analysed that the character building of students conducted by teacher through guidance and counselling services was relatively good. That is, the counselling teachers in cooperation with principals, subject teachers and other school staff have been working to establish and build the character of students in accordance with the applicable norms both within the school and in society.

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COMMON INJURIES IN BOXING – A REVIEW

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ABSTRACT:

Boxing was the sport with highest risk of injuries together with soccer, taekwondo, hockey, handball, and weight lifting during the summer 2008 Olympic. Boxing has become a controversial sport because of the degree of injury, long-term sequel, and occurrence of death during competition. Sports injuries result from acute trauma or repetitive stress associated with athletic activities. Sports injuries can affect bones or soft tissue (ligaments, muscles, tendons). There are numerous sports injuries happened in the field of sports. The sample for the study consists 30 Male Boxers of different weight Categories in Telangana State between the age group of 20 to 22 Years. The questionnaire was used in the study. It is concluded that Boxers has secured the Head, Neck, face injuries and eye are 70 %, upper extremities injuries are 15 %, and Spine 5% and lower extremities 10%. It was concluded that Boxers are more prone to head, neck, face and eye injuries. The study also helps injured athletes and coaches to select recovery technique depending on type of injury. Keywords: Boxing, Sports Injuries, head and neck etc.

INTRODUCTION:

Every day, a lot of people all over the world participate in games and sports activities or competitions. Participation in sports improves physical fitness and overall health and wellness. Games and sports can also result in injuries, some minor, some serious and still other in life long medical problem. Sports injuries result from acute trauma or repetitive stress associated with athletic activities. Sports injuries can affect bones or soft tissue (ligaments, muscles, tendons). There are numerous sports injuries happened in the field of sports. It is very important for all coaches, trainers and players to know the causes symptoms, prevention and treatment for all these common injuries in order to avoid most of these types of injuries, also to update the poor training methods.

Boxing was the sport with highest risk of injuries together with soccer, taekwondo, hockey, handball, and weight lifting during the summer 2008 Olympic. Boxing has become a controversial sport because of the degree of injury, long-term sequel, and occurrence of death during competition. Deaths to boxing participants have been reported in a more comprehensive manner than deaths as a result of any other combat sport type. Furthermore, very limited data exist for deaths occurring in other combat sports. In boxing, head injuries generally occur because of contact between the fist and head, head and head, or head and some part of the boxing ring. A number of factors that affect the outcome of neurological injury in combat sports have been assessed in a laboratory setting. These include the region of the head that receives the contact, the magnitude, force, and direction of the contact, the use of gloves and their associated weights

Adkitte, Roshan Gopal; Bardgujar, Sharka; Yeole, Ujwal; Gawali, Pravin; Gharote, Gaurai (2016) Several changes have occurred in Olympic boxing in last few decades. In March 2013, the use of headgear was banned to reduce the incidence of cerebral concussion. This reduced the concussion rate to 0.17% but affected the boxer's psychology and also the way boxers and coaches prepare. The boxers feel safer to take the risk wearing headgear that they simply would not do if they are not wearing one. Furthermore, three fatal incidents of professional boxing make it important to find out the prevalence of injuries in competitive boxers. The aim of this study was to find out the prevalence of injuries in national level boxers of India that occurred during the bout or training. The study was conducted as a retrospective and was carried on 54 national level boxers ranging between 11 and 35 years. Fifty-four boxers reported with 820 injuries in 2 years. Each boxer sustained 15.18 injuries in 2 years on an average, i.e., 7.59 injuries/year on an average. The injury rate per boxer was 9.64/1000 h of training. The injuries of head and face (42.92%) are more frequent followed by the injuries of upper limb (33.90%). Soft tissue lacerations and contusions are common. Furthermore, frequent low back pain (5%), calf cramp (3.41%), and high ankle sprain (4.4%) were reported because of training. The study suggests that the most common type of injuries in boxers is the soft tissue lacerations and contusions, and the most common site of injury is the head and face region. Common injuries due to training are low back pain, calf cramp, and high ankle sprain.

METHODOLOGY

The sample for the study consists of 30 Male Boxers of different weight categories Telangana State between the age group of 20 to 22 Years.The questionnaire were used in the Study.

RESULTS AND DISCUSSION.

Table 1: Percentage of Injuries among Boxers

lower extremities injuries (Sprained Ankle, Calf cramps Heel Pain etc)	Upper Extremities(shoulder, Wrist and elbow injuries,	Head, Face Neck and Eye Injuries	Spine
10	15	70	5

Table No. 1; It is concluded that Boxers has secured the Head, Neck, face injuries and eye are 70 %, upper extremities injuries are 15 %, and Spine 5% and lower extremities 10%. It was concluded that Boxers are more prone to head, neck, face and eye injuries.

CONCLUSIONS:

It is concluded that Boxers has secured more injuries in the Head, Neck, face injuries and eye compare to shoulder, Spine etc.

RECOMMENDATIONS

The following suggestions are made for the benefit of players, coach’s academicians and sports scientists.

- The study also helps the injured athletes, physical educationist, sports scientists etc for their ongoing activities.
- The study helps the physical educationist and coaches for selecting the best recovery techniques for injured athletes.
- The study also helps the physical educationists and coaches compass the knowledge of performance and recovery among injured athletes.

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EXERCISE PHYSIOLOGY AND ITS SIGNIFICANCE

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ABSTRACT:

Exercise physiology is the study of how the body responds to physical activity and how it adapts to it overtime. This exercise physiology improves health by conditioning them to be more physically fit. This helps athletes achieve peak performance by applying research findings to exercise testing, performance evaluation and safety. Exercise physiologists study physical activity affects the body's physiological functionally overtime. The cardio vascular response study how the heart, blood pressure and coronary circulation respond to exercise musculo skeletal response study how the skeletal muscles, ligaments and tendons respond to exercise hormonal responses study how the endocrine system responds to exercise. Exercise physiologists work with clients to understand the benefits and risks of physical activity by conducting health and risk assessments. They help clients understand how their injuries may affect their performance. Exercise Physiology study the effect of exercise on pathology, and the mechanisms by which exercise can reduce or reverse disease progression. Prolonged exercise snch as marathons can increase cardiac bio markers such as tropomin, b type natriurctic peptide (BNP), and is chennia modified (aka ml) albumin. This can be misinterpreted by medical personnel as signs of myocardial infarction or cardiac dys function. In these conditions, such cardiac biomarkers are produced by irreversible injury of muscles.

Keywords: Exercise Physiology, Blood Pressure, Skeletal muscles, Tropornid, Albunin, Cardiac biomarkers, Physical activity

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A STUDY OF RECENT INNOVATIONS IN TECHNOLOGY MEANT TO IMPROVE PERFORMANCE IN SPORTS

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ABSTRACT:

Technology advancements have had a significant impact on exercise science and sports. Today's sports and exercise research would be impossible without technology. The use of technology is always fraught with unease and disappointment. Paradoxically, people's inability to fully appreciate the breadth, complexity, and ambiguity surrounding the use of various technological innovations in sports contributes significantly to the widespread use of technology. Indeed, sports technology has had a considerable impact on the field of sports and exercise research. It's important to remember that technology has radically altered how we perceive the athletic physique. To get a better understanding of how technology affects sports performance, this study looks at several types of sports technology, its advantages and limitations, and technological concepts. **Keywords:** Sports technology, Instrumentalist theory, Critical theory, Sports database

INTRODUCTION:

Modern sports integrate more complicated technology with natural athletic ability, artificial intelligence, and advanced analytics to get the greatest outcomes on the field. Technology is just one factor among many that make sport successful, which thrills people as a result of human achievement, claims Barr [16]. Sports have always exploited technology in a variety of ways, with top sports benefiting the most. Because there are so many definitions of technology, some people say it can't be adequately characterized. It incorporates every little device ever made and, on the one hand, relates to science and critical thinking. Skilled athletes, amateur runners, and spectators are finding it simpler to participate in the sport because to technology, claim Cave and Miller [15]. Technology resides both outside and inside us. Another memorial to the fact that so many athletes have been technologically boosted or transformed into more technologically sophisticated by contact lenses and other healthcare procedures is the residue of painkillers and multivitamins that persist in our system on any given day of the week. According to Feenberg [9] and Miah [11], technology is any intellectual, procedural, or material component of contemporary sport and exercise science that seeks to advance [12, 17, 20]. Prior to the technological revolution, the primary objectives of technology usage in sports were athlete screening (diagnostics), improved sports equipment through improved designs and engineering, and increased use during events. The earliest usage of electronic timed touch pads for swimming (1957), physiological testing apparatus (1920s), are all excellent instances of early sports technology.

Technology plays a significant role in modern sports, both as a required component of some activities (like motorsport) and as a tool to enhance performance in others. Thematic uses of technology include things like media broadcasting and communications, performance analytics, facilities, competition forms and adjudication, apparel and wearables, and sports equipment. As a result, there has been considerable turbulence in the interaction between sport and technology over time [12]. Sports and technology didn't seem like the most sensible combination at first [14]. Due to the quick integration of technology, sports, and the necessary equipment, several jobs are combined into a single tiny gadget.

However, if sports science hadn't been specialized and tailored to help athletes succeed in real world ways, current symbols would not have evolved as they have. Technology is enabling rapid advancements in sports and enhancing performance in other domains. As a result, technology applications provide a variety of functions, including enhanced performance, injury prevention, player administration and tracking, stimulations, training, and validity of outcomes [5]. Athletes utilize technology as a tool to try to improve their training and competition environments in order to perform better overall. It is regarded as a technological instrument or approach for achieving particular goals. Thus, the study looks into how technology affects athletic performance.

A. TECHNOLOGY RELATED PERFORMANCE THEORIES:

One of the most well-known technology philosophers, Feen Berg [9], articulated his theoretical views on technological advances. Technological developments can have either beneficial or bad impacts, depending on how they are seen. Heidegger [6] pointed out the basic objections concerning technology as ideology, whereby innovations are sometimes perceived as manipulating their users by encouraging reliance and distorting interpersonal interactions rather than serving as a tool for humankind. Some common theories are:

I Instrumentalist theory: The most commonly recognised theory of technology is the instrumental theory. Its underlying premise is that technology is a "tool" that can be employed to satisfy consumer needs. According to the instrumentalist viewpoint, technology is a neutral tool having special uses and methods. Instrumentalists think that technological improvement will come after a lengthy period of gradual, steady growth. The instrumentalist viewpoint sees modern lighter racquets as merely additional aids in the never-ending quest for improved performance. Athletes are employing whatever resources are available to them to outperform their rivals, just like other technology.

II Substantive theory: A competing theoretical perspective known as the substantive theory maintains that innovation is neither completely under human control nor impartial. Substantive theory holds that technology's impact on people and the environment is more important than its claimed goals. In terms of its perception of the new tennis racquet, this is a negative opinion by Tenner [3]. It might be believed that newer racquets are connected with specific values. For example, the new design seems to prioritise speed and power above elegance, despite the racquet developers' intention to make a better, lighter racquet that would allow players to smash the ball faster and harder. Both the determinist and substantive viewpoints argue that once technologies are in application, they might take on a life of their own, making it increasingly difficult to return to more "natural" performance-enhancing approaches. In the end, technology will dictate the kind of sports we play, the strategies we employ, and the most qualified individuals to compete.

III Determinist theory: According to determinists, technological progress is sporadic. Stated differently, they view technological advancement as a constant series of ground breaking advancements rather than a slow, evolutionary process [18,19]. One of the most commonly cited works of determinism is Future Shock, written by Alvin Toffler in 1971. "Behind such prodigious economic facts lies that great, growling engine of change technology," he writes, summarising the determinist worldview after providing many instances of quicker economic growth. While acknowledging that other elements have a role in societal transformation, he goes on to argue that "technology is undeniably a major force behind this accelerative thrust". Though they all agree that technology is a transformative and independent force. Technological determinists occasionally differ over the ethical implications of it. Deterministic thinking holds that although technology has developed into an autonomous or autonomous system, it is neutral or devoid of values. The determinist perspective would consider the recently invented tennis racquet as a technology that, once it was incorporated into the game, would have a "life of its own" and compel athletes to use it whether they wanted to or not. The racquet's very presence means that if one athlete chooses to use it, other athletes will be forced to do the same. Furthermore, this particular technological advancement could potentially permanently change the way tennis is played if the newly created racquet gives high-velocity servers an even greater advantage.

IV Dynamic systems theory: Dynamic systems approach has emerged as a powerful framework for athletic performances modeling when we talk about movement sciences. The human movement system, therefore, can be regarded from the dynamical systems perspective as a very complex network of interdependent subsystems (skeletal, muscular, circulatory, neurological, respiratory, and perceptual) composed of many interacting components (bone, muscle fibers, connective tissue, oxygen molecules, metabolic enzymes, and blood cells). The patterns of motion are created by universal self-organizing mechanisms found in physical and biological structures, according to the dynamical systems theory [8]. The development of temporary groupings of muscle complexes or coordinated structures considerably lowers the biomechanical degrees of freedom of the motor system, according to dynamic systems theorists [1]. Dynamic systems analysts contend that the biomechanical degrees of freedom of the motor system are greatly diminished when coordinated structures or temporary groups of muscle complexes are formed [1]. Goal-directed actions are made easier by the development of functionally preferred synchronization or attractor states, which are facilitated by the motor system's reduced dimensionality as well as complexity. For certain aims, the dynamic systems exhibit predictable movements because to their great organization and stability within each attractor area, which is the immediate surroundings of an attractor. Nonetheless, diversity in several attractor zones allows for flexible and adaptive motor system operation, allowing each individual to freely experiment with different performance settings. Expert athletes are able to sustain their level of motor output while varying it during the competition due to the paradoxical relationship between stability and variability. Variability in movement behaviour allows performers to explore goal and environmental constraints in order to enhance motor learning and progressively create stable motor solutions. The concern that sports biomechanics research need a shift from a descriptive to an analytical level has long been voiced by several eminent researchers like Elliott [7]. Most performance-focused sports biomechanics research is theoretically weak and seldom makes reference to broad biomechanical principles, motor control theory, or the physical laws that underlie them, according to Bartlett [10]. The concept of dynamic systems may therefore provide a helpful theoretical framework for performance-driven sports biomechanics research because of its interdisciplinary approach to the coordination as well as control mechanisms in the human motor system.

V. Critical theory: A change to a more sceptical understanding of technology is advocated by Feen Berg [9]. According to critical theory, technology is a "ambivalent" process of advancement situated between various possibilities, not a thing in the ordinary sense of the word. In contrast to neutrality, this "ambivalence" of technology is defined by the significance it places on social norms in the creation of technical systems rather than only in their use. According to this viewpoint, technology is a battlefield rather than a predetermined outcome. Although it is a social battlefield, a parliament of things, where civilizational possibilities are debated and selected, could be a more accurate description. A critical theory reveals the Technological politics and values of technology. As a result, those who oppose the widespread use of new tennis racquet technology would support more open dialogue on the politics of the sport and ask questions such as "Who will have access to this equipment?" "Who decides whether a particular gear should be legal or prohibited on the professional tour?" as well as "long-term impact on the sport".

B. SPORTS TECHNOLOGIES:

Numerous sports, such as cycling, tennis, skiing, football, speed skating, surfing, squash, swimming, golf, jogging, and many more, benefit from the usage of modern technology. There are many ways that technology is used in sports today, and every new advancement might be advantageous. Using a simple typology, sports technology is separated into five groups; however, these categories are not mutually exclusive, and frequently, the same technologies may be included in more than one category. Self-optimization, database, motion, landscape, and rehabilitation are examples of technologies in this area. By studying a variety of sports technologies, we may gain a better understanding of the technological possibilities that athletes will eventually encounter and how they will affect their athletic performance.

I Landscape technologies: The sports environment is impacted by this type of technology, especially how fans perceive athletic events. The emergence of contemporary multifunctional sports facilities equipped with artificial grass, Mondo tracks, soaring cameras, collapsible domes, and Jumbo Tron screens is a notable development in landscape technology. Modern athletes have a close connection to technologically enhanced sporting situations, according to Bates [2]. As they approach the finish line, track and field athletes modify their strategies since they can see their opponents on the Jumbo Tron. Some people even throw discuses and javelins. It's amazing how often the high-tech stadium tries to replicate the ambiance of stadiums with more traditional architecture. Similar to other aspects of life, technology has had a significant influence on sports science and exercise [4]. In actuality, it is difficult to envision contemporary sports and the several subfields of exercise science without the ubiquitous modern technology. Would it be possible to perform biomechanical research without computers, or prepare for Olympic track and field competitions without the use of contemporary training and assessment techniques? Think about viewing sporting events on television from only one or two camera angles. The global positioning system (GPS) precisely identifies geographic coordinates and tracks an activity by using 24 satellites and base stations as reference points. For instance, using a portable GPS gadget while hiking gives you data on altitude, distance, time, and average speed. There is also a graph showing the landscape's slope and decline. With the increasing availability and affordability of GPS receivers, their usage for tracking and encouraging physical activity may increase. The surge of sports inventions has had a significant influence on the study of sports and exercise, but perhaps more significantly, technology has started to alter the athletic body in a variety of ways. We are more unsure of how various technological developments should fit into our lives and find it more difficult to comprehend the breadth and depth of its impacts due to technology's pervasiveness.

II Rehabilitative technologies: Rehabilitation technology includes the drugs and techniques used to treat minor to catastrophic wounds. These technologies are used by sports trainers and medical professionals. Acetylsalicylic acid is one type of anti-inflammatory medication used in rehabilitation treatments. Athletes with aching muscles and joints might also benefit from whirlpool equipment and ultrasound therapy. More modern innovations like electrical stimulation and minimalism enhance blood flow and speed up the healing process by delivering currents into the injured region. Acupuncture and chiropractic adjustments, which are not strictly technical in the classic sense, are utilised in treatment. Because they enable athletes to practise and perform at a level they would not otherwise be able to, rehabilitation technologies can also be regarded as performance-enhancing aids.

III Self-technologies: This technology is the most obvious and pervasive to many people since it has the ability to drastically or even permanently change an athlete's either mental or physical composition. The most well-known use of these technologies is the unlawful use of performance-enhancing pharmaceuticals. Self-technologies cover other sensitive sports breakthroughs. Other self-technologies include genetic engineering, sports psychology, bionic or prosthetic limbs, and medical services. It is possible that self-optimization technology, like Oscar Pistorius' bionic prostheses, will eventually be used in sports. This viewpoint holds that technology is ethically neutral. It's neither nice nor bad by nature. Instead, the objective or purpose for which technology is only a tool is what counts.

IV Motion technologies: It indicates the tools and techniques used to evaluate one's physical form and ability to perform in sports. The most popular technique is videotape analysis, however there are even more advanced systems that offer thorough computational data on a player's biomechanics. In cutting-edge environments, movement technologies are frequently invisible, just like other forms of technology. Apart from enhancing the athlete's current technique, the expertise derived from movement techniques may also enable conceptual or style modifications that enable a professional athlete to compete in a way that is both mechanically and artistically distinctive. Considering the development of technological advances, sports have under gone substantial transformation. The referees' reactions when a ball crosses the goal line without them present may be altered by goal-line gadgets, or high-speed video analytics. The way coaches and sports psychologists engage with individual athletes and teams has fundamentally altered with the introduction of (small) digital cameras, wireless connections, and mobile computer devices. Individual body-worn sensors can produce real-time biometric player data that can be utilised to evaluate a player's development over time or to guide coaching decisions during a game. However, at constant, submaximal workloads, Warburton [13] noticed that simulation cycling greatly boosted steady-state heart rate as well as energy consumption in comparison to traditional cycling; evaluations of perceived effort were comparable for both cycling styles.

