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Effect Of Asanas, Pranayamas And Kriyas On Physiological Variable Of Women

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Abstract

Yogasana, pronounced with the emphasis on the second syllable, is a term for the various postures that comprise the core of a yoga workout. Different systems of yoga training require different postures. In all systems of yoga, though, the postures are only one aspect of the overall workout, because yoga encompasses more than just the physical aspects of an athlete's health.

The term yogasana consists of two Sanskrit words: yoga and asana. The translation of these terms into English can be difficult, but yoga is an ancient body of knowledge consisting of six branches that collectively cover aspects of the physical body, spirituality, morality and even social relations. The term asana translates to "posture" or "pose." Yogasana, then, is the term for the postures that comprise the branch of yoga that focuses on the physical body. This branch is called hatha yoga.

It is important to realize, though, that there is more to hatha yoga than just the postures. Maintaining proper breathing and meditation practices also are crucial to most forms of yoga. Some styles of yoga, such as ashtanga yoga, also place an emphasis on the motions that connect the various postures. Yogasana, then, is only one particular part of hatha yoga, which, in turn, is only one of the six branches of yoga. **Methodology** The Purpose of the study was to find out the "Effect of Asanas, Pranayamas and Kriyas on Physiological variable of Women" To achieve this purpose 120 Female in the age group ranging from 19 to 23 years studying in Vijayapura Karnataka state were selected randomly as subjects. The Asanas, Pranayamas and Kriyas training were selected for 16 weeks of training for 120 subjects. Criterion variable Resting pulse rate was selected Measured by using Radial Pulse rate. It was used for pre -test and post –test. **Result:** The result shows that the 16 weeks of Asanas, Pranayamas and Kriyas training improvement of Resting pulse rate. **Conclusion:** Asanas, Pranayamas and Kriyas training improvement of Resting pulse rate. **Keywords:** Asanas, Padmasana, Vajrasana and Pranayama and Kriyas training and resting pulse rate.

Introduction

Asana is the physical practice of yoga poses. In addition to referring broadly to the physical aspect of yoga, asana can also be used to describe a single pose, as in, "The handstand is an asana that is really hard for me."

What most people call yoga could more specifically be called asana. Yoga has eight limbs. Besides asana, yoga also encompasses pranayama (breathing exercises), dhyana (meditation), yamas (codes of social conduct), niyamas (self-observances), pratyahara (withdrawal of the senses), dharana (concentration), and samadhi (bliss).

ASANA: An asana is defined as a posture which gives steadiness and comfort. Steadiness will come when your attention is fixed either on the breath or sensations in the part of the body being worked upon or on the body movement in certain asanas. An asana can be perfected by learning to hold the posture in relaxation (relaxing unnecessary effort and tension).

PRANAYAMA: (Prana- bio energy; Ayama- control / management / expansion.) The essence of pranayama is to breathe effortlessly; your inhalation should merge with retention, retention should merge with exhalation, exhalation merging into suspension or holding your breath outside. The breath is usually smooth, rhythmic and long during the practice of pranayama.

KRIYA: (Kri- to do) Cleansing techniques such as Jal Neiti, Tratak and Kapalbhati. Asana is a comfortable posture; for complete comfort, cleanliness is essential. Impurities will distract the mind. Jal Neiti cleans the eyes, nose and sinuses. Tratak results in concentration and helps to strengthen the eye muscles and stimulates tears to clean the eyes.

Methodology

The procedure adopted in the present research work is related to the selection of subjects, selection of variable and Statistical techniques.

Selection of Subjects

The Purpose of the study was to find out the "**Effect of Asanas, Pranayamas and Kriyas on Physiological variable of Women".** To achieve this purpose 120 women in the age group ranging from 19 to 23 years studying in ARSI women's Degree college Vijayapura Karnataka state were selected randomly as subjects were divided into four equal groups of thirty each known as Experimental group I Asanas training Experimental group II Pranayama training Experimental group III Kriyas training and group IV Control group.

Selection of variables

The investigator reviewed through the available relevant related literature and discussed with the experts in the field and also discussed with the research guide before selection of variables for the present research work. The researcher used the availability of technique based on the data researcher done the analysis regarding feasibility; Reliability and the outcome of the results were taken care before finalizing the variables. The variables selected for the present research work Psychological variable.

Independent Variables

Asanas	Pranayam	Kriyas
Padmasan	Anuloma viloma	Jalneeti
Vajrasan	Sheetali	Trataka
Vakrasana	Shetkari	kapalbhati
Tadasana	Bhramari Pranayama	
Vrikshasana		
Shavasana		
Naukasana		
Halasana		
Makarasana		
Bhujanagasana		
Dhanurasana		

Dependent Variables

Psychological Variable

- Resting Pulse rate

Selection of Tests

The test items were selected for this study after thorough review of literature as well as consultation with experts, Physical Education Professionals, and also Research supervisor. The selection tests and the criterion variable are presented in the Following table.