V Sports Database Infrastructure: Coaches and players can get all the information they could need on themselves and their opponents thanks to computational technology. The way that many, if not most, professional athletes and coaches conduct their business has been significantly impacted by database initiatives. Individual athletes can continually monitor changes in critical physiological and performance characteristics thanks to information feedback technology (such as a Polar heart rate monitor or a Nike GPS sports watch). Technology can be supportive and helpful in achieving professional goals, even if one is not striving for an Olympic gold medal. It might encourage people to keep up a regular workout schedule or to recover from an injury. It has long been a dream to restrict human movement by means of unique training techniques and underlying benefits. Modern sports, particularly those involving high athletic performance, have seen levels of competitiveness that are nearly beyond human tolerance. The broad variety of sports-related functions and impacts has been completely understood by the comprehensive application of current science and technology, including genetic engineering, computer improvements, energy technology, information technology, and modern scientific and technology theories. Training methods and site equipment have been updated as a consequence, sports training settings have evolved and improved, and the scope of competitive sports has significantly increased.

CONCLUSION:

Sports have evolved into upscale social trends and modern tech accessories. Because technology has a significant impact on how athletes live their everyday lives and how their physical characteristics seem, sports have changed as a result. As a result, sports, injury management, and performance enhancement are all being continuously altered by technology. Humans have created sports technology that supports their intended outcomes or desired aims in a certain sport. Athletes use this technical approach to try to enhance their training and competitive environments in order to enhance their complete athletic ability. It entails being able to employ the most recent technology and specialized tools to complete jobs more quickly. Coaches and players need to be up to date on the most recent technical developments related to their sport in order to make informed decisions concerning how sports technologies impacts their execution.

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FUNCTIONAL NUTRITION FOR THE HEALTH OF EXERCISING INDIVIDUALS AND ELITE SPORTS PERSONS

By

Dr. Venkata Rajasekhar Kali, Ph.D.

ABSTRACT:

Elite sportspersons involved in high-intensity physical sports indulge in severe training and competition schedules, which exposes them to high levels of inflammatory and oxidative stress, hence it may hamper their health sometimes. Disturbance in the health of sportspersons also induces compromised performances. Functional nutrition is essential for elite sportspersons' training to secure rest and recovery to have proper health and anticipated performance. Apart from serving the energy needs of the sportspersons, the nutrition strategies should provide them with certain metabolic advantages, which provide greater health and immunity, to ensure proper training and competition. The diet of the sportspersons needs to contain appropriate anti-inflammatory and ant oxidative nutrients to reduce and control tissues' physiological stress during high-intensity physical sports, especially during marathon running. Preserving anabolic valence among sportspersons for muscle myokine optimization is an essential aspect of sports nutrition, which secures health and provides excellent performance potential. Preservation and optimization of gut microbiome among sportspersons enhance immune health and performance, through proper gut integrity and enhanced metabolic cascades. As the genes are to be properly expressed for excellent manifestation in protein synthesis and other metabolic signaling, achieving genetic valance through proper nutrition ensures the health of the sportspersons. Functional nutrition seems a very necessary and potent factor in the training and competition aspects of elite sportspersons since nutrition not only provides recovery but also ensures proper health for elite sportspersons.

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EFFECT OF TWELVE WEEK WEIGHT TRAINING PROGRAM ON THE THROWING DISTANCE OF THROWERS (SHOT PUT, DISCUS, JAVELIN & HAMMER)

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ABSTRACT-

Finding the influence of twelve-week weight training program on the performance of throwers was the motive this study. To achieve this purpose of the study, 60 men students of IIT Bombay, were selected as subjects. Their age ranged between 19 to 25 years. The selected subjects were divided into two equal groups of thirty each namely weight training group and control group. The experimental group executed a number of weight training exercises such as Bench press, Full squats, Wrist curls, Triceps Curls, Biceps curl, Dead Lifts, Shoulder press etc. three days a week for twelve weeks whereas the control group maintained their daily routine activities and no special training was given to them. The variable named throw distance was selected as criterion variable. To assess the throw distance, the Pre-Test and Post-test were conducted. This study shows that due to the weight training exercises there was significant improvement in the throwing performance of experimental group and control group has reported no major difference in throw performance due to general training. Keywords: Performance, Throwing Distance, Weight Training and Throwers

1.INTRODUCTION:

Lifting of weight is practiced for different reasons. Some individuals participate in this highly specialized form of physical activity because body building in their objective. To those the size of the skeletal muscle is of paramount importance. The aim of body builder is the attainment of symmetrical hypertrophy of all muscle groups capable of being subjected to maximal shortening against heavy resistance. An athlete can derive a great deal of strength, speed, power, flexibility and co-ordination through a weight training program. In Weight lifting, weight is also used as a form or conditioning exercise for maintaining or improving physical fitness or increasing athletic power in general (Frank D Sills, 1962).

Weight training is not usually thought as an end in itself, but as a means to an end. The primary objective is not to learn to lift as much weight as possible but to increase strength and power for application to some other sports, weight training may be either or isometric contraction, isotonic or isokinetic contraction.

1.1 Statement of the problem

Effect of Twelve-week Weight Training Program on the Throwing Distance of throwers.

1.2 Purpose of the Study

The purpose of the study was to find out the effect of weight training on throwing distance of the throwers.

1.3 Hypothesis

There would be significant change on selected variable due to the effect of twelve-week Weight Training Program.

METHODOLOGY

2.1 Selection of Subjects

The sample for present study consists of 60 athletes of IIT Bombay out of which 30 are experimental group and 30 are control group with age range from 19-25 Years.

2.2 Selection of Variable

Dependent Variable- Throwing Distance

Independent Variable- Weight Training

2.3 Training Program and Experimental Procedure

The following Weight Training exercises were given for twelve weeks to the Experimental group while control group were given general fitness training.

- Clean & Jerk
- Bench Press

- Full Squat
- Biceps Curl
- Triceps Curl
- Leg Press
- Heel Raise
- Lunges
- Dead Lift
- Wrist Curls
- Shoulder Press
- Abdominal Crunch
- Back Hyper extension

2.4 Collection of data

To assess the throwing distance of throwers the Pre-Test and Post Test were conducted. Each thrower was given the three chance to perform with their respective throwing equipment such as shot put, discus, javelin and hammer. Best of three throws was measured and recorded.

RESULTS AND DISCUSSION

This study shows that due to the Twelve Week weight training program there is noticeable improvement in the throwing distance of experimental group and control group has not reported any change in the throwing distance due to the general fitness training.

TABLE 1

'T' STATISTICS OF EXPERIMENTAL AND CONTROL GROUP ON THROWING DISTANCE (THEIR RESPECTIVE EVENT)

Group	Pre-Training Mean	Post Training Mean	Mean Difference	't' Value
Weight Training	27.59	29.83	2.24	5.17*
Control	20.56	20.21	-0.35	0.07

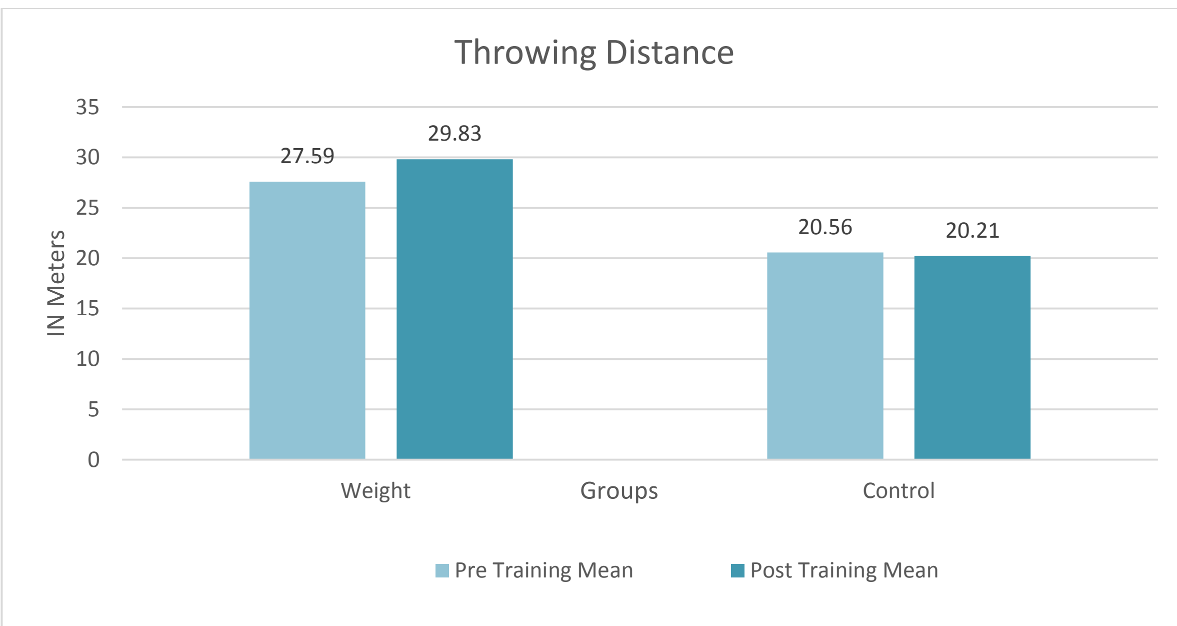
**Significant at 0.05 level*

(Table value required for significance at 0.05 level for t-test with degree of freedom 29 is 2.04)

Table-1 showed that 't' values of weight Training group and control Group were 5.17& 0.07 correspondingly. These 't' values were obtained by evaluating data acquired before and after training regime. As the received 't' values of weight training group is greater than the desired value 2.04 with df 29 so it can be said that weight group has recorded substantial progress in increasing the Throwing Distance (their respective event). Table also revealed the mean values of the data acquired on the Throwing Distance (in their respective event) before and after the twelve weeks training program for both the groups. The difference values from pre training and post training Mean of weight group and control group are 2.24 & -0.35 respectively.

The Pre-Training and Post-Training mean values of Weight training group and Control group for throwing distance are graphically represented in the Figure-1.

Figure 1: Graphical Representation of Pre-training and Post training Means of Weight Training Group and Control Group on Throwing Distance.



CONCLUSION

- It is concluded that due to twelve-week weight training program there is significant enhancement in the throwing distance of the throwers. Hence, it can be laid down that weight training program has a significant role in the performance of throwers.

RECOMMENDATIONS

It is recommended that

- A similar study can be conducted on the athletes of different regions.
- Weight Training must be given due consideration while preparing training program of throwers.

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A STUDY OF FOLK GAMES IN KARNATAKA STATE SPECIAL REFERENCE TO HYDERABAD, KARNATAKA

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ABSTRACT:

Folk performing arts represent the cultural segments of a particular region and language. In North Karnataka the documentary looks through the dynamics of the folk games help for physical and mental development of the young generation suiting their geographical conditions. Even in modern computer age their affection towards traditional game is reflected in the spirit of folk games. The objective of the present study was to know the popularity of folk games as well as the number of folk game played in the region of North Karnataka. The data was collected from 6 districts of north Karnataka through questionnaire and interview method. In participation of folk games, Bidar district men and women having more percentage than the other districts boys and girls. In number of folk games played, the Bidar district men and women in the all age group are playing more games than the other districts of north Karnataka.

INTRODUCTION

Today, in conditions of global integration, our future mostly depends on preservation of its cultural variety. The traditional way of life and life in harmony with the nature are not only our past, but also the future in its significant part. Scientists see a way out of economic, ecological, psychological and moral crisis of industrial and urban society in centuries-old experience of those people who have kept their own ethnographic space in extreme conditions of 21st century.

The development of sport and its contribution to the development of society as a whole is not a movement into one direction only, going from traditional games to modern sport. The modern kids of these days and kids of previous generation, one striking difference between them is the lack of folk games. These days, almost all kids play video games previous generation kids used play folk games of their soil and some were that adapted from neighboring places.

TYPES OF FOLK GAMES IN HYDERABAD KARNATAKA

Chinni Dandu (Gilli Danda):

Gilli Danda is one of the most popular outdoor games played all over India and even in South Asia. It is called Chinni Dandu in Kannada. This game is believed to be the origin of many European and American games such as Cricket, Baseball and Softball. The game is played with a peg (Gilli) and a stick (Danda), both of which are made of wood. The stick is used to strike the peg. It is a team game that requires hand eye co-ordination and concentration of the player.

Bugara (Spinning the top):

Spinning the top or Latto is a fun game played across many parts of India and Pakistan. It is known as Bugara in Kannada. It is an interesting traditional game where a wooden top is made to spin. There are grooves in the lower half of the top and a nail at the bottom to spin on. A string is wrapped around the grooves to deploy the top and make it spin.

Gotti (Marbles):

Popularly known as marbles, Kanchi or Goli, it is a much loved gully sport in the country. It is called Gotti in Kannada. This classic game requires the player to hit the selected target ‘marble’ using his/her own marble ball. The winner of the game walks away with all the marbles of the other players. This game requires aiming and concentration skills on part of the player.

Kabaddi:

Kabaddi is a team sport that originated in ancient India. Two teams occupy opposite halves of an enclosure and each team sends in a raider to the other side in turns. The raider has to tackle members of the opposite team while chanting kabaddi during the raid before he returns to his side of the enclosure. It is a very popular sport that is played not only across India but also in countries like Bangladesh and Maldives.

Kallu Gundu Attitude (Stone Balls)

Kallu Gundu Attitude or Kalita is an outdoor sport of rural Karnataka. It requires the participants to lift round stone balls (called Kalu Gundu in Kannada) of various sizes and weights. The sport demands that the players be physically strong enough to lift heavy stones.

Parade

Parade is a cross and circle board game that is very similar to the ancient game of Pachisi or Chau pad. This game requires 2 or 4 players to race their respective pawns to reach the innermost square. The origin of the game can be traced to 4th century AD and it has remained popular throughout history.

Chuka Bara (Chakaara):

Chuka Bara is one of the oldest board games of India that is still played in some parts of the country. It is known as Chuka Bara in Mysuru and as Chakaara or Chakka in north Karnataka. This game is similar to ludo and can be played by 4 players. It is a game of chance that is played with cowry shells (called kavade in Kannada). The players attempt to race their pawns from the starting point to the safety of home. The game improves eye-to-eye coordination and teaches to make strategies.

Ashta Pada:

Ashta pada is an Indian board game that originated before chess. The game is played on a board having eight-by-eight grid of squares of same colour and the board has special markings known as “castles”. Each player has an even number of game pieces and the objective is to move a game piece around the board in clockwise direction, enter the castle, and regain the castle back in a counter-clockwise direction so as to make the game piece reach the centre. It can be played by 2 or 4 players.

Parama Pada (Snakes & Ladders):

Snakes & Ladders is a classic board game that originated in ancient India. It is known as Parama pada in Kannada. The game can be played by two or more players on a game-board that has numbered, gridded squares. The board has several ladders and snakes drawn on it. Players have to navigate their game piece from the start to the finish based on die rolls. The ladders help the game piece to progress while the snakes hinder their movement.

Ali Guli Mane:

Ali Guli Mane or Channe Mane is a traditional indoor board game of Karnataka. The game is generally played by two players on a wooden board that has 14 pits. The pits are used to store 70 tamarind seeds or cowry shells that act as counters in the game. It is an engaging game that helps to develop logic, hand-eye coordination and concentration.

Ligorio (Seven Stones):

A stack of stones, a ball and a focused eye is all you need to play the game of **Ligorio** in an open courtyard. This game is quite popular in the North and Eastern states of India and is fondly called pitta, lingchi or pallid patty by many. However, it is becoming increasingly popular in Mangalore and a common outdoor norm amongst the youth. The game involves a pile of flat stones and two opposing teams. A player from one team throws the ball at the pile to disrupt it, and runs. The players of the opposite team reach for the ball and run to hit the players of the ball-throwing team who re-make the stack in the meantime without getting hit. It barely makes use of any expensive tools or equipment and is really easy to follow. No wonder it has been gaining heat lately.

Adu Huli Aata (Tiger & Goat):

Tiger and goat is a hunt game that is known as Adu Huli Aata in Kannada. The game is played between 2 players where one player gets 3 tigers and the other player has 15 goats. The game is about the tigers trying to kill the goats while the goats look for ways to immobilize the tigers. This game requires planning and concentration on part of both the players.

Saalu Mane Ata (Nine Men's Morris)

Nine Men's Morris is a traditional board game that originated in the western world. It is known as Saalu Mane Ata or Jodi Ata or Char-Par in Kannada and is popular as Naayantara in various parts of India. This alignment game requires 2 players. Each player is given 9 coins and they try to achieve as many points as possible by getting 3 coins in a row on the game board. It is a complex game that requires strategic thinking.

Kunte Bille (Hopscotch)

Hopscotch is a traditional children's game that is known as Kunte Bille in Kannada. The game can be played alone or with several players. It involves drawing a court on the ground and then tossing a small object into the numbered rectangles of the court. The player then needs to hop or jump through the spaces in order to retrieve the object.

CONCLUSION

Folk performing arts represent the cultural segments of a particular region and language. In North Karnataka the documentary looks through the dynamics of the folk games help for physical and mental development of the young generation suiting their geographical conditions. Even in modern computer age their affection towards traditional game is reflected in the spirit of folk games.

RECOMMENDATIONS

Folk games are instrument for the formation of personality, social and national integration, nation building, identification, and satisfy basic demands.

Folk games should be organized at grass root level to popularize them.

State level folk Olympic games should be organized to promote folk games in the state.

Government should include folk games at school levels to popularize folk games among school going children.

Government should provide funds to local bodies to conduct folk games in village festivals.

Government should take initiative to identify the voluntary agencies or local bodies which promote folk game in a particular geographical condition and encourage them by providing funds.

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EXPLORING THE SYNERGISTIC POTENTIAL OF DARK CHOCOLATE AND CAMEL MILK AS A FUSION SUPPLEMENT FOR RECOVERY IN ENDURANCE RUNNERS

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[iii]Ms. Divyamini. V.

ABSTRACT:

The present study was to explore the dark chocolate with camel milk as a supplementation for recovery on endurance sports. The varsity level Professional twenty varsity level of elite half marathon female athlete were randomly selected and divided into two equal group as experimental group (EG) and control group (CG), were EG underwent supplementation through namely dark chocolate mixed with camel milk drink practice (DCMWCMP) Forten varsity level elite half marathon female athlete. The selected supplement's nutritive value was tested before supplementation. The double-blind procedure of the supplement the participant to avoid research bias. Were tested for pre and post-test for selected variables recovery heart, volume of oxygen level and resting pulse rate, was to measures Harvard steep test,12 minutes cooper run walk and early morning wakeup time was used to measured. There was significant difference at 0.05 on selected variables. Hence, DCMWCM has high impact physical performance and also extrapolated improved recovery was identified with the supplementation the subjects as well as the knowledge of nutrition and scientific training to combined to maximize performance. **Key words**: dark chocolate, camel milk, recovery half marathon, endurance sports

INTRODUCTION:

Physical endurance refers to the capacity to perform submaximal physical work for a long period of time. "Endurance exercises" are those activities that one performs for an extended period of time and that require less than maximum effort. Endurance sports are increasing in popularity and athletes at all levels are looking for ways to optimize their performance by training and nutrition (***Asker 2011*).** Coaches and women athletes are recognizing that appropriate training programs, similar to those employed by men, will markedly enhance athletic performance of women. Recently, greater improvements have been made by women than by men. The enhancement of physical endurance could also be achieved by increasing of number of blood vessels around each muscle fibre, which leads to an increase in gas, heat, and nutrient exchange between blood and working muscle fibers (***Akhmetov et al.,***

2008**).** For endurance exercise lasting 30 min or more, the most likely contributors to fatigue are dehydration and carbohydrate depletion, whereas gastrointestinal problems, hyperthermia, and hyponatraemia can reduce endurance exercise performance and are potentially health threatening, especially in longer events (***Asker E 2011***). There is also a high prevalence of osteopenia, osteoporosis, and poor nutrition that may affect and be affected by physical activity in women (***Henderson et al., 2002; Samson- Fang et al., 2002***). Sports nutrition focuses its studies on the type, as well as the quantity of fluids and food taken by an athlete. In addition, it deals with the consumption of nutrients such as vitamins, minerals, supplements and organic substances that include carbohydrates, proteins and fats. Camel milk with its high levels of lactoferrin supports weight loss efforts while maintaining lean muscle mass. Therefore, athletes who consume camel milk after training sessions are able to protect their lean muscle mass, shorten their recovery time and increase their endurance. Camel milk is unique from other ruminant's milk in terms of composition as well as claimed health effects. Camel milk has low cholesterol, high minerals (sodium, potassium, iron, copper, zinc and magnesium) and high vitamin C when compared with other ruminant milk. Camel milk contains various fatty acids, enzymes and protective proteins. Camel milk has potential therapeutic effects such as antibacterial, antiviral, antidiabetic, anti-ageing and anticarcinogenic. The medicinal properties of camel milk can be attributed to the presence of protective proteins, which possibly play a pivotal role in sports mainly towards endurance and recovery and for the enhancement of immune defence mechanism. Not only camel milk, but also camel meat in general, is considered a functional food for cures and remedy for many ailments and for improved performance. Athletes are encouraged to drink camel milk in countries such as Kenya. It is considered a super food. Camel milk contains 30-100 times higher lactoferrin than bovine milk (***Konuspayeva et.al 2005***). Lactose intolerance is a major concern for athletes, because sometimes their only option is to consume sports drinks with cow whey. But that is not the case with camel milk whey, as it is the perfect alternative for lactose intolerant athletes. It non-allergenic as it does not contain beta casein or lactoglobulin and contains proteins that are similar to human breast milk.

THE PURPOSE OF THE STUDY IS TO:

1. Identify the best nutritional supplements, specifically to address sport-related disorders in women athletes.
2. Develop a scientific nutritional strategy to improve performance and recovery in endurance sports, with a focus on enhancing overall athletic endurance, supporting recovery, and addressing health concerns related to women in sports.

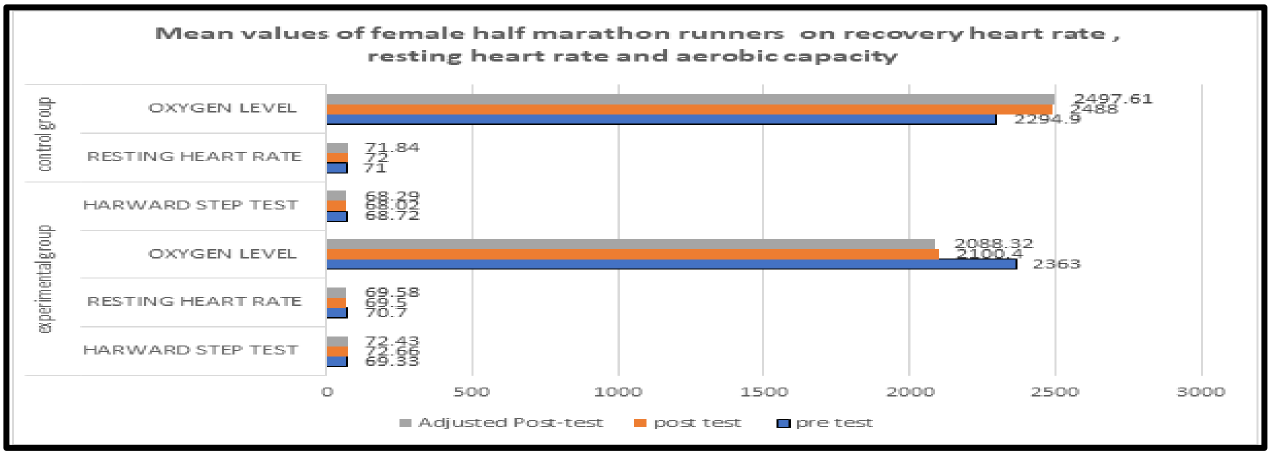
METHODOLOGY: To achieve the purpose of the study 20 elite half marathon varsity level female athletes was randomly selected Coimbatore district and the age group of 20-25 years has been selected, in to split up two equal group of experimental groups (n=10) and control group (n=10) were allotted randomly. and they were stared the treatment of EG& there was no treatment of CG. EG Treatment name is (DCCMS) dark chocolate camel milk supplementations and they are execution regular activity both EG and CG. But EG training days after half an hour they loaded 233ml (8ounces) amount of (DCCMS) forgone individual and intervention was plan to execution of totally 8 weeks and with the frequency of 6 session in a week. One serving after half an hour workout finishing. Before the supplementation the pre-test was taken for all the variables and after the treatment for 8 weeks post-test was taken. The participants provide subjective feedback on their experience with DCCM. This feedback perceived changes in energy levels, perceived improvements in recovery time, pre and post intervention they used questionnaires and they gather feedback**.** ensuring they aware study's purpose, procedures and benefits. The collected data were analysed using statistical techniques was used for paired sample ANCOVA statistical analysis. Ancona, they calculated data and to evaluate the impact of independent variable is (DCCMS) on selected physiological dependent variables are oxygen level, recovery heart rate and resting pulse rate used to measure the effect of study Statistical analysis there was a significant difference among selected variables before and after the intervention. To achieve the purpose of this study, twenty elite varsity-level female marathon runners of was randomly selected Coimbatore district and the age group of 20-25 years has been selected, the samples were in to split up two equal group at random. The ten experimental group (n=10) and control group (n=10) were allotted randomly. The selected variables were tested for recovery heart rate. resting pulse rate and aerobic capacity they following tools there used to measure the selected variables are, Harvard step test and count your pulse rate set a period and 12 minutes cooper run and walk test of time they both groups are pre-test data was collected. were stared EG underwent treatment of Dark Chocolate Camel Milk (DCCMS) supplementation. The selected samples go with (DCCMS) intervention were plan to execution was supplemented for totally 8 weeks and with the frequency of 6 session in a week. The daily dosages were restricted to 233ml (8ounces) amount of (DCCMS) 45 minutes after the training. & there was no treatment of CG. the selected both groups were involved with their own training pace under their coach in between, they samples are were not allowed to participate in any major-competitions. They were allowed to participate only in buildup competitions. Then the post-test was selected contacted for criterion variables are oxygen level, recovery heart rate and resting pulse rate. Pair-sample t-test was used for the statistical analysis to evolve the impact of REDS on selected criterion variables. Before the supplementation the pre-test was taken for all the variables and after the treatment for 8 weeks post-test was taken. After the data was collected, paired sample ANCOVA was used for the statistical analysis. The independent variable is (DCMWCM) and selected physiological dependent variables were and resting pulse rate used to measure the effect of study. They were allowed to participate only in buildup competitions. Then the post-test was selected contacted for criterion variables are recovery heart rate, mental toughness and performance. Pair-sample t-test was used for the statistical analysis to evolve the impact of REDS on selected criterion variables.

RESULTS: Analysis Harward Step Test Use to Measure The Recovery Heart Rate, Analysis of Resting Heart Rate and Analysis 12 Minutes Cooper Run Test Use to Measure The Aerobic Capacity The table show that the Recovery heart rate, resting plus rate and Aerobic capacity**:** pre-test means of experimental groups and control group are 69.33 and 68.72, 70.7

and 71 and 2363 and 2294.9 respectively. The obtained 'F' ratio of 0.308, 0.403 and 0.378 for pre- test means of Recovery heart rate, resting heart rate and Aerobic capacity test is lesser than the table value 4.41, This proved that there was no significant mean difference between the groups. The post mean of experimental groups and control group are 72.66 and 68.02, 69.58 and 71.84 and 2100.4 and 2488

VARIABLES	MEAN	EXPERIMENTAL GROUP	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	DF	MEAN SQUARES	'F' RATIO
Recover heart rate	Pre- test	69.33	68.72	B	1.83	1	1.831	0.308
				W	107.14	18	5.952	
	Pre- test	72.66	68.02	B	107.56	1	107.559	14.897
				W	129.97	18	15.201	
	Adjusted Post-test	72.43	68.29	B	84.09	1	84.09	24.481
				W	54.96	16	3.44	
Resting plus rate	Pre- test	70.7	71	B	0.450	1	0.450	0.403
				W	20.10	18	1.117	
	Pre- test	69.5	72	B	31.25	1	31.250	22.959
				W	24.50	18	1.362	
	Adjusted Post-test	69.58	71.84	B	24.83	1	24.831	42.244
				W	9.41	16	0.588	
Aerobic capacity	Pre- test	2363	2294.9	B	23188.05	1	23188.05	0.378
				W	1105516.9	18	61417.61	
	Pre- test	2100.4	2488	B	751168.8	1	751168.8	18.711
				W	722626.4	18	4014591	
	Adjusted Post-test	2088.32	2497.61	B	1	1	1	37.879
				W	351159.87	16	21947.49	

** Significant at 0.05 level of confidence*



DISCUSSION: The findings of this study indicate that Dark Chocolate Camel Milk Supplementation (DCCMS) significantly improved recovery heart rate, resting pulse rate, and oxygen levels in elite female half-marathon athletes. The experimental group (EG), which received DCCMS, demonstrated faster recovery and more efficient cardiovascular function compared to the control group (CG), which did not receive supplementation. These results suggest that DCCMS may help enhance recovery, reduce fatigue, and improve overall endurance performance by supporting muscle repair and optimizing cardiovascular health. The improvements in the EG can likely be attributed to the bioactive compounds in camel milk, such as lactoferrin, which have anti-inflammatory and antioxidant properties. These compounds may aid in quicker muscle recovery and better adaptation to intense physical activity. Additionally, the mineral content of camel milk, including magnesium and potassium, may support heart function and electrolyte balance during prolonged exercise. No significant changes were observed in the CG, highlighting the potential effectiveness of DCCMS supplementation. Subjective feedback from athletes also suggested improvements in energy levels and recovery time. However, the study's small sample size and focus on limited physiological markers suggest the need for further research with larger sample sizes and additional performance measures to better understand the broader effects of DCCMS on endurance athletes.

CONCLUSION: The subjects of the experimental group, after 8 weeks of DCCMP, exhibited a significant improvement in the selected Physiological variables. The study concluded that through proper DCCMP, they can able to improve quick recovery, and with the help of the sub-components of performance like oxygen level. The researcher used CG for more accuracy on the result.

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THE ROLE OF EXPLOSIVE POWER TRAINING IN ENHANCING BASKETBALL PERFORMANCE

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ABSTRACT

Explosive power is a critical component of basketball performance, influencing key movements such as jumping, sprinting, and rapid accelerations. This study aimed to evaluate the impact of a structured explosive power training program on basketball players' performance, focusing on vertical jump height as a measure of explosive power. Thirty male basketball players were divided into two groups: an experimental group that underwent an 8-week explosive power training program and a control group that followed a regular training regimen. Pre- and post-test assessments were conducted using the Vertical Jump Test. Results indicated a significant improvement in the experimental group compared to the control group, demonstrating the effectiveness of targeted training interventions for enhancing explosive power. These findings underscore the importance of integrating explosive power exercises into basketball training programs to optimize performance. **Keywords**: Basketball, explosive power, vertical jump, plyometric training, performance enhancement, strength.

INTRODUCTION

Basketball is a dynamic sport that demands a combination of physical, technical, and tactical skills. Among the physical attributes required for optimal performance, explosive power plays a central role. Explosive power is defined as the ability to exert maximal force in the shortest amount of time, which is crucial for executing high-intensity movements such as jumping for rebounds, sprinting during fast breaks, and performing quick accelerations and decelerations during gameplay (Newton & Kraemer, 1994). These movements are not only essential for individual performance but also contribute significantly to team success.

One of the most visible applications of explosive power in basketball is the vertical jump, which is required for actions such as shooting, blocking, and rebounding. The ability to jump higher and more explosively provides players with a competitive edge, particularly in close-contact situations near the basket (Hoffman et al., 2005). Explosive power also enhances speed and agility, allowing players to execute quick transitions between offensive and defensive play.

Developing explosive power requires a systematic approach that incorporates exercises aimed at improving muscle strength, speed, and neuromuscular coordination. Plyometric training, which involves rapid, explosive movements such as jumping and bounding, has been widely recognized as an effective method for enhancing explosive power (Markovic, 2007). Resistance training, focusing on exercises like squats and power cleans, is another critical component that contributes to the development of lower-body strength and power. Research indicates that combining these training modalities can lead to significant improvements in performance metrics such as jump height, sprint speed, and overall power output (Cormie et al., 2011).

Despite its importance, explosive power is often overlooked in traditional basketball training, which tends to prioritize skill development over physical conditioning. However, given the increasing physical demands of modern basketball, there is a growing need to incorporate targeted training programs that address specific physical attributes like explosive power. This study seeks to investigate the impact of a structured explosive power training program on basketball players, with a focus on vertical jump height as a measurable indicator of performance improvement.

METHODS

The study involved 30 male basketball players aged 18–25 years, all of whom had at least two years of competitive experience. Participants were randomly divided into two groups: an experimental group (n = 15) and a control group (n = 15). The experimental group participated in an 8-week explosive power training program, conducted three times per week. This program included a combination of plyometric exercises such as box jumps, depth jumps, and medicine ball throws, as well as resistance training exercises like squats, power cleans, and deadlifts.

The control group continued with their regular basketball training routine, which emphasized skill development (e.g., dribbling, shooting, and passing) and general conditioning. Explosive power was assessed using the Vertical Jump Test, a widely accepted measure of lower-body power. Pre- and post-test scores were recorded for both groups, and statistical analyses were conducted using paired t-tests (to evaluate within-group changes) and independent t-tests (to compare differences between groups).

RESULTS

The results of the study revealed a significant improvement in explosive power among the experimental group compared to the control group.

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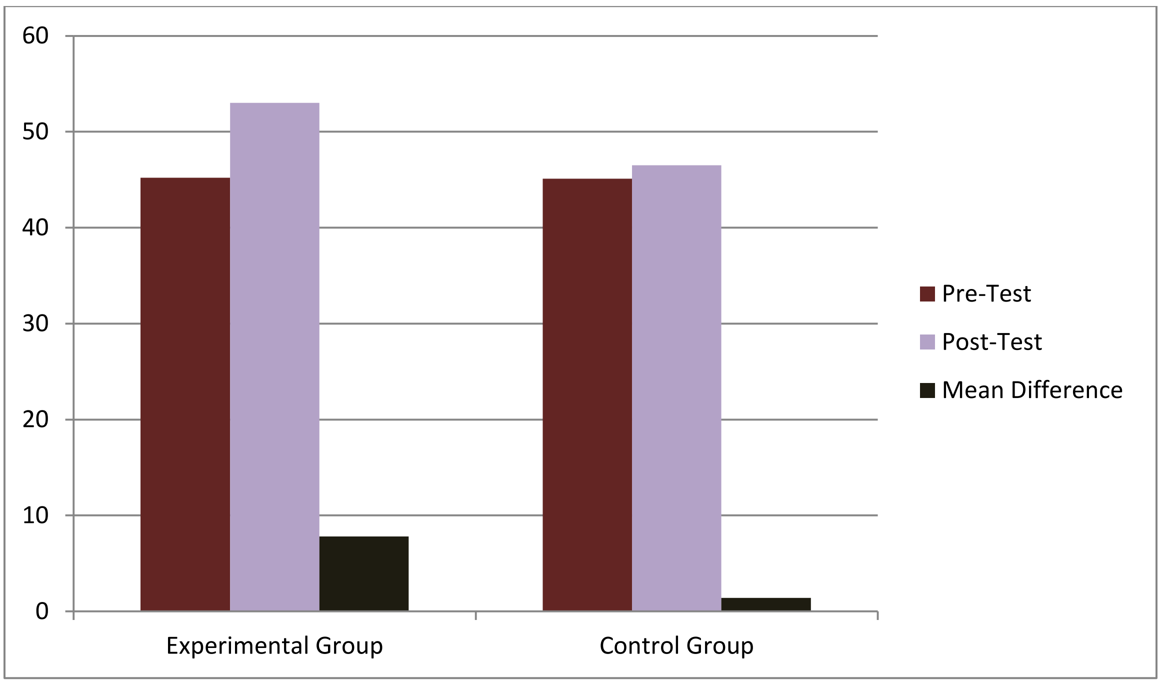
Table: Explosive power among basketball players

Group	Pre-Test Mean (cm)	Post-Test Mean (cm)	Mean Difference (cm)	p-Value
Experimental Group	45.2	53.0	7.8	< 0.01
Control Group	45.1	46.5	1.4	> 0.05

Graph: Explosive power among basketball players



In the experimental group, the average vertical jump height increased from 45.2 cm to 53.0 cm, representing a mean improvement of 7.8 cm, which was statistically significant ($p < 0.01$). This substantial increase demonstrates the effectiveness of the explosive power training program in enhancing lower-body strength and performance. In contrast, the control group showed only a marginal improvement of 1.4 cm, which was not statistically significant ($p > 0.05$).

The significant difference between the two groups underscores the importance of targeted training interventions in improving explosive power. The exercises included in the experimental program likely contributed to neuromuscular adaptations, improved muscle recruitment, and enhanced force production, all of which are critical for executing explosive movements in basketball.

DISCUSSION

The findings of this study highlight the crucial role of explosive power in basketball performance and the effectiveness of targeted training programs in enhancing this attribute. The substantial improvement observed in the experimental group's vertical jump scores can be attributed to the systematic use of plyometric and resistance training exercises. These exercises are designed to improve the stretch-shortening cycle of muscles, enhance neuromuscular coordination, and increase the rate of force development, all of which contribute to greater explosive power (Markovic, 2007; Cormie et al., 2011).

The minimal improvement observed in the control group indicates that traditional basketball training alone may not be sufficient to develop explosive power. While skill-based drills are essential, they do not provide the specific stimulus required to improve neuromuscular efficiency and force production. This finding aligns with previous research, which emphasizes the need for sport-specific conditioning programs that address the unique physical demands of basketball (Hoffman et al., 2005).

These results have practical implications for coaches and trainers, who are encouraged to incorporate explosive power training into their programs to optimize players' performance. Future research could explore the long-term effects of such training interventions, as well as their impact on other performance variables such as sprint speed and agility.

CONCLUSION

This study demonstrates the significant impact of structured explosive power training on basketball players' performance. The targeted program led to a marked improvement in vertical jump height, underscoring the importance of explosive power in basketball. These findings highlight the need for coaches and trainers to integrate plyometric and resistance training into their regimens to enhance players' physical capabilities and readiness for competition. Further research is recommended to explore the broader implications of explosive power training across different levels of play and age groups.

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BIOMECHANICS OF FAST BOWLING IN CRICKET: A FOCUS ON THE EFFECT OF RELEASE ANGLE

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ABSTRACT

Cricket is a sport that demands both precision and power, particularly in fast bowling, where biomechanics plays a significant role in determining the effectiveness of the delivery. This article focuses on the **angle of release** during fast bowling, a key biomechanical variable influencing the trajectory and speed of the ball. The study examines how different release angles affect ball speed, accuracy, and movement, contributing to the overall performance of a fast bowler. By using motion capture technology and high-speed cameras, the analysis reveals that an optimal angle of release is crucial for maximizing performance while minimizing the risk of injury. The findings provide valuable insights for players and coaches seeking to improve bowling techniques. **Keywords**: Cricket, Biomechanics, Fast Bowling, Angle of Release, Performance, Kinematics, Injury Prevention

INTRODUCTION

Cricket, a sport deeply ingrained in various cultures, is renowned for its strategic complexity and physical demands. Among the different disciplines in cricket, **fast bowling** is one of the most physically taxing and technically challenging skills. A fast bowler is required to generate high-speed deliveries with the potential to swing or bounce unpredictably, making it difficult for the batsman to react in time. The speed and accuracy of the delivery depend heavily on the biomechanics of the bowler, which involves precise coordination between the body segments, muscle activation, and movement efficiency.

Biomechanics, the study of the mechanical aspects of movement in living organisms, plays a crucial role in optimizing performance while minimizing injury risks (Zatsiorsky&Prilutsky, 2012). In cricket, biomechanics is used to analyze how different physical variables, such as the bowler's posture, arm action, and **release angle**, affect the trajectory of the ball, the speed of delivery, and its movement (Elliott, 2006). The release angle, in particular, is a key factor influencing how the ball travels through the air and interacts with the pitch surface. It affects how much the ball swings (moves laterally), bounces, and ultimately reaches the batsman.

Release angle refers to the angle at which the bowler’s hand or arm releases the ball relative to the ground. This angle is a product of various biomechanical factors, including the bowler's stance, arm position, shoulder rotation, and wrist action. A flatter release angle (closer to 5°) typically results in a faster ball with less swing and bounce. Conversely, a steeper release angle (closer to 15°) can result in a slower ball with more bounce but potentially less swing. The trade-off between speed and movement is critical, as a fast bowler must optimize both to be effective on different pitch surfaces and in varying weather conditions.

In the context of performance, an optimal release angle is integral to the bowler's ability to control the trajectory and movement of the ball. Delivering the ball at the right release angle allows the bowler to create more swing, achieve better bounce, and reduce the predictability of their deliveries. A well-executed delivery with an appropriate release angle makes it difficult for the batsman to judge the ball, leading to a higher chance of inducing mistakes or taking wickets (Stretch, 2014).

Despite its importance, the **release angle** has been less frequently studied compared to other biomechanical variables like body posture, arm action, and stride length. However, with the increasing use of technology in cricket, particularly motion capture and high-speed video analysis, biomechanical research has been able to provide more detailed insights into the relationships between release angle and bowling performance. By understanding how variations in the release angle impact ball speed, accuracy, and movement, bowlers can adjust their technique to enhance their performance and achieve greater success on the field.

This study aims to explore the impact of different **release angles** on the speed, accuracy, and movement of fast bowling deliveries. The focus will be on how adjusting the release angle can affect the performance of a fast bowler, particularly in terms of ball speed, swing, bounce, and accuracy. Through this biomechanical analysis, the research will provide valuable insights that can guide fast bowlers in refining their technique to optimize performance and reduce injury risks.

METHODS

The study involved 12 male fast bowlers, aged between 20 and 30 years, all with a minimum of five years of competitive cricket experience. These participants were selected based on their ability to consistently bowl at speeds greater than 130 km/h, ensuring they possessed the necessary skill level for biomechanical analysis. The biomechanical data was collected using a combination of high-speed cameras (capturing at

1000 fps) and a 3D motion capture system, which were used to track the kinematic movements of the bowlers during their deliveries. Each bowler was asked to perform deliveries under controlled conditions, with the primary focus being the **release angle** of the ball.

To assess the impact of different release angles, the bowlers were instructed to perform 10 deliveries at their usual release angle, followed by 10 deliveries where they adjusted their release angles to **5°, 10°, and 15°**. The bowlers were instructed to maintain consistent bowling speed and technique during each trial, with the primary variable being the angle at which the ball was released. A radar gun was used to measure the ball's speed at the point of release, while the motion capture system tracked the angle of release by recording the bowler's arm position and joint angles relative to the ground at the moment the ball was released. The accuracy of each delivery was assessed by marking how closely the ball landed to the target area on the pitch, which was set according to the bowler's intended line and length.

After the data was collected, statistical analysis was conducted to compare the results across different release angles. Descriptive statistics were used to calculate the average ball speed, accuracy, and movement for each release angle. Pearson's correlation coefficient was computed to determine the relationship between release angle and the key performance indicators: ball speed, accuracy, and movement. Additionally, regression analysis was performed to explore how changes in the release angle influenced the effectiveness of the bowling deliveries in terms of speed, accuracy, and swing or bounce.

RESULTS

The biomechanical analysis revealed significant findings regarding the impact of release angle on the performance of fast bowlers.

Ball Speed:

The speed of the ball was found to decrease slightly as the release angle increased. Deliveries with a release angle of **5°** averaged a ball speed of 138 km/h, while deliveries with a **15° release angle** resulted in an average ball speed of 130 km/h. This suggests that a flatter release angle (closer to 5°) contributes to higher ball speeds, as it allows the bowler to maintain a more direct and efficient arm path.

Accuracy:

Bowlers who released the ball at a 10° angle demonstrated the highest accuracy, with a 90% success rate in hitting the target area on the pitch. In contrast, deliveries at 5° and 15° showed a decrease in accuracy, with success rates of 75% and 80%, respectively. This indicates that a slightly higher release angle contributes to greater control and precision.

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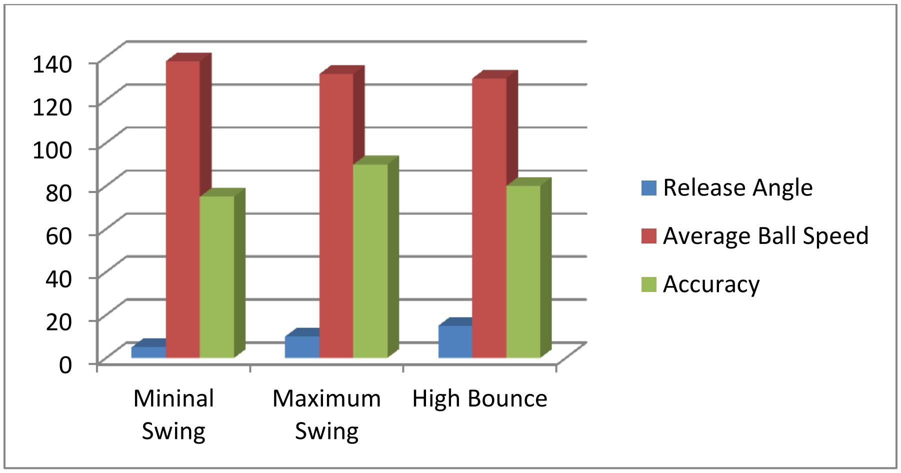
Ball Movement:

Ball movement, in terms of swing and bounce, was also influenced by the release angle. Deliveries with a 5° release angle resulted in the least amount of lateral movement, making the ball travel straighter. On the other hand, a 10° release angle produced more pronounced swing, both in the air and after hitting the pitch, which is beneficial for bowlers looking to deceive batsmen. A 15° release angle resulted in excessive bounce but less movement in the air, which can be effective in certain playing conditions but is less predictable.

Table: Release angle on the performance of fast bowlers

Release Angle (°)	Average Ball Speed (km/h)	Accuracy (%)	Movement (Swing & Bounce)
5	138	75	Minimal Swing, Straight Path
10	132	90	Maximum Swing, Controlled Bounce
15	130	80	High Bounce, Less Swing

Graph: Release angle on the performance of fast bowlers



DISCUSSION

The results of the biomechanical analysis underscore the importance of the **release angle** in fast bowling performance. The study found that a lower release angle (closer to 5°) allows bowlers to generate higher ball speeds, which is essential for putting pressure on batsmen. However, this angle is less effective in producing significant swing or movement, which can be advantageous in certain match situations.

On the other hand, a 10° release angle provides a balance between speed and accuracy, producing both swing and bounce, which are essential for deceiving batsmen and creating wicket-taking opportunities. This angle appears to be the most effective for bowlers looking to maximize both performance and accuracy.

A 15° release angle leads to higher bounce but reduced swing, which could be beneficial on certain pitches that offer extra bounce but less lateral movement. However, the reduced ball speed and accuracy may limit its effectiveness in high-pressure situations, especially against aggressive batsmen.

These findings suggest that bowlers should aim for an optimal release angle that balances ball speed, accuracy, and movement. Coaches can use this information to help bowlers fine-tune their technique and adapt to different pitch conditions and opposition strengths.

CONCLUSION

This study highlights the critical role that the **release angle** plays in determining the speed, accuracy, and movement of fast deliveries in cricket. While a lower release angle favors higher ball speeds, an optimal release angle of around 10° offers the best balance of speed, accuracy, and ball movement, enhancing a bowler’s overall performance. Future research could explore the biomechanical impact of other variables such as body posture, bowling action, and follow-through to further refine our understanding of fast bowling mechanics.

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THE IMPACT OF KABADDI TRAINING ON AGILITY AND ANAEROBIC POWER IN ADOLESCENTS

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ABSTRACT

Kabaddi, a high-intensity, contact team sport, is widely recognized for its physical and strategic demands. This study investigates the effects of an eight-week Kabaddi training program on two key physical fitness components: agility and anaerobic power, in adolescents aged 12–16 years. Results demonstrated significant improvements in agility (measured by the T-test) and anaerobic power (measured using the Margaria-Kalamen test), emphasizing Kabaddi's effectiveness in enhancing these critical fitness attributes. **Keywords:** Kabaddi, Agility, Anaerobic Power, Physical Fitness, Adolescents, Traditional Sports

INTRODUCTION

Kabaddi, a traditional sport with deep cultural roots in South Asia, has gained popularity worldwide due to its intense gameplay and strategic depth. The sport requires players to combine quick reflexes, strength, endurance, and tactical awareness to succeed. Played in teams, Kabaddi involves actions such as sprinting, dodging, lunging, and holding opponents, making it a comprehensive test of both physical and mental skills. These dynamic movements inherently develop agility and anaerobic power, two key attributes essential for optimal performance in the game (Rathi et al., 2021).

Agility, defined as the ability to change direction rapidly and efficiently, is a cornerstone of Kabaddi gameplay. Players must react swiftly to opponents' movements, execute quick directional changes, and evade tags or tackles. Similarly, anaerobic power, the ability to exert high-intensity energy for short durations, is crucial for Kabaddi raiders and defenders during bursts of activity, such as raids or tackles. According to Sharma and Singh (2020), regular participation in Kabaddi not only improves these physical attributes but also enhances overall fitness and skill proficiency in adolescents.

The importance of agility and anaerobic power in Kabaddi aligns with its classification as a high-intensity interval sport. Studies have shown that sports involving frequent sprints and rapid directional changes significantly enhance neuromuscular coordination and energy system efficiency (Faude et al., 2013).

Additionally, Kabaddi fosters physical and mental discipline, making it a holistic development tool for adolescents during their formative years.

Adolescence is a critical phase for motor skill development and physical conditioning. Engaging in structured sports like Kabaddi can promote physical activity, combat sedentary behavior, and contribute to overall health and well-being (WHO, 2020). Traditional sports, such as Kabaddi, not only preserve cultural heritage but also provide a platform to address physical inactivity and lifestyle-related health issues among youth (Rathi et al., 2021).

Despite the sport's growing popularity, there remains a lack of empirical research on its impact on specific fitness components, particularly among young athletes. This study aims to bridge this gap by analyzing the effects of an eight-week Kabaddi training program on agility and anaerobic power in adolescents. By exploring these outcomes, the research underscores Kabaddi's potential as a valuable tool in promoting physical fitness and preparing youth for other sports and physical activities.

METHODS AND MATERIALS:

This study utilized a pre-test and post-test experimental design involving 40 adolescents (20 males and 20 females) aged 12 to 16 years. Participants were recruited from local schools, and inclusion criteria required them to be in good health, without prior structured Kabaddi training, and to provide parental consent. The study was approved by the institutional ethics committee. All participants were assessed for agility and anaerobic power before and after the intervention.

The training program spanned eight weeks, with sessions conducted five days a week for 90 minutes each. Each session was systematically structured to include a 15-minute warm-up comprising dynamic stretching and light jogging, a 60-minute skill-focused Kabaddi training segment, and a 15-minute cool-down with static stretching exercises. Agility-specific drills, such as ladder drills, cone drills, and shuttle runs, were incorporated to enhance directional speed and coordination. To improve anaerobic power, high-intensity drills, including sprints, resistance runs, and game simulations, were emphasized. The T-test and Margaria-Kalamen test were employed as evaluation tools for agility and anaerobic power, respectively. Statistical analyses were performed using paired t-tests to evaluate pre- and post-intervention differences, with a significance level set at $p < 0.05$.

RESULTS

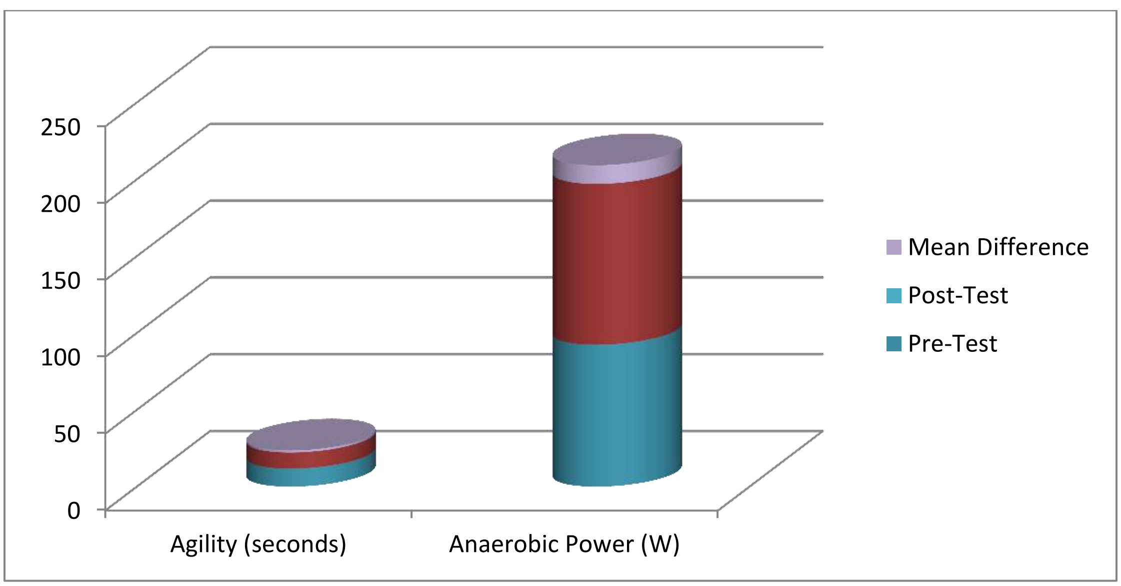
The results revealed significant improvements in both agility and anaerobic power following the eight-week Kabaddi training program.

Agility improved significantly, with participants completing the T-test faster in the post-test (mean difference: -1.4 seconds). Anaerobic power also showed marked enhancement, with an average increase of 12.2 watts in the Margaria-Kalamen test. The improvements were consistent across both male and female participants, highlighting the program's effectiveness.

Table: Agility and anaerobic power among Kabaddi players

Variable	Pre-Test (Mean ± SD)	Post-Test (Mean ± SD)	Mean Difference	p-value
Agility (seconds)	11.8 ± 1.2	10.4 ± 1.1	-1.4	< 0.001
Anaerobic Power (W)	92.4 ± 14.8	104.6 ± 16.2	+12.2	< 0.001

Graph: Agility and anaerobic power among Kabaddi players



DISCUSSION

The findings highlight the effectiveness of Kabaddi training in enhancing agility and anaerobic power in adolescents. The significant reduction in T-test times indicates improved neuromuscular coordination and the ability to change direction efficiently. These gains can be attributed to the repetitive, multidirectional movements inherent in Kabaddi drills and gameplay.

The increase in anaerobic power reflects enhanced muscular strength and energy utilization during high-intensity activities. The explosive efforts required during raids, tackles, and sprints likely stimulated adaptations in the participants' anaerobic energy systems. These results align with prior research emphasizing the benefits of high-intensity sports for anaerobic development (Faude et al., 2013).

The study also supports the inclusion of traditional sports like Kabaddi in school and community fitness programs. By fostering agility and anaerobic power, Kabaddi can prepare adolescents for better performance in various physical activities while promoting overall fitness.

CONCLUSION

The eight-week Kabaddi training program significantly improved agility and anaerobic power among adolescents, demonstrating the sport's potential as a comprehensive fitness activity. Incorporating Kabaddi into physical education programs can serve as an effective and culturally relevant approach to promoting physical fitness and combating sedentary lifestyles in youth. Further research is needed to explore its long-term effects and its impact on other fitness parameters.

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EXPLORING EMOTIONAL INTELLIGENCE: KEY TO SUCCESSFUL INTERPERSONAL ADJUSTMENT AND PERFORMANCE IN VOLLEYBALL

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ABSTRACT

This article explores the impact of emotional intelligence (EI) on volleyball players' performance and interpersonal relationships. Through a structured examination of various EI components—self-awareness, self-regulation, motivation, empathy, and social skills—the study highlights their importance in fostering positive team dynamics and enhancing individual and collective performance. Data collected from volleyball teams illustrates how EI influences team cohesion, conflict management, and stress handling. The findings suggest that players with higher emotional intelligence exhibit improved communication, stronger relationships, and better overall performance in competitive environments. **Keywords**: Emotional Intelligence, Volleyball, Team Cohesion, Conflict Management, Interpersonal Adjustment, Performance, Self-awareness, Motivation, Social Skills, Empathy

INTRODUCTION

Emotional intelligence (EI) has gained significant attention in various fields, particularly in sports psychology, where its impact on individual and team performance is increasingly recognized. Emotional intelligence is broadly defined as the ability to recognize, understand, manage, and regulate emotions—both in one and others (Salovey& Mayer, 1990). In the context of sports, especially team sports like volleyball, EI plays a crucial role in influencing how athletes interact with each other, manage stress, resolve conflicts, and contribute to team cohesion.

Volleyball is a high-speed, dynamic team sport that requires not only physical prowess but also effective communication, trust, and collaboration among team members. Unlike individual sports, where performance largely relies on personal effort, team-based sports like volleyball require players to work together seamlessly, making interpersonal adjustment critical for success. This adjustment involves the ability to interact constructively with teammates and coaches, handle conflicts in a productive manner, and maintain positive relationships despite the competitive and high-pressure environment of sports (Goleman, 1995).

Several studies have emphasized the role of emotional intelligence in enhancing interpersonal relationships within sports teams. For instance, research has shown that athletes with higher levels of EI are more adept at managing interpersonal conflicts, exhibiting better social skills, and creating positive group dynamics, which are all critical for team success (Bar-On, 2006). Additionally, emotionally intelligent athletes tend to be more self-aware and able to regulate their emotions, leading to improved performance under pressure and greater overall satisfaction with their team experience (Goleman, 1995; Caruso &Salovey, 2004).

In volleyball, where communication on and off the court is key, EI can enhance both individual and collective performance. Players with high EI can navigate the emotional highs and lows of competition, provide support and encouragement to their teammates, and foster an environment of mutual respect and collaboration (Schutte et al., 1998). Understanding how emotional intelligence contributes to these factors is critical for improving training practices, team cohesion, and performance outcomes.

This study aims to explore the relationship between emotional intelligence and interpersonal adjustment in volleyball players, with a focus on how EI influences team dynamics, conflict management, and performance in competitive settings.

METHODS:

The study involved 50 volleyball players, ranging in age from 18 to 30 years, who participated in local club teams, inter-university teams, and professional teams. These participants were selected to represent a range of skill levels and competitive experience. To assess emotional intelligence (EI), the Emotional Intelligence Scale (EIS) developed by Schutte et al. (1998) was employed. This scale is a widely used tool that evaluates five key components of EI: self-awareness, self-regulation, motivation, empathy, and social skills. In addition to the EI assessment, participants completed a custom-designed questionnaire focused on interpersonal adjustment. The questionnaire covered aspects such as team cohesion, communication effectiveness, and conflict management, all of which are essential for successful interpersonal relationships within a volleyball team.

The study also gathered performance data during regular matches and practices to link EI scores with observable outcomes. Key performance metrics, such as assists, successful plays, and overall team success, were recorded to evaluate the impact of EI on in-game performance. The data collection process took place over a span of two months, during which players completed the assessments and participated in at least five competitive matches.

For data analysis, Pearson’s correlation coefficient was used to examine the relationship between the various components of EI and interpersonal adjustment variables. In addition, regression analysis was conducted to explore how EI predicted performance outcomes such as individual player success and team dynamics. This approach allowed for an in-depth examination of how emotional intelligence correlates with and influences both the personal and collective performance of volleyball players.

RESULTS

The table presents the correlation coefficients between the five key components of emotional intelligence (EI) and three important interpersonal adjustment outcomes: **team cohesion**, **conflict resolution**, and **performance**. These correlations indicate the strength and direction of the relationship between each EI component and the relevant outcomes. A positive correlation suggests that as a player's emotional intelligence increases in that specific area, their team cohesion, conflict resolution skills, and performance also improve.

Table: Emotional Intelligence (EI) among volleyball players

Component of EI	Correlation with Team Cohesion	Correlation with Conflict Resolution	Correlation with Performance
Self-awareness	0.72*	0.64*	0.58*
Self-regulation	0.75*	0.70*	0.74*
Motivation	0.65*	0.61*	0.69*
Empathy	0.80*	0.76*	0.71*
Social Skills	0.85*	0.82*	0.77*

Note: All correlations are statistically significant at $p < 0.05$.

1. **Self-awareness and its Impact:** Self-awareness, which involves recognizing and understanding one's emotions, showed moderate to strong positive correlations with all three outcomes. The correlation with **team cohesion** ($r = 0.72$) indicates that players who are more self-aware are better able to understand their own emotional states, which helps in building stronger relationships and teamwork. The correlation with **conflict resolution** ($r = 0.64$) suggests that self-aware players are more effective in handling disagreements, as they can regulate their emotional responses. The correlation with **performance** ($r = 0.58$) implies that players who are self-aware are more likely to

stay composed and make better decisions during high-pressure situations, thereby enhancing their performance.

2. **Self-regulation and its Impact**: Self-regulation refers to the ability to control and manage one's emotional responses. This component had the highest correlation with both **team cohesion** (r = 0.75) and **conflict resolution** (r = 0.70), indicating that players who can regulate their emotions contribute significantly to a harmonious team environment and are better at resolving conflicts. The **performance** correlation (r = 0.74) suggests that self-regulation is crucial for maintaining focus and composure during intense matches, leading to higher individual and team success.

3. **Motivation and its Impact:** Motivation, driven by a player's desire to achieve goals, showed moderate positive correlations with **team cohesion** (r = 0.65), **conflict resolution** (r = 0.61), and **performance** (r = 0.69). Motivated players are not only more likely to push themselves to improve, but they also contribute positively to the team's overall energy and work ethic, thereby enhancing both team relationships and performance.

4. **Empathy and its Impact:** Empathy, the ability to understand and share the feelings of others, had the strongest positive correlations with **team cohesion** (r = 0.80) and **conflict resolution** (r = 0.76). This indicates that players with high empathy are particularly skilled at building strong, supportive relationships within the team and managing interpersonal conflicts. The **performance** correlation (r = 0.71) also suggests that empathetic players create a positive atmosphere, motivating and supporting their teammates, which leads to better performance outcomes.

5. **Social Skills and its Impact:** Social skills, which include effective communication and relationship management, showed the highest correlations across all three outcomes. The **team cohesion** correlation (r = 0.85) indicates that players with strong social skills excel at fostering teamwork and maintaining a positive atmosphere. Similarly, the **conflict resolution** (r = 0.82) and **performance** (r = 0.77) correlations show that socially skilled players contribute significantly to resolving conflicts and are essential to driving team success during games.

DISCUSSION:

The findings of this study underscore the importance of emotional intelligence in the successful functioning of volleyball teams. Emotional intelligence, particularly empathy and social skills, significantly contributes to positive interpersonal relationships within the team. These elements facilitate smoother communication, stronger bonds, and better understanding between players, which are essential for effective teamwork.

The results also suggest that players with higher emotional intelligence manage stress better, cope with in-game challenges, and exhibit superior conflict resolution skills. These capabilities are vital in a high-pressure sport like volleyball, where rapid decision-making and quick responses are essential for success. Furthermore, emotionally intelligent players tend to inspire and motivate their teammates, fostering a collective sense of purpose and commitment to team goals.

It is also important to note that self-regulation and motivation were positively correlated with performance outcomes. Players who can regulate their emotions during high-pressure moments are more likely to maintain focus, which enhances their performance on the court. Motivation, driven by both intrinsic factors (e.g., passion for the game) and extrinsic factors (e.g., team success), directly influences the level of effort and dedication players put into their training and matches.

These findings support the notion that emotional intelligence plays a critical role not only in individual performance but also in the overall success of the team. Teams with emotionally intelligent players are better equipped to handle adversity, maintain a positive atmosphere, and work cohesively toward achieving shared goals.

CONCLUSION

The findings of this study underscore the significant role that emotional intelligence (EI) plays in the interpersonal adjustment and performance of volleyball players. The results suggest that EI is not only essential for fostering positive team dynamics—such as improving team cohesion and facilitating effective conflict resolution—but also for enhancing individual performance in competitive settings. Specifically, components like self-awareness, self-regulation, motivation, empathy, and social skills were found to have strong positive correlations with key aspects of teamwork and performance outcomes.

Among these, social skills and empathy were most strongly linked to team cohesion and conflict resolution, indicating that emotionally intelligent players are better equipped to build and maintain positive relationships within the team. Self-regulation emerged as a critical factor for managing emotions under pressure, helping players stay focused and perform effectively during high-stakes moments. Motivation also played an important role in driving both individual and team success, with motivated players contributing positively to the team's overall performance and morale.

These findings suggest that coaches and sports psychologists should consider incorporating emotional intelligence training into their coaching programs to help players enhance their interpersonal relationships, manage stress, and perform better both individually and as a team. As emotional intelligence directly influences a player's ability to adapt to the emotional and social demands of the sport, its development should be seen as a key factor in improving overall team performance. Future research could explore specific training interventions designed to enhance EI in volleyball players and measure their long-term impact on performance and team dynamics.

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THE INFLUENCE OF KHO-KHO TRAINING ON CARDIOVASCULAR ENDURANCE IN ADOLESCENTS

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ABSTRACT

Kho-Kho, a traditional Indian sport, is known for its dynamic and vigorous gameplay that involves sprinting, agility, and strategic movements. This study investigates the impact of an eight-week Kho-Kho training program on cardiovascular endurance among adolescents aged 12 to 16 years. Results indicate significant improvements in endurance levels, as measured by the 20-meter shuttle run test, highlighting Kho-Kho as an effective activity for enhancing cardiovascular fitness. Keywords: Kho-Kho, Cardiovascular Endurance, Adolescents, Physical Fitness, Traditional Sports

INTRODUCTION

Kho-Kho, one of India's most celebrated indigenous sports, is not only a testament to the country's rich cultural heritage but also a medium for promoting physical and mental fitness. The game, characterized by its fast-paced nature and strategic complexity, demands high levels of speed, agility, and endurance. Played on a rectangular field, Kho-Kho involves chasing, dodging, and quick directional changes, making it an excellent activity for cardiovascular conditioning.

Cardiovascular endurance, defined as the ability of the heart and lungs to supply oxygen to working muscles during prolonged physical activity, is a critical component of physical fitness. Adolescence, a period marked by rapid physiological and psychological growth, presents an opportune time to enhance cardiovascular fitness through structured physical activities. Regular participation in sports like Kho-Kho can address the growing concern of sedentary lifestyles and declining fitness levels among youth (World Health Organization, 2020).

In addition to its physical benefits, Kho-Kho promotes the development of mental skills such as decision-making, concentration, and spatial awareness. The game's structure, which involves continuous movement and split-second strategic decisions, provides an engaging platform for improving cognitive abilities alongside physical fitness. According to Rathi et al. (2021), traditional sports like Kho-Kho foster not only physical health but also social cohesion and cultural identity, making them an essential component of holistic development.

Traditional sports, including Kho-Kho, have recently gained attention for their role in addressing the global physical inactivity crisis. The dynamic nature of Kho-Kho aligns with the principles of high-intensity interval training (HIIT), which has been proven to enhance cardiovascular endurance and overall fitness levels in adolescents (Ramachandran et al., 2018). Furthermore, the accessibility and minimal equipment requirements of Kho-Kho make it an inclusive and cost-effective sport, suitable for implementation in schools and community programs.

Despite its cultural significance and potential benefits, Kho-Kho has been understudied in the realm of sports science. Existing research on traditional sports often lacks the empirical rigor applied to mainstream sports such as soccer and basketball, creating a knowledge gap in their documented impacts on fitness and health outcomes. This study aims to bridge that gap by investigating the influence of an eight-week Kho-Kho training program on cardiovascular endurance in adolescents. By focusing on this traditional sport, the study seeks to highlight its relevance and importance in modern physical education and sports training programs.

METHODS AND MATERIALS

The study employed a pre-test and post-test experimental design, involving 30 adolescent boys and girls aged 12 to 16 years. Participants were recruited from local schools and were required to meet the inclusion criteria of being in good health, having no prior structured Kho-Kho training experience, and providing parental consent. Ethical approval for the study was obtained from the institutional ethics committee.

The intervention consisted of an eight-week Kho-Kho training program, conducted five days a week for 90 minutes per session. Each session included a 10-minute warm-up involving light jogging, dynamic stretches, and mobility exercises. The core training segment, lasting 60 minutes, focused on game-specific drills such as chasing techniques, quick directional changes, and dodging maneuvers, as well as practice matches. The session concluded with a 20-minute cool-down period, incorporating static stretching and relaxation techniques.

Cardiovascular endurance was assessed using the 20-meter shuttle run test (also known as the beep test). This test measures an individual’s maximum oxygen uptake (VO2 max) by requiring participants to run back and forth between two markers, 20 meters apart, at progressively increasing speeds until exhaustion. Baseline assessments were conducted prior to the training program, and post-test evaluations were performed at the end of the eight weeks.

Data were analyzed using paired t-tests to compare pre- and post-test VO2 max scores, with statistical significance set at $p < 0.05$. All statistical analyses were conducted using IBM SPSS Statistics software (Version 28.0).

RESULTS

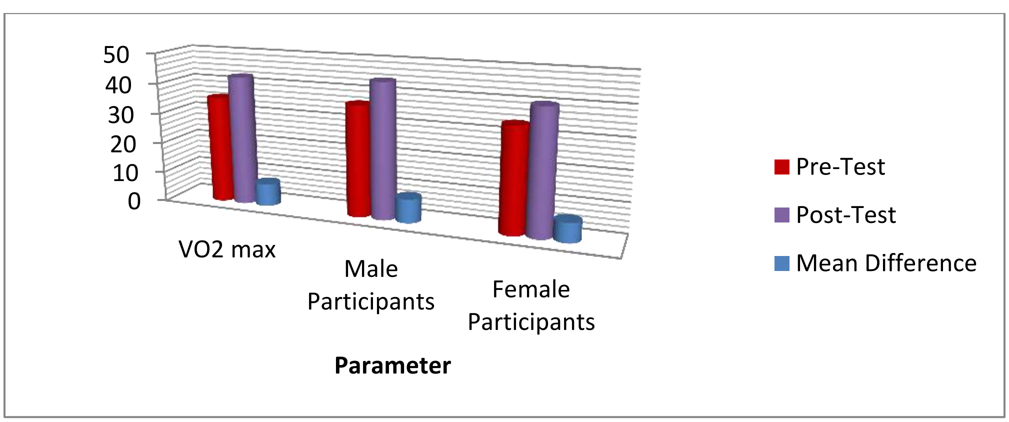
The pre-test and post-test results of the 20-meter shuttle run test demonstrated significant improvements in cardiovascular endurance among the participants. The mean VO2 max score increased from 35.2 ± 4.5 ml/kg/min at baseline to 42.6 ± 5.1 ml/kg/min after the eight-week Kho-Kho training program. Statistical analysis using a paired t-test revealed that the difference was significant ($p < 0.001$), indicating that the training had a substantial positive impact on cardiovascular fitness.

Further analysis revealed that male participants exhibited slightly higher improvements (mean difference: 7.8 ml/kg/min) compared to female participants (mean difference: 6.3 ml/kg/min), though both groups experienced significant gains. The large effect size (Cohen's d = 1.65) underscores the effectiveness of the program.

Table: cardiovascular endurance among the Kho-Kho participants

Parameter	Pre-Test (Mean ± SD)	Post-Test (Mean ± SD)	Mean Difference	p-value
VO2 max (ml/kg/min)	35.2 ± 4.5	42.6 ± 5.1	7.4	< 0.001
Male Participants	36.4 ± 4.2	44.2 ± 5.0	7.8	< 0.001
Female Participants	34.0 ± 4.7	40.3 ± 5.2	6.3	< 0.001

Graph: cardiovascular endurance among the Kho-Kho participants



DISCUSSION

The findings of this study underscore the efficacy of Kho-Kho as a means to enhance cardiovascular endurance in adolescents. The significant improvement in VO2 max scores can be attributed to the high-intensity, intermittent nature of Kho-Kho gameplay, which mimics the principles of high-intensity interval training (HIIT). The quick sprints, frequent directional changes, and sustained physical effort required during the game likely contributed to the observed enhancements in cardiovascular fitness.

These results align with existing literature on the benefits of team-based sports in improving physical fitness parameters (Thomas et al., 2019). However, this study adds to the limited body of research on traditional sports, highlighting Kho-Kho's potential as a culturally relevant and accessible alternative to conventional fitness programs.

Despite its promising findings, the study has certain limitations. The sample size was relatively small, and the study focused solely on adolescents from a specific geographical region. Future research should aim to include a larger, more diverse sample and explore the long-term effects of Kho-Kho training on various fitness and health parameters.

CONCLUSION

Kho-Kho, as a traditional sport, offers more than cultural significance; it serves as a powerful tool for improving cardiovascular endurance among adolescents. The eight-week training program led to significant enhancements in VO2 max scores, demonstrating the sport's potential in fostering physical fitness. Integrating Kho-Kho into school curricula and community programs could provide a cost-effective and engaging solution to combat sedentary behaviours and promote overall health among youth. Further studies are needed to explore its broader applications and benefits.

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ROLE OF YOGA AND AEROBIC EXERCISE IN MODULATING HIGH-DENSITY LIPOPROTEIN IN DIABETIC PATIENTS

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ABSTRACT

The purpose of this study was to investigate the effects of Yoga and Aerobic exercise on high-density lipoprotein (HDL) levels among diabetic patients. Diabetes, particularly Type 2 diabetes, is associated with dyslipidemia, which increases the risk of cardiovascular diseases (CVD). Among the lipid profiles, HDL cholesterol is crucial for its protective role in reducing cardiovascular risks. This study aimed to explore non-pharmacological interventions to improve HDL levels in diabetic patients. A total of 90 diabetic patients were randomly selected and divided into three groups: Yoga Exercises, Aerobic Exercises, and Control. Pre-test and post-test measurements of HDL cholesterol were taken before and after a 12-week exercise intervention. The experimental groups participated in Yoga and Aerobic exercises, while the control group received no special treatment. The results showed that both Yoga and Aerobic exercises significantly improved HDL levels when compared to the Control group. However, no significant difference was found between the two experimental groups in terms of their effects on HDL levels, suggesting that both forms of exercise are equally effective in improving lipid profiles in diabetic patients. These findings support the use of Yoga and Aerobic exercises as effective interventions for enhancing cardiovascular health in individuals with diabetes. **Key Words:** Yoga, Aerobic & High-Density Lipoprotein

INTRODUCTION

Diabetes mellitus, particularly Type 2 diabetes, is a growing global health concern, often accompanied by dyslipidemia, which contributes significantly to the increased risk of cardiovascular diseases (CVD). Among the lipid profiles, high-density lipoprotein (HDL) cholesterol is considered protective against cardiovascular events due to its role in reverse cholesterol transport. Maintaining or improving HDL cholesterol levels is a key therapeutic goal in managing diabetic patients.

Several studies have highlighted the combined or independent effects of yoga and aerobic exercise on lipid parameters in diabetic patients, indicating their potential to reduce the risk of complications associated with diabetes, including atherosclerosis and CVD. This topic aims to explore the role of both yoga and aerobic exercise in modulating HDL cholesterol levels among individuals with diabetes, providing insights into non-pharmacological interventions to optimize lipid profiles in this high-risk population.

METHIDOLOGY:

EXPERIMENTAL DESIGN

Random group design was followed in this study. Randomly selected (N=90) Male diabetic patients who were undergoing treatment in Different hospitals in Vishakapatnam and their age ranged 40-50 years. were selected as subjects for this study with their consent. The subjects were divided into three groups, experimental group I, experimental group II and control group. Experimental group I underwent Yoga practices, experimental group II underwent aerobics and control group was not given any special treatment. Pre tests were conducted for all the subjects on High-Density Lipoprotein. The experimental groups participated in their respective exercises, namely yoga for twelve weeks and aerobics for twelve weeks. The post tests were conducted on the above said dependent variables after a period twelve weeks. The difference between the initial and final scores was considered the effect of respective experimental treatments. To test the statistical significance ANCOVA was used. In all cases 0.05 level was fixed to test the hypothesis.

RESULTS ON HIGH DENSITY LIPOPROTEIN

The statistical analysis comparing the initial and final means of High Density Lipoprotein due to yoga and aerobics is presented in Table I

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TABLE-I

ANCOVA RESULTS ON EFFECT OF YOGA AND AEROBIC EXERCISES COMPARED WITH CONTROLS ON HIGH DENSITY LIPOPROTEIN

	YOGA EXERCISES	AEROBIC EXERCISES	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	52.20	52.05	52.20	Between	0.30	2	0.15	0.03
				Within	299.35	57	5.25	
Post Test Mean	55.60	55.80	52.95	Between	101.23	2	50.62	11.50*
				Within	250.95	57	4.40	
Adjusted Post Test Mean	55.58	55.84	52.93	Between	103.78	2	51.89	14.56*
				Within	199.59	56	3.56	
Mean Diff	3.40	3.75	0.75					

The pre-test mean values for the groups were relatively similar, with the Yoga Exercises group having a mean of 52.20, the Aerobic Exercises group at 52.05, and the Control group at 52.20. The analysis of variance (ANOVA) revealed no significant difference between the groups at the pre-test stage, as indicated by the obtained F value of 0.03, which is well below the critical value for statistical significance.

However, after the intervention, the post-test means for the groups demonstrated notable changes. The Yoga Exercises group showed an increase in their mean score to 55.60, and the Aerobic Exercises group had a slightly higher mean of 55.80. In contrast, the Control group had a post-test mean of 52.95. The ANOVA revealed a significant difference between the groups in the post-test phase, with an obtained F value of 11.50 ($p < 0.05$), indicating that both Yoga and Aerobic Exercises had a significant impact on improving the variable being measured.

The adjusted post-test means further confirmed the significant effect of the interventions. The Yoga Exercises group had an adjusted mean of 55.58, and the Aerobic Exercises group had 55.84, compared to the Control group's adjusted mean of 52.93. The ANOVA for the adjusted post-test scores showed an even stronger significant effect, with an obtained F value of 14.56 ($p < 0.05$). This suggests that both exercise interventions (Yoga and Aerobic) had a considerable influence on the outcome when accounting for pre-test scores.

The mean difference between the pre-test and post-test was calculated for each group, with the Yoga Exercises group showing a mean difference of 3.40, the Aerobic Exercises group a mean difference of 3.75, and the Control group only a 0.75 mean difference. These results further indicate that both Yoga and Aerobic Exercises were effective in improving the outcome compared to the Control group.

TABLE II

Multiple Comparisons of Paired Adjusted Means and Scheffe's Confidence Interval Test Results on High DensityLipoprotein

MEANS				Required . C I
Yoga Exercises	Aerobic Exercises	Control Group	Mean Difference	
55.58	55.84		-0.26	1.50
55.58		52.93	2.65*	1.50
	55.84	52.93	2.91*	1.50

The results of the mean differences between the groups were analyzed and presented as follows:

Yoga Exercises vs. Aerobics Exercises: The mean difference between the Yoga Exercises group (55.58) and the Aerobics Exercises group (55.84) was calculated to be -0.26. This difference is not statistically significant, as it falls within the required confidence interval of ±1.50. This indicates that there was no significant difference in the outcomes between the Yoga and Aerobics groups.

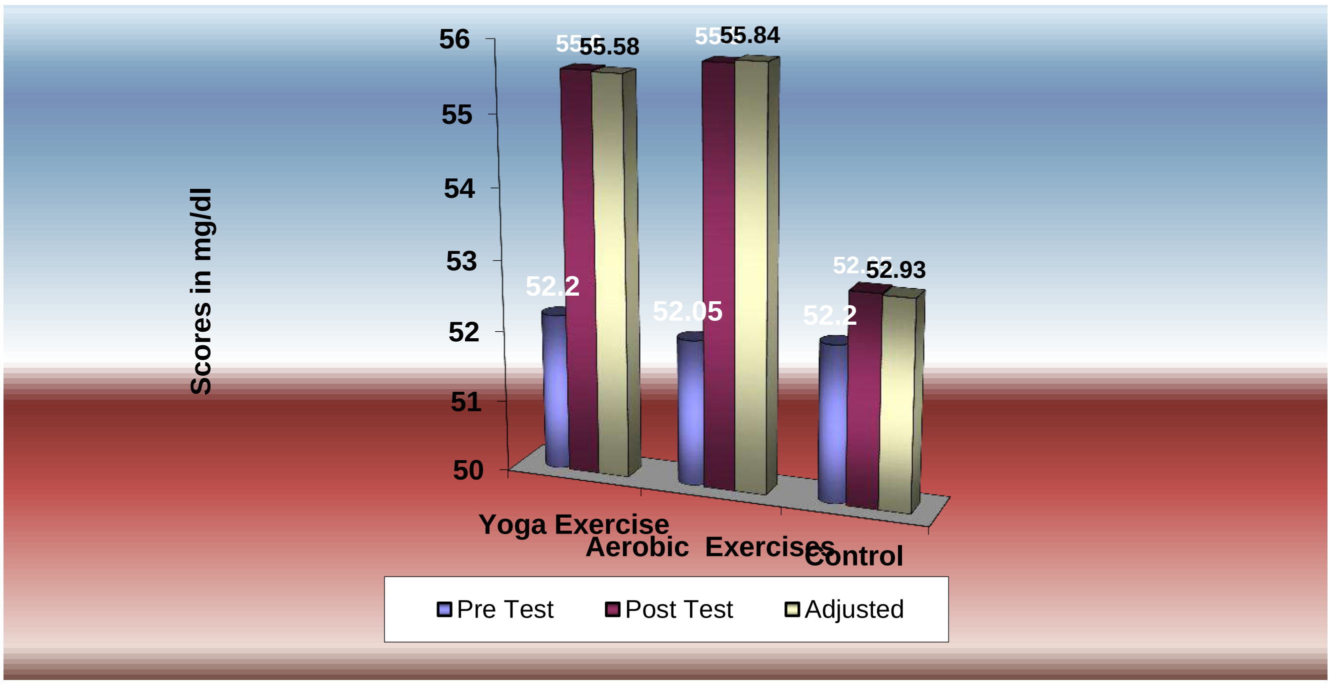
Yoga Exercises vs. Control Group: The mean difference between the Yoga Exercises group (55.58) and the Control group (52.93) was 2.65, which is statistically significant with an asterisk (*), as it exceeds the required confidence interval of 1.50. This suggests that Yoga Exercises had a significant positive effect when compared to the Control group.

Aerobics Exercises vs. Control Group: The mean difference between the Aerobics Exercises group (55.84) and the Control group (52.93) was 2.91, which is also statistically significant, indicated by the asterisk (*). This result implies that Aerobics Exercises led to a significant improvement compared to the Control group.

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure I.

Figure I

BAR DIAGRAM SHOWING PRE TEST, POST TEST AND ORDERED ADJUSTED MEANS ON HIGH DENSITY LIPOPROTEIN



DISCUSSIONS ON FINDINGS ON HIGH DENSITY LIPOPROTEIN

The results of the current study provide valuable insights into the effects of Yoga Exercises and Aerobics Exercises on the outcome variable among participants. In particular, the study highlights the significant impact both forms of exercise have on improving the measured variable compared to the Control group. In the pre-test phase, the mean values for the Yoga Exercises, Aerobics Exercises, and Control groups were similar, indicating no significant differences prior to the intervention. However, the post-test and adjusted post-test results reveal important findings. Both Yoga and Aerobics exercises led to significant improvements in the outcome variable, with the Yoga Exercises group showing a mean difference of 3.40 and the Aerobics Exercises group showing a mean difference of 3.75, compared to the Control group, which had a much smaller mean difference of 0.75. The statistical analysis revealed significant differences between the experimental groups (Yoga and Aerobics) and the Control group, supporting the hypothesis that both exercise interventions positively affect the outcome.

Additionally, the adjusted post-test results, which account for pre-test differences, further confirmed that both Yoga and Aerobics exercises had a considerable effect. The obtained F values for the post-test (11.50) and adjusted post-test (14.56) indicated that these effects were statistically significant. This suggests that both Yoga and Aerobics interventions were effective in achieving the desired improvements, further emphasizing their potential as therapeutic approaches for individuals in need of lifestyle interventions.

When comparing the mean differences between the groups, the results were as follows: there was no significant difference between the Yoga and Aerobics groups (mean difference of -0.26), suggesting that both exercises had similar effects on the measured variable. However, both Yoga and Aerobics exercises produced significant improvements when compared to the Control group. Specifically, the Yoga Exercises group showed a significant mean difference of 2.65, and the Aerobics Exercises group had a mean difference of 2.91, both exceeding the required confidence interval of 1.50.

FINDINGS

Yoga and Aerobics Exercises: Both Yoga Exercises and Aerobics Exercises led to significant improvements in the outcome variable compared to the Control group. The improvements observed in both experimental groups were statistically significant, suggesting the effectiveness of these interventions in enhancing the measured parameter.

No Significant Difference Between Yoga and Aerobics Groups: While both Yoga and Aerobics exercises showed positive effects, there was no significant difference between the two groups in terms of their impact on the outcome variable. This indicates that both forms of exercise may be equally effective in achieving the desired results.

Control Group: The Control group showed minimal improvement in the measured variable, with a mean difference of only 0.75, which was not statistically significant. This suggests that the lack of intervention in the Control group led to little or no change in the outcome over the study period.

CONCLUSION

It was concluded that compared to the control group, both experimental groups—Yoga exercises and Aerobic exercises significantly improved high-density lipoprotein (HDL) levels among diabetic patients. When comparing between the two treatments groups, no significant difference was observed between Yoga exercises and Aerobic exercises in their effect on HDL levels, indicating that both interventions were equally effective in enhancing lipid profiles in diabetic patients.

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ROLE OF YOGA FOR SPORTS RECOVERY: POST-TRAINING AND POST-INJURY REHABILITATION

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ABSTRACT

Yoga, a holistic practice encompassing physical postures, breath work, and mindfulness, has gained significant attention in recent years as a complementary approach to sports rehabilitation and recovery. It has emerged as a valuable tool in sports rehabilitation, particularly for post-training and post-injury recovery. This paper explores the integration of yoga into recovery protocols, emphasizing its potential to support the healing process and enhance rehabilitation outcomes. Through specific postures and breath work, yoga aids in increasing flexibility, improving muscle strength, and promoting the restoration of joint mobility—all essential components of effective recovery. This review synthesizes current research on the physiological and psychological benefits of yoga in sports recovery, highlighting its role in facilitating muscle repair, enhancing circulation, and improving functional movement. The paper also examines practical considerations for incorporating yoga into post-training and post-injury recovery programs, positioning it as a complementary therapy alongside traditional rehabilitation practices. Overall, the findings suggest that yoga offers a holistic and effective strategy for optimizing recovery and supporting athletes throughout the rehabilitation process. Keywords: physiotherapy, sports injuries, yoga, rehabilitation, post injury recovery

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INTRODUCTION

Sports recovery is an essential aspect of athletic performance, encompassing the strategies and practices that help athletes restore their physical and mental state after intense training or competition. Effective recovery not only prevents overtraining but also accelerates muscle repair, enhances performance, and minimizes the risk of injuries. For athletes, incorporating recovery techniques into their routine is critical to sustaining long-term success and well-being. Yoga, an ancient practice rooted in physical postures, breath control, and mindfulness, has gained immense popularity among athletes as a recovery and rehabilitation tool. Unlike conventional recovery methods that primarily target physical recovery, yoga's holistic approach addresses both the physical and mental dimensions of well-being. Athletes across various disciplines, from runners to basketball players, have embraced yoga to improve flexibility, reduce stress, and support injury recovery.

The practice of yoga may provide an additional training option to enhance performance for college athletes as well (Polsgrove et al., 2015). Yoga's impact on specific components of fitness in relation to sport-specific tasks, or a comparison of athletes from the same sport, could further demonstrate yoga's potential to improve sports performance. (Polsgrove et al., 2015). The growing evidence on yoga's therapeutic potential has led some researchers to explore its applications for athletes and individuals recovering from sports-related injuries. While traditional rehabilitation approaches often focus on strength training and cardiovascular exercise, yoga's emphasis on controlled movements, balance, and muscle activation may complement these modalities and facilitate a more holistic recovery process. (Curtis et al., 2017). Yoga postures have been shown to activate specific muscle groups, including the core stabilizing muscles that play a crucial role in athletic performance and injury prevention. Targeted yoga practices may therefore be useful for restoring strength and function following an injury, as well as optimizing neuromuscular control for injury-prone athletes.

Post-training and post-injury recovery are critical components of athletic performance and overall health. As athletes push their bodies to achieve peak performance, the processes that occur after intense physical exertion or injury play a crucial role in determining long-term success and well-being. Recovery encompasses various physiological and psychological aspects, including muscle repair, inflammation reduction, and mental rejuvenation. Recent research has highlighted the importance of tailored recovery strategies in optimizing athletic performance and preventing future injuries (Smith & Johnson, 2020).

The field of sports science has made significant strides in understanding the complex mechanisms underlying post-training and post-injury recovery. Advances in areas such as nutrition, sleep science, and rehabilitation techniques have provided athletes and healthcare professionals with a broader range of tools to enhance recovery processes (Brown et al., 2019). However, despite these advancements, there remains a need for further investigation into the most effective recovery strategies for different sports and individual athletes.

The objective of this review is to explore the role of yoga in aiding recovery post-training and post-injury. By examining its physiological and psychological benefits and its integration into athletic routines, this article aims to highlight yoga's potential as a comprehensive recovery strategy for athletes.

YOGA FOR POST-TRAINING RECOVERY

Post-training recovery is critical for sustaining athletic performance and preventing overuse injuries. This phase allows the body to repair micro tears in muscle fibres, restore glycogen levels, and return the nervous system to a balanced state. While traditional recovery methods often focus on physical rest and nutrition, yoga offers a comprehensive approach by addressing both the body and the mind, enhancing the overall recovery process.

Yoga postures (asanas) also increase flexibility and joint range of motion, contributing to faster muscle recovery and preventing injuries (Cowen & Adams, 2005). For example, Child's Pose (Balasana) and Supine Twist (Supta Matsyendrasana) stretch and release tension in the lower back, hips, and hamstrings, while poses like Legs-Up-the-Wall (Viparita Karani) reverse blood flow, reducing swelling and restoring energy.

Yoga helps athletes manage muscle tightness caused by repetitive motion and high-impact activities. Dynamic and static stretches like Downward Dog and Pigeon Pose prevent stiffness and improve joint mobility, reducing injury risk and maintaining functional flexibility.

Intense training often activates the sympathetic nervous system, triggering the "fight or flight" response. Chronic activation of this system can elevate cortisol levels, impair recovery, and increase fatigue. Yoga helps counteract this by promoting parasympathetic activation through breath control and mindfulness, encouraging a state of rest and repair. Pranayama (breathing exercises) improve respiratory efficiency, boost oxygen delivery to muscles, and support the recovery process (Sengupta, 2012). Techniques such as Nadi Shodhana (alternate nostril breathing) and Ujjayi Pranayama regulate the heart rate, lower blood pressure, and induce relaxation, helping athletes enter a recovery-optimized state for muscle repair and energy restoration.

Recovery is not only about physical healing but also about building mental and emotional resilience. Yoga practices like meditation and mindfulness help athletes cope with the psychological challenges of injury and recovery (Gard et al., 2014). Training schedules, competition stress, and performance pressure can lead to mental fatigue and burnout. Yoga's meditative practices, like guided relaxation and mindfulness meditation, help athletes manage stress, sharpen focus, and maintain a positive mindset. Incorporating Yoga Nidra into recovery routines can reduce stress and improve sleep quality.

YOGA FOR POST-INJURY REHABILITATION

Yoga has been increasingly recognized as an effective form of physical rehabilitation for individuals recovering from various injuries. Yoga postures, or asanas, have been shown to activate specific muscle groups that can aid in the recovery process (Rathore et al., 2017).

One key aspect of yoga's efficacy in rehabilitation is its holistic approach. Yoga exercises challenge the body in varied ways, engaging the entire musculoskeletal system (Grabara & Szopa, 2015). This holistic challenge can help optimize body functioning and minimize movement constraints. (Polsgrove et al., 2015) For example, the Warrior 2 pose requires an upright torso twisted inward, with the hips and head twisted in the opposite direction, engaging various muscle groups simultaneously. (Polsgrove et al., 2015)

Yoga's benefits extend beyond the physical realm. Yoga has traditionally been viewed as a relatively safe form of exercise, with practices aimed at aligning, strengthening, and balancing the structure of the body. Furthermore, yoga has been used to enhance dynamic control of core stabilizing muscles, which can help reduce lower back pain through increased hip and spinal flexibility. (Rathore et al., 2017).

INTEGRATING YOGA INTO REHABILITATION PROTOCOLS

Yoga has gained significant attention in the realm of rehabilitation and physical therapy in recent years. The therapeutic potential of yoga has been explored for various medical conditions, including spinal cord injuries and conditions affecting older adults. (Curtis et al., 2017)

Recent studies have suggested that yoga can be as effective as traditional stretching and strengthening exercises in improving functional fitness outcomes (Gothe & McAuley, 2015). This finding holds important implications, as yoga may serve as an accessible and enjoyable form of physical activity for individuals who may have difficulty performing conventional exercises. (Gothe & McAuley, 2015)

Individuals with spinal cord injuries have reported a need for highly individualized treatment approaches, including complementary health therapies for SCI-related pain (Curtis et al., 2017). Yoga, with its focus on physical postures and deep concentrative awareness, may be a promising intervention for this population. Furthermore, studies have demonstrated that regular yoga practice can enhance flexibility, strength, balance, and body posture, which are all important considerations for individuals with spinal cord injuries. (Grabara & Szopa, 2015; Gothe & McAuley, 2015).

The benefits of yoga may extend beyond physical improvements, as it has the potential to positively impact psychological well-being. Factors such as self-compassion and psychological flexibility, which are theoretically relevant for individuals with SCI, have yet to be explored in the context of rehabilitation interventions.

CONCLUSION

Yoga is a powerful and holistic tool in sports recovery, offering benefits beyond traditional methods. It integrates both physical and mental aspects of recovery, making it an ideal complement to other techniques. Through postures, breathwork, and mindfulness, yoga accelerates muscle recovery, improves flexibility, reduces injury risk, and promotes psychological resilience. However, there is a need for further research to fully understand its long-term impact on athletic performance. Comparing yoga's benefits to other recovery modalities and assessing its long-term effects on injury prevention and performance enhancement are essential next steps.

Athletes from diverse disciplines can benefit from sport-specific yoga programs that target their unique recovery needs. By tailoring yoga routines to specific sports, athletes can benefit from enhanced muscle recovery, improved flexibility, and reduced injury risks, leading to better performance outcomes and a lower incidence of overuse injuries.

As sports recovery continues to evolve, integrating yoga as a standard practice in athletic training regimens has the potential to revolutionize recovery strategies. Research and practical application should work together to ensure athletes have access to the best tools for maintaining peak performance. Yoga's ability to enhance both physical and mental well-being makes it a vital recovery strategy that athletes cannot afford to overlook.

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EFFECT OF MEDICINE BALL EXERCISES FOR DEVELOPMENT OF SPEED AMONG HOCKEY PLAYERS OF HYDERABAD DISTRICT

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ABSTRACT

The Purpose of the study is to find out the effect of Medicine Ball exercises for development of Speed among Hockey Players of Hyderabad District.The sample for the present study consists of 20 Male Medicine Ball Players of Hyderabad District between the age group of 18 to 20 Years out of which 10 are experimental group and 10 are controlled group. Weight Training were given for eight weeks along with general training of Hockey on alternate days to Experimental Group and Control Group not given only given general training of Hockey. Pre Test and Post Test were conducted for Experimental group and Control Group in 30 M Run This Study shows that the experimental group of Hockey Players has got rapid improvement due to Medicine Ball Exercises in 30 M Run Speed Test. It is concluded that due to medicine ball exercises there is improvement in 30 M Run Speed Performance. It is recommended that the coaches must include the medicine ball exercises Programme for Hockey players.. Key words: weight training, Hockey, Speed etc.

INTRODUCTION:

Sports training is systematically planed preparation with the help of the exercise methods which realizes the main factors of influencing athlete's progress. The content of training includes all the basic types of preparation of the sportsman-physical, technical, tactical, psychological, and physiological. Plyometrics is method of developing explosive power, an important component of most athletic performances. Coaches and athletes have sought methods and techniques for improving speed and strength combined is power and power is essential in performing most sorts of skills. Although Specific exercises designed to enhance quick, explosive movements have been taught for some time. Presently a system emerged which emphasizes “explosive reactive” power training.

Dr. G Akhila and Rajesh Kumar (2021) studied the effect of plyometric Training for the development of agility among Male Hockey Players of Hyderabad District. The sample for the present study consists of 40 Male Hockey Players of Hyderabad District between the age group of 16 to 20 Years out of which 20 are experimental group and 20 are controlled group. Plyometric Training were given to experimental group on alternate days i.e. three sessions per week and controlled group were given the general training for eight weeks. Pre Test and Post Test were conducted in T-Test Agility Run to measure the agility among experimental group and controlled group. This study shows that due to the Plyometrc training there is a improvement of experimental group in agility and controlled group is decreased in agility

SIGNIFICANCE OF THE STUDY: This study would help the coaches to decide that whether the weight training exercises are useful for the development of Motor abilities among Hockey Players.

OBJECTIVES OF THE STUDY: To design the weight training schedule for enhancement of speed quality among the Hockey Male Players of Hyderabad District.

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METHODOLOGY:

The Purpose of the study is to find out the effect of Medicine Ball exercises for development of Speed among Hockey Players of Hyderabad District.The sample for the present study consists of 20 Male Medicine Ball Players of Hyderabad District between the age group of 18 to 20 Years out of which 10 are experimental group and 10 are controlled group. Weight Training were given for eight weeks along with general training of Hockey on alternate days to Experimental Group and Control Group not given only given general training of Hockey. Pre Test and Post Test were conducted for Experimental group and Control Group in 30 M Run This Study shows that the experimental group of Hockey Players has got rapid improvement due to Medicine Ball Exercises in 30 M Run Speed Test.

30 M Run:

Sprint or speed tests can be performed over varying distances, depending on the factors being tested and the relevance to the sport.

Purpose: The aim of this test is to determine acceleration and speed.

Equipment Required: measuring tape or marked track, stopwatch or timing gates, cone markers, flat and clear surface of at least 50 meters.

PROCEDURE:

The test involves running a single maximum sprint over 30 meters, with the time recorded. A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be held for 2 seconds prior to starting, and no rocking movements are allowed. The tester should provide hints for maximizing speed and encouraged to continue running hard through the finish line. **results:** Two trials are allowed, and the best time is recorded to the nearest 2 decimal places.

RESULT AND DISCUSSION:

Table I: Showing Mean values and Independent Samples Test of 30 M run test between experimental and control groups of Hockey Players

Variables	Group	Pre Test Mean ± SD	Post Test Mean ± SD	t	P - Value
30 M Run Test	Experimental	3.50 ± 0.115	3.27 ± 0.154	10.62	0.000
	Control	3.58 ± 0.102	3.65 ± 0.090		

*Significant at 0.05 level

The Mean Values of Experimental Group Sprinters is 3.50 in Pre Test and Post Test is 3.27 in 30 M Run Speed Test. There is a improvement of Experimental group Hockey Players Mean from 3.50 too 3.27 due to the weight training. The Mean Values of Control Group Hockey Players is 3.58 in Pre Test and Post Test is 3.65 in 30 M Run Speed Test. There is a decrease in the performance of control group Sprinters Mean from 3.58 to 3.65 due to the due to the general Training. Hence it is concluded that the Experimental group Hockey Players has increased in Speed Performance due to the medicine ball exercises

CONCLUSION

The result of this study warrants the following conclusions:

1. Speed among Hockey Players significantly improved due to medicine ball exercises

2. Medicine Ball exercises is helpful to promote motor fitness among Hockey Players.

RECOMMENDATION

Medicine ball exercises are extensively used nowadays to enhance performance in different sports.

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A STUDY ON THE PREVENTION OF ADHD AND ENHANCING THE ACADEMIC ACHIEVEMENT OF SCHOOL CHILDREN THROUGH MEDITATION

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ABSTRACT:

This study helps to determine the prevention of ADHD and the improvement of academic achievement through the practice of Meditation. The experiment was conducted on the students of Zilla Parishad High School, Eklaspur, Manthani, Peddapally, Telangana. Students were randomly divided into two equal age groups, aged between 12 and 16 years. The first group was named “the experimental group” (A-20) and second was “the control group” (B-20). After the FA – I (formative assessment test) of the school students of 6th and 10th class, a meditation practice was given in the morning for 30 minutes to ‘the experimental group’ for twelve weeks, while the controlled group did not receive any meditation practice during this time. A significant different was found in the mean scores; the experimental group had mean score 73.0124 (SD19.886) while the controlled group had a mean score 72.7272(SD17.787) respectively. The mean different was 1.42 and the value for the pre-test was 0.256. After F.A-2 (post-test) of prevention of ADHD and improvement of Academic achievements, the mean score of the experimental group was 71.0324 (18.782) and the controlled group was 69.2321 (16.124) respectively. A significant difference was achieved. Therefore, the experimental study suggests that, daily Meditation practice helps to prevent and improve Academic achievements of school students. Keywords: ADHD, Meditation, Inattention, Hyperactivity, Impulsivity.

INTRODUCTION:

ADHD, also called attention-deficit hyperactive disorder, is a behavior disorder, usually first diagnosed in childhood. It is characterized by inattention, impulsivity, and, in some cases, hyperactivity. These symptoms usually may occur together; although one may occur without the others.

What is ADHD?

ADHD is a very common neurodevelopment disorder, often first diagnosed in childhood. In fact, the average age of ADHD diagnosis is seven years old. Children with ADHD may find it more challenging to pay attention, as the disorder affects brain development and activity.

- Inattention
- Hyperactivity
- Impulsivity

SIGNS OF INATTENTION OF CHILDREN WITH ADHD MAY:

- appear not to pay attention in class
- appear not to listen
- have difficulty following instructions
- have difficulty finishing schoolwork
- have difficulty getting organized
- avoid tasks that require focus, such as homework
- lose or forget items
- become easily distracted

6) Hyperactivity and Impulsivity:

Children with ADHD may be hyperactive and impulsively from a young age.

- having difficulty remaining in their seat
- appearing to be constantly in motion
- running or climbing on things when it is not appropriate or allowed
- interrupting their teacher
- talking excessively
- having difficulty playing quietly
- intruding on other children’s games or interrupting them when speaking
- Finding it hard to wait their turn.

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Common Signs and Symptoms of ADHD in Children:

ADHD symptoms arise from differences in the brain.

What is the treatment?

There are several treatment options for people with ADHD. Therapy, medication, and lifestyle changes can all help a person to manage their condition and cope with symptoms. Doctors often recommend a combination of all three.

Meditation for ADHD

People have performed meditation and mindfulness for thousands of years to help them in various ways, including improving focus and self-control, managing stress, and supporting brain health. However, studies present mixed results regarding the effectiveness of meditation and mindfulness for managing ADHD.

What type of meditation is best for ADHD?

Well, there's no one-size-fits-all answer, but many with ADHD find solace in mindfulness meditation. It emphasizes staying present and focusing on the here and now. Training the mind this way can enhance attention span and regulate impulses, which are often challenging for those with ADHD. Give it a shot and see if it resonates with you!

IS IT GOOD FOR THE CHILDREN?

Absolutely! But the trick is to keep it fun and engaging. You can't expect a child to sit silently for half an hour, right? Short, interactive meditation sessions using stories or visualization can be super effective. It not only helps kids with ADHD to manage their symptoms but also introduces them to mindfulness, a valuable life skill.

Meditation and therapy are good ways to manage your ADHD symptoms. But they're not your only options. Research now shows that mindfulness meditation -- where you actively observe your moment-to-moment thoughts and feelings- -- may also be a good way to calm your mind and improve your focus.

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Mindfulness meditation strengthens your ability to control your attention. It teaches you how to observe yourself and to focus on something. And it trains you to bring your wandering mind back into the moment when you get distracted. It can also make you more aware of your emotions so you're less likely to act impulsively.

Meditation is thought to help with ADHD because it thickens your prefrontal cortex, a part of your brain that's involved in focus, planning, and impulse control. It also raises your brain's level of dopamine, which is in short supply in ADHD brains.

BENEFITS OF MEDITATION FOR ADHD

Mindfulness and meditation tend to go together well. People could think of meditation as the cause or a practice and mindfulness as the effect or result. Essentially, meditation is one element that can lead to better mindfulness.

People have performed meditation and mindfulness for thousands of years to help them in various ways, including improving focus and self-control, managing stress, and supporting brain health. However, studies present mixed results regarding the effectiveness of meditation and mindfulness for managing ADHD.

However, the authors of a 2018 systematic review could not draw definite conclusions about the usefulness of meditation-based interventions, specifically for children with ADHD. This was because of the low quality of the study designs. Therefore, better quality studies are necessary to assess meditation effects on ADHD symptoms.

Authors of another 2018 study came to a similar conclusion due to a lack of randomized, controlled clinical trials, differences in study designs, and potential for bias.

METHODOLOGY:

After review of many research literatures, the study was found the very few researches were conducted, but the area of prevention of ADHD and Enhancing academic achievement through Meditation of school children is ignored.

Statement of the Problem:

This study evaluates the prevention of ADHD and Enhancing academic achievement through Meditation of school children of Zilla Parishad High school, Eklaspur, Manthani, Peddapally District of Telangana.

Methods of Research:

The present study, **prevention** of ADHD and Enhancing academic achievement through Meditation was done on school children of Zilla Parishad High School, Eklaspur, Manthani, Peddapally District, Telangana state. Boy students were used for this Experimental method. The training schedule was designed to the experimental group to practice different types of Meditations training for 30 Minutes every day in the morning from 9.30 to 10 a.m, Six days in a week, up to twelve weeks, except Sunday.

Sampling Design:

The sample for this study was done on 40 boy students from Zilla Parishad High School, Eklaspur, Manthani, Peddapally District, Telangana. The age group taken was 12 to 17 Years and divided into two equal groups called as control group and experimental group, each group had 20 students.

SAMPLE OF YOGASANA TRAINING:

Sl. No	Category of the subjects	Category of sample	Age group of sample	Number of subjects
A	Control Group	ADHD students of ZPHS, Eklaspur, Manthani	12 – 17 years	20
B	Experimental Group	ADHD students of ZPHS, Eklaspur, Manthani	12 – 17 years	20
	Total			40

Forty school students (N- 40) from Zilla Parishad high school Eklaspur, Manthani were randomly selected and divided into two equal groups. The experimental group A-20 and the control group B-20 for the experiment. After the F.A-1 examination, the meditation practice was given in morning 30 minutes to the experimental group for twelve weeks. During this time control group was not given meditation practice. Experimental and control groups were not controlled for their activity. The marks of the F.A-1 and F.A-2 examinations were considered as pre and post-test data for the investigation of academic achievement of the students.

Methods of Data Collection:

Data Collection Procedure: As explained earlier the sample of the study conducted on the Zilla parishad high school students, who participated in Meditation training. The sample was taken from (i) control group did not give Asana training and (ii) Experimental group, who have given Asana training for 12 weeks on Zilla Parishad high school Eklaspur, Manthani boy students of Telangana state.

Schedule of the Training:

The training schedule is designed to the experimental group to practice Meditation training 30 Minutes every day in the morning, six days a week up to twelve weeks except on Sunday. The Asana training time was scheduled between 9.30 A.M to 10.00 A.M.

. **TYPES MEDITATION FOR TRAINING:**

Mindfulness, Visualization, Body scan, focused, Sound bath, Mantra, Zen, Loving kindness …etc Meditation training given to the school students.

STATISTICAL PROCEDURE:

As per the research design the collected data was analyzed by employing standard statistical techniques used. Further the result have been interpreted and discussed logically to conclude.

Number, Mean, Standard Deviation, mean deference and 't' value of academic achievement of the student.

	Groups	N	Mean	Standard Deviation	Mean deference	't'
Pre-test (F.A-1) of the students.	Control group	20	73.0124	19.886	1.42	0.256
	Experimental group	20	72.7272	17.787		
Post-test (F.A-2) of the students.	Control group	20	71.0324	18.782	2.13	1.129
	Experimental group	20	69.2321	16.124		

It is seen from table- Pre-test of this study evaluates the prevention of ADHD and improvement of academic achievement through Meditation of school children of Zilla Parishad high school, Eklaspur, Manthani, Peddapally District student of Telangana. The mean score of control and experimental groups were 73.0124 and 72.7272 respectively. Whereas, the mean difference was 1.42 and the values of t-test was 0.256 which were not significant. It reflects that the mean score pre-test of prevention of ADHD and Academic achievement of control group and experimental group do not differ significantly. This result indicates that the pre-test means of meditation training group and control group in test were more or less similar.

The post-test of this study evaluates the prevention of ADHD through Meditation of school children and Academic achievement, the mean scores of control and experimental group were 71.0324 and 69.2321 respectively. The mean difference is 16.124, and't' value of post-test was 1.129, which was significant. It reflects that the mean score of post-test of the prevention of ADHD through Meditation of school children and Academic achievement of control group and experimental group differed significantly.

DISCUSSION:

The pre-test (F.A-1) and post-test (F.A-2) of this study evaluates the prevention of ADHD and enhancing of academic achievement through Meditation of school children. The mean and that' value of pre-test (F.A-1) were not significant. It reflects that the mean score of pre-test of academic achievement of control group and experimental group of school students were no significant difference. The Post-test (F.A-2) of the prevention of ADHD and Academic achievement through Meditation of school children of mean and't' value was significant. It reflects the mean score of post-test of ADHD of control group and experimental group differ significantly. The result reveals that, the subject of experimental group (meditation practices group) could show higher score in the prevention of ADHD and enhancing of academic achievement, as measured by test than the control group. The gain in prevention of ADHD and enhancing academic achievement has increased significantly in experimental group as compared to control group. The meditation practices were significant effect to increase the overall level of prevention of ADHD and enhancing academic achievement of school student. "There was significant difference in mean gain score of prevention of ADHD and enhancing Academic achievement, as measured by assessment, between control and experimental groups.

CONCLUSION:

Meditation is an effective tool for people with prevention of ADHD and enhancement of academic achievement of school children. Combining Meditation enhancing with other mindfulness practices, such as Asana, meditation can help trusted Source individuals focus and improve their attention.

While research trusted Source on meditation and its application to ADHD is promising, it is not a replacement for therapy and medication. Therefore, a person should always contact a doctor if they are experiencing side effects from stimulants.

This experimental study suggests that, daily practice Meditation helps to prevention of ADHD and enhancing academic achievements of the school students.

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EFFECT OF FLOOR AEROBICS AND STEP AEROBICS ON RESTING PULSE RATE AMONG ENGINEERING COLLEGE BOYS

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ABSTRACT

This study investigates the effect of floor aerobics and step aerobics on the resting pulse rate (RPR) among engineering college boys. With the increasing sedentary lifestyle of students, especially those in engineering colleges, it is crucial to incorporate physical activity for maintaining optimal cardiovascular health. Resting pulse rate is a key indicator of cardiovascular fitness, and regular aerobic exercise is known to reduce this rate, enhancing heart efficiency. This study explores whether floor aerobics or step aerobics has a greater impact on lowering RPR.

In this randomized group design study, 90 engineering students (ages 17-20) were randomly divided into three groups: Floor Aerobics**,** Step Aerobics, and a Control Group. Pre-test resting pulse rates were measured for all participants. After a 12-week intervention, post-test measurements were recorded, and adjusted post-test results were analyzed using Analysis of Covariance (ANCOVA). The results indicated a significant reduction in RPR for both aerobic groups compared to the control group. The floor aerobics group reduced their RPR by 5.00 bpm, while the step aerobics group saw a reduction of 4.15 bpm, while the control group showed only a slight reduction of 1.40 bpm. The ANCOVA results revealed a significant difference between the aerobic groups and the control group ($F = 10.75$, $p < 0.05$).

Further post hoc analysis using Scheffe's Confidence Interval Test confirmed that both floor and step aerobics were significantly more effective than the control group in reducing resting pulse rate. The results suggest that incorporating either floor aerobics **or** step aerobics into the lifestyle of college students could help improve cardiovascular health, particularly in reducing resting pulse rate, which is a critical indicator of overall heart health. These findings support the need for integrating regular aerobic exercise into the routines of engineering students to promote better cardiovascular health and mitigate the negative effects of sedentary behaviors common in academic environments. Keywords: Resting Pulse Rate, Floor Aerobics, Step Aerobics, Resting Pulse Rate.

INTRODUCTION

In recent years, physical activity has been recognized as a crucial component of maintaining optimal health, particularly for students who often experience sedentary lifestyles due to the nature of their academic routines. Engineering college students, known for their long hours spent in classrooms or working on assignments and projects, may suffer from limited physical activity, leading to an increased risk of cardiovascular and metabolic diseases. Therefore, incorporating physical exercise into their daily lives is essential for maintaining cardiovascular health.

Resting pulse rate (RPR), often referred to as resting heart rate, is a key indicator of an individual's cardiovascular fitness and autonomic nervous system function. A lower resting pulse rate is generally associated with higher levels of physical fitness and cardiovascular health. Regular aerobic exercise has been shown to lower the resting pulse rate by improving the efficiency of the heart and increasing its ability to pump blood, thereby reducing the effort required to circulate blood when at rest.

Two popular forms of aerobic exercise, floor aerobics and step aerobics, have been studied for their effects on cardiovascular health. Floor aerobics involves performing rhythmic exercises on the ground, which engage multiple muscle groups and help improve overall cardiovascular endurance. Step aerobics, on the other hand, uses an elevated platform (or "step") where participants perform choreographed movements, providing a more intense workout. Both types of exercise can lead to cardiovascular adaptations, but their impact on resting pulse rate, particularly among young adults such as engineering college boys, remains an area of interest.

This research aims to examine the effect of floor aerobics and step aerobics on the resting pulse rate of engineering college boys. By comparing these two exercise modalities, this study seeks to determine which type of aerobic exercise is more effective in reducing resting pulse rate and enhancing overall heart health in this specific population. Understanding how these exercises impact resting pulse rate can inform the development of more effective fitness programs for students, promoting a healthier lifestyle and better cardiovascular fitness during the academic years.

EXPERIMENTAL DESIGN

Random group design was followed in this study. Randomly selected (N=90) Engineering college boys in JNTUH affiliated colleges in Hyderabad and their age ranged between 17-20 years. The subjects were divided into three groups, experimental group I, experimental group II and control group. Experimental group I underwent floor aerobics, experimental group II underwent step aerobics and control group was not given any special treatment. Pre tests were conducted for all the subjects on resting pulse rate . The experimental groups participated in their respective exercises, floor and step aerobics for twelve weeks. The post tests were conducted on the above said variable after a period twelve weeks. The difference between the initial and final scores was considered the effect of respective experimental treatments. To test the statistical significance ANCOVA was used. In all cases 0.05 level was fixed to test the hypothesis.

RESULTS ON RESTING PULSE RATE

TABLE I

ANCOVA RESULTS ON EFFECT OF FLOOR AND STEP AEROBICS ON RESTING PULSE RATE

	FLOOR AEROBICS	STEP AEROBICS	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	Df	MEAN SQUARES	OBTAINED F
Pre Test Mean	71.70	71.60	71.25	Between	2.23	2	1.12	0.03
				Within	2506.75	57	43.98	
Post Test Mean	66.70	67.45	69.85	Between	108.30	2	54.15	1.70
				Within	1815.70	57	31.85	
Adjusted Post Test Mean	66.56	67.39	70.05	Between	133.29	2	66.65	10.75*
				Within	347.33	56	6.20	
Mean Diff	-5.00	-4.15	-1.40					

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.16, 2 and 56 (df) =3.16.

Pre-Test Results:

- **Pre-test means** for the resting pulse rate were very similar across the three groups: Floor Aerobics (71.70 bpm), Step Aerobics (71.60 bpm), and the Control Group (71.25 bpm).
- **Between-group sum of squares** for the pre-test is 2.23 with a mean square of 1.12.

- The **F-value (0.03)** indicates no significant difference in resting pulse rate among the groups prior to the intervention ($p > 0.05$).

Post-Test Results:

- **Post-test means** show a slight reduction in resting pulse rate in the floor aerobics (66.70 bpm) and step aerobics (67.45 bpm) groups compared to the control group (69.85 bpm).
- **Between-group sum of squares** for the post-test is 108.30 with a mean square of 54.15.
- The **F-value of 1.70** suggests no significant difference between the groups after the exercise intervention ($p > 0.05$).

Adjusted Post-Test Results*:*

- **Adjusted post-test means** were computed to control for potential pre-test differences. The adjusted means are as follows: Floor Aerobics (66.56 bpm), Step Aerobics (67.39 bpm), and Control Group (70.05 bpm).
- **Between-group sum of squares** for the adjusted post-test is 133.29, with a mean square of 66.65.
- The **obtained F-value of 10.75** is statistically significant (**$p < 0.05$**), indicating that there are significant differences between the groups after the intervention, once pre-test values are controlled for.

Mean Differences:

- The **mean difference** for the floor aerobics group was **-5.00 bpm**, for the step aerobics group it was -4.15 bpm, and for the control group, it was -1.40 bpm. These results suggest that the floor and step aerobics groups had a more substantial reduction in resting pulse rate compared to the control group.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table II

Table II

Multiple Comparisons of Paired Adjusted Means and Scheffe's Confidence Interval Test Results on Resting pulse rate

MEANS				Required . C I
FLOOR AEROBICS	STEP AEROBICS	Control Group	Mean Difference	
66.56	67.39		0.83	1.98
66.56		70.05	3.49*	1.98
	67.39	70.05	2.67*	1.98

* Significant

Mean Differences:

- **Floor Aerobics vs. Step Aerobics**:
  - The **mean difference** between the Floor Aerobics group (66.56 bpm) and the Step Aerobics group (67.39 bpm) is 0.83 bpm. This difference is not statistically significant ($p > 0.05$), indicating that both groups had similar reductions in resting pulse rate.

Floor Aerobics vs. Control Group:

- The **mean difference** between the Floor Aerobics group (66.56 bpm) and the Control Group (70.05 bpm) is 3.49 bpm. This difference is statistically significant ($p < 0.05$), suggesting that the Floor Aerobics group experienced a significantly greater reduction in resting pulse rate compared to the Control Group.

Step Aerobics vs. Control Group:

- The **mean difference** between the Step Aerobics group (67.39 bpm) and the Control Group (70.05 bpm) is 2.67 bpm. This difference is also statistically significant ($p < 0.05$), indicating that the Step Aerobics group had a significantly greater reduction in resting pulse rate than the Control Group.

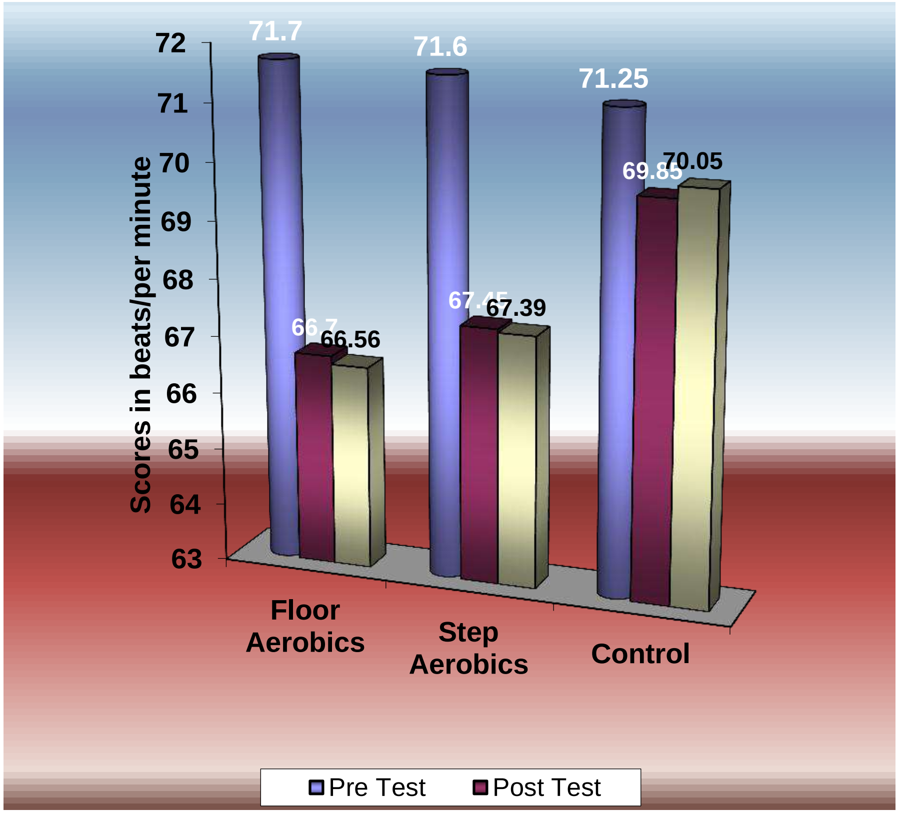
Confidence Intervals (C.I.)*:*

- The **confidence interval (C.I.)** for each comparison is 1.98 bpm. Since both the Floor Aerobics vs. Control Group and Step Aerobics vs. Control Group comparisons show mean differences greater than 1.98 bpm, these differences are statistically significant at the 95% confidence level.

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure I

FIGURE I

BAR DIAGRAM SHOWING PRE TEST, POST TEST AND ORDERED ADJUSTED MEANS ON RESTING PULSE RATE



DISCUSSION ON FINDINGS: RESTING PULSE RATE

Pre-Test and Post-Test Observations:

The pre-test mean resting pulse rates for the three groups (Floor Aerobics, Step Aerobics, and Control Group) were all quite similar (around 71 bpm), indicating that the participants had comparable baseline cardiovascular fitness levels before the intervention. However, the post-test results showed a noticeable reduction in resting pulse rate for both exercise groups, with floor aerobics reducing the pulse rate to 66.70 bpm and step aerobics reducing it to 67.45 bpm. In contrast, the control group showed a minimal reduction in pulse rate (69.85 bpm), suggesting no significant change in cardiovascular health due to the absence of structured exercise.

Adjusted Post-Test Results*:*

The adjusted post-test means revealed a clear trend: both the floor aerobics and step aerobics groups showed a significant reduction in resting pulse rate, with floor aerobics at 66.56 bpm and step aerobics at 67.39 bpm. These adjusted results account for potential pre-test variations and reflect the true impact of the interventions. Notably, the control group, with an adjusted mean of 70.05 bpm, continued to show minimal change.

The ANCOVA results, with an F-value of 10.75 ($p < 0.05$), indicate that the differences in post-test resting pulse rate among the three groups were statistically significant when controlling for pre-test values. This suggests that both floor aerobics and step aerobics were effective in reducing resting pulse rate, while the control group showed no substantial improvement.

CONCLUSION:

This study highlights the positive effects of both floor aerobics and step aerobics on improving cardiovascular health among engineering college boys, as evidenced by the significant reduction in resting pulse rate. Both forms of aerobic exercise are effective interventions for reducing resting pulse rate, with step aerobics showing a slightly greater improvement. These findings suggest that incorporating either form of aerobic exercise into the lifestyle of students could contribute to better cardiovascular health and overall well-being, helping to mitigate the negative effects of sedentary behaviors commonly observed in academic settings.

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A COMPARATIVE STUDY OF SPORTS INJURIES AMONG BASKETBALL AND HANDBALL PLAYERS OF HYDERABAD DISTRICT, TELANGANA STATE

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INTRODUCTION

Every day, many people worldwide participate in sports activities or competitions, improving physical fitness, overall health, and wellness. However, sports can also result in injuries—some minor, some serious, and others potentially lifelong. Sports injuries result from acute trauma or repetitive stress associated with athletic activities, affecting bones or soft tissue such as ligaments, muscles, and tendons. Understanding the causes, symptoms, prevention, and treatment of common injuries is crucial for coaches, trainers, and players to avoid most injuries and improve training methods.

ABSTRACT

Basketball is a high-intensity, fast-paced sport requiring quick movements, sharp turns, and explosive jumps. However, it is prone to various injuries due to its nature. Basketball involves complex movements such as jumps, turns, and changes in direction, leading to frequent musculoskeletal injuries. Despite the benefits of participating in sports—such as improved body composition, cardiorespiratory function, increased strength, enhanced self-esteem, psychosocial well-being, and weight control—the repetitive actions in basketball, like jumps, abrupt changes in direction, running, and deceleration, pose a greater risk of injury.

Normal wear and tear or injury could damage articular cartilage, affecting cartilage structures and operations. This damage could result from a bad fall, traumatic sport-accident, previous ankle injuries, or wear and tear over time. Chondral and osteochondral injuries can be categorized by tissue damage and repair response.

1. **Dislocation**: Joint injuries force the ends of bones out of position. Causes include falls, blows, or contact sports. Commonly affected joints include ankles, knees, shoulders, hips, elbows, and jaw. Dislocated joints are often inflamed, painful, visibly out of place, and immobile.

2. **Bursitis**: Acute inflammation and swelling of a bursa, a fluid-filled sac acting as a cushion between tendons and bones. Commonly affected areas include the shoulder, elbow, knee, hip, ankle, foot, and Achilles tendon.

COMMON INJURIES IN BASKETBALL

1. **Ankle Sprains**: Due to sudden changes in direction and jumping.
2. **Knee Injuries**: Including ACL tears from pivoting and twisting motions.
3. **Finger Injuries**: From catching or deflecting the ball.
4. **Hamstring Strains**: From the explosive movements required in the game.
5. **Shoulder Injuries**: Often from repeated overhead motions.

Common Injury in Basketball

PREVENTION STRATEGIES

1. **Warm-up and Cool-down**: Perform a thorough warm-up before playing and a cool-down afterward to prevent muscle strains and improve flexibility.
2. **Stretching and Foam Rolling**: Regular stretching and foam rolling can help improve flexibility, reduce muscle tension, and prevent injuries.
3. **Strengthening Exercises**: Incorporate exercises such as squats, lunges, and calf raises to improve ankle stability and reduce injury risk.
4. **Proper Footwear**: Wear shoes that provide adequate support, cushioning, and traction to reduce the risk of ankle and knee injuries.

5. **Play Safe**: Encourage players to play safely, avoid unnecessary contact, and respect opponents' physical boundaries.

DIAGNOSIS AND TREATMENT

1. **Ankle Sprains**: Rest, ice, compression, and elevation (RICE). Severe cases may require physical therapy or surgery.
2. **Knee Injuries**: Treatment depends on severity. Mild injuries may require RICE and physical therapy, while severe injuries may need surgery.
3. **Shin Splints**: Rest, ice, and physical therapy. Severe cases may require orthotics or surgery.
4. **Concussions**: Rest, monitoring, and gradual return to play. Severe cases may need medical attention.
5. **Finger Injuries**: Mild injuries may require RICE and buddy taping, while severe injuries may need surgery.

METHODOLOGY

Sample of the Study

Sl. No.	Game	No of subjects
1.	Male Basket Ball Players	20
2.	Male Hand Ball Players	20
3.	Total subjects	40

Tools Used

1. **Questionnaire**:
   - Did you find any injury at the site of the ankle during practice or competition?
     - YES √
     - NO

- Did you experience severe sprain injury pain during practice or competition?
  - YES √
  - NO

Tester to Hand Ball Players   Tester to Basket Ball Players

CONCLUSIONS

- Handball players have secured lower extremities injuries (55%), upper extremities injuries (35%), head and neck injuries (5%), and spine injuries (5%).
- Basketball players have secured lower extremities injuries (45%), upper extremities injuries (40%), head and neck injuries (10%), and spine injuries (5%).
- Handball players are more prone to lower extremities injuries due to fast and attacking skills.
- Basketball players are more prone to upper extremities injuries, head and neck injuries, and spine injuries due to more contact among players compared to handball.

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EFFECT OF YOGIC PRACTICES ON PHYSICAL FITNESS VARIABLE AMONG GIRLS

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ABSTRACT

Aim: To examine the scientific approach for the effect of Yogic practice on Balance among girls.

Method: A sample of one hundred (N= 100) subjects in the age categories of 18 to 22 years, were divided equally into two groups. One experimental group and the other control group. The dependent variable tested for this study was delimited to Balance. The criterion variables chosen were tested with reliable testing tools. Balance was tested by using Standing balance test (One leg) and scores were recorded based on the time is noted in seconds for the best of three tries. The control group was not given any specific training whereas the experimental group underwent Yogic practice 6 days a week for 12 weeks and 60 min per session. The pre and post test data collected were statistically analyzed by applying paired t-test initially to compare the means for significant difference on balance.

Results: The results of the study indicate that Balance significantly increased in the experimental group as a result of participating in the Yogic practice**.**

Conclusion: It is concluded that Yogic practice increases Balance in girls.

Health is a positive concept positive health does not mean really freedom from disease, but it also includes a jubilant and energetic feeling of well-being with an amount of general resistance and capacity to easily cultivate immunity against specific offending agent there are many modern and indigenous methods and disciplines that can help of to successfully fight with diseases for example the system of Yoga, Naturopathy, Ayurveda, Unani, Homeopathy and Siddha kriya among indigenous systems, where are somatic system is coded as the modern and popular medical system yoga is one of the most powerful drugless system of treatment it is having its own concept of wellness which has been scientifically understood and presented by many, yoga can be adopted as Lifestyle for promoting our physical and mental health.

Historically yoga was more than a particular teaching. Yoga, a way of life, a culture and a lifestyle which encompassed not just techniques, practices or ideas, but also eating habits, bathing habits, prayer, social interaction, and work. Yoga included a vast body of “attitudes toward being”, an ingrained sense of morality and ethic and it was the bedrock of the personal – social – cosmic order which developed in that part of the earth known as India.

The origin of yoga can be traced back to the very oldest of these scriptures, the Rig Veda, which speaks about “yoking the mind” to the “highest truth”. But within these hymns from this ancient Vedic period, one even sees the actual word 'yoga' used occasionally as well. Ever since yoga was introduced, it has seen varied evolution. In the east, yoga remains to be a sacred practice that incorporates a lot of prayer and chanting into each session. But in the Western parts of the world, yoga has been used mainly for its physical exercises that are known to provide health and fitness benefits.

Physical fitness refers to the ability of your body systems to work together efficiently to allow you to be healthy and perform activities of daily living. Being efficient means doing daily activities with the least effort possible. Physical fitness is a state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition, moderate-vigorous physical exercise, and sufficient rest along with a formal recovery plan.

BALANCE

Balance is a term used to describe the ability to maintain an upright position. The term “postural stability” describes balance more specifically as the ability of an individual to maintain their center of gravity within a base of support. Balance is the ability to stay upright or stay in control of body movement, and coordination is the ability to move two or more body parts under control, smoothly and efficiently. Static balance is maintaining equilibrium when stationary, while dynamic balance is maintaining equilibrium when moving. Having good balance is important for many activities we do every day, such as walking and going up and down the stairs. Exercises that improve balance can help prevent falls, a common problem in older adults and stroke patients. A loss of balance can occur when standing or moving suddenly.

The ability to retain the center of mass above the base of support when stationary (static balance) or moving (dynamic balance). Balance is a term used to describe the ability to maintain an upright position. The term "postural stability" describes balance more specifically as the ability of an individual to maintain their center of gravity within a base of support.

METHODOLOGY

Selection of subjects: For the present investigation one hundred (100) girl students of Government College of Physical Education, Domalguda, Hyderabad was selected randomly. Their age ranged between 18 and 22 years.

Training Design: The subjects were assigned to two groups with 50 each, Group I was experimental and group II control group. Yogic practices were given to Group I. No training was provided to Group II i.e. control group. The duration of the training period was 12 weeks and the number of sessions per week were confined to 6 days which was considered adequate enough to cause change in selected dependent variables. Each session lasted for one hour. Pre-test and post-test were conducted to the control and experimental groups.

Selection of Variable and Procedure: The purpose of the test is to find the ability to balance while standing on the ball of your foot. Stand on one leg's toes for a longer period of time with the other leg at side. Try to maintain the position and balance on one leg. Before the final execution, the students were given a free practice period of one minute to gain joint proprioception activation. The students may shift the balance position on the foot from the heel to the ball to the toe. The heel of the starting foot is used to balance the stopwatch on the ball of the foot. When any of the following take's place, the stopwatch is paused.

- Hands project out of hips.
- The stepping foot can change direction or jump.
- The supporting foot loses contact with the knee.

Scoring: The time is noted in seconds for the best of three tries.

The table displays the overall test ratings.

- Greater than 50 Outstanding
- 40- 50 Good

- 25- 39 Average
- 10 – 24 Fair
- Less than 10 Poor

Statistical Analysis: The data collected from the groups on selected variable was statistically examined to find out whether there was any significant difference between the pretest and posttest of experimental and control groups by using statistical technique of t-test and comparing the means scores for significant differences. The level of significance was fixed at 0.05 level of confidence.

RESULTS:

Table showing the Effect of Yogic practices on experimental groups than control groups on Balance among girls.

TABLE I

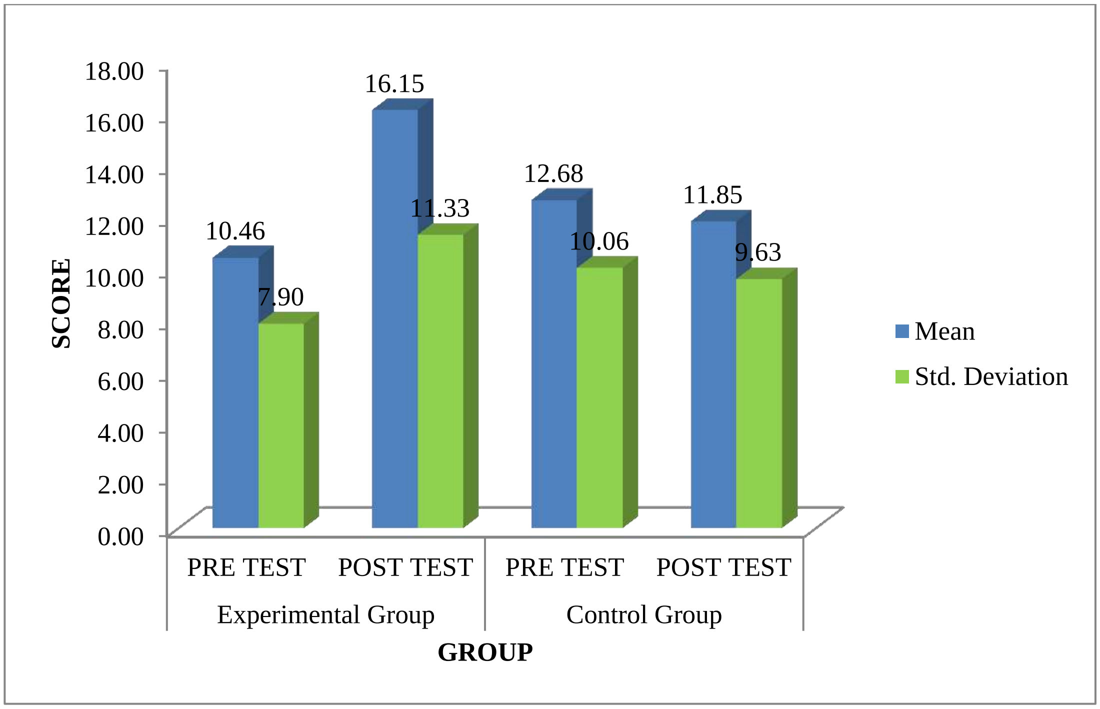
Groups	N	Pre test		Post test		Mean diff	t-value	Sig. (2-tailed)	Inference
		Mean	SD	Mean	SD				
Experimental Group	50	10.456	7.901	16.149	11.333	5.693	7.461	0.001	S*
Control Group	50	12.675	10.057	11.854	9.630	0.821	1.972	0.054	NS

Table Value 2.011 at 49 D.F

The above table shows that balance of the selected sample in experimental group, pretest mean is 10.456 with 7.901 S. D and posttest mean is 16.149 with 11.333 S.D. From the t-test calculated value is 7.461 greater than table value 2.011 at 49 D.f. with 0.05 α. Hence there is a significant different improvement in Yogic practices on pretest to post test in experimental group.

Whereas the selected variable balance of selected women in control group shows that pretest mean is 12.675 with 10.057 S. D and posttest mean is 11.854 with 9.630 S.D. From the t-test calculated value is 1.972 less than table value 2.011 at 49 D.f. with 0.05 α. Hence there is no significant improvement in Yogic practices on Balance of pretest and posttest in control group.

FIGURE I



DISCUSSION:

The main aim of the study was to find out the effect of yogic practices on Balance of the girls. All the subjects took part in their regular Yogic training program. Our results indicate yogic training significantly increases the Balancing ability. Athletes generally require training to improve their body balance, which is crucial for competitive performance. Balance training can not only improve an athlete's functional performance, posture, and neuromuscular control, but also reduce the risk of sports-related injuries. The inclusion of balance training in overall conditioning programme can be strengthened and it also shown =to have a positive influence on athletic performance.

CONCLUSION:

Within the limitations of the study and on the basis of the obtained results it was concluded that the 12 weeks of Yogic practice had significantly increased Balance among girls.

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