Sl. No	Test Item	Test	Criterion Measurement
1	Resting Pulse rate	Radial Pulse rate	Once pulse is located count the number of beats felt within a one minute period will be recorded.

Statistical techniques

The collected data thought and valid and reliable, would not give us useful meaning in terms of what we need. The data has to be processed with the help of statics, analyzed scientifically, interpreted and concluded intelligently. In this study the data have been collected on variables such as Physiological variable of Resting pulse rate.

The collected data were analyzed with application of 't' test to find out the individual effect from base line to post test, Further Analysis of Covariance (ANCOVA) was used to determine the significant difference between the treatment means. Whenever 'f' ratios were found to be significant, Scheffe's post hoc test was applied to test the significant between the paired adjusted means.0.05 level of confidence was fixed for Physiological variable to test the level of significance. And it was considered sufficient for the present study.

ANALYSIS OF INTERPRETATION OF DATA

The aim of the research work was find out the "**Effect of Asanas, Pranayamas and Kriyas on Physiological variable of Women".** For the purpose of the research study 120 women's in the age group of 19 to 23 years belonging to the student of ARSI women's Degree College Vijayapura Karnataka state were selected as subjects for the present study. The subjects were divided into four groups. Group I treated as Asanas group, Group II treated as Pranayama group, Group III treated as Kriyas group and Group IV did not treated as control group.

Asanas group underwent Asanas training, Pranayama group underwent Pranayama training Kriyas group underwent Kriyas training for Sixteen weeks. The duration of the training

session allowed to the experimental groups Sixteen weeks. The Control group did not participate in the training programme other than their routine work.
Pre and post test data were gathered on Resting pulse rate and the same as described in the following table 4.1(a)

TABLE NO 4.4 (A). PRE-TEST AND POST TEST AND ADJUSTED POST-TEST SCORES ON RESTING PULSE RATE IN THE EXPERIMENTAL GROUP AND CONTROL GROUP

Resting Pulse rate	Group	Mean	SD	SV	SS	Df	MS	F	P
Pre test ANOVA	G1	630.0000	36.19869	BG	833.333	3	277.778	.165	.20
	G2	636.6667	45.35936	WG	195833.333	116	1688.218		
	G3	635.0000	45.76929	T	196666.667	119			
	G4	631.6667	35.91977						
	Group	Mean	SD	SV	SS	Df	MS	F	P
Post test ANOVA	G1	766.6667	59.20935	BG	969729.167	3	323243.056	114.289	.000
	G2	875.0000	56.85735	WG	328083.333	116	2828.305		
	G3	703.3333	57.13465	T	1297812.500	119			
	G4	630.0000	36.19869						
	Group	Mean	SD	SV	SS	Df	MS	F	P
Adj.post ANOVA	G1	766.6667	59.20935	BG	947663.079	3	315887.693	165.138	.000
	G2	875.0000	56.85735	WG	219979.929	115	1912.869		
	G3	703.3333	57.13465	T	1167643.01	118			
	G4	630.0000	36.19869						

**Significant 0.05 level table value 2.76

Table No.4.4 (A). Indicates that the AM ± SD Pre-test resting pulse rate scores of G1, G2, G3 and G4 are 92.00 ±5.06, 151.33± 231.14, 89.96± 5.56 and 119.80± 166.52 respectively. The AM ± SD Post-test resting pulse rate scores of G1, G2, G3 and G4 are 79.00± 5.88, 75.700± 6.26, 75.76±10.84 and 150.43±231.26 respectively.

The AM ± SD adjusted Post-test resting pulse rate scores of G1, G2, G3 and G4 are 79.00± 5.88, 75.70± 6.26, 75.76±10.84 and 150.43± 231.26 respectively, it can be inferred that there do not exist any significant mean differences in the pre test resting pulse rate scores of Experimental and Control groups ($F= 1.225, P > 0.05$).

That means all the groups have same pre-test mean resting pulse rate scores and therefore the groups can be equable for their final scores.
There do exist significant mean difference in the post-test resting pulse rate scores of Experimental and Control groups ($F= 3.034, P < 0.05$). Further, if the effect due to initial pre-test scores was eliminated, the adjusted post-test mean resting pulse rate scores also showed significant difference among various groups ($F= 3.638, P < 0.05$).

Since ANCOVA showed significant difference in resting pulse rate among various groups, Scheffe's post hoc pair- wise comparisons has been carried out. The details are shown in table 4.4. (b)

TABLE 4.4 (B)
DATA AND TEST OF SIGNIFICANCE OF SCHEFFES POST HOC PAIR-WISE COMPARISON RESTING PULSE RATE

Group	Group2	MD	P
G1	G2	23.364	.399
G1	G3	2.546	.926
G1	G4	-62.033(*)	.025
G2	G3	-20.818	.453
G2	G4	-85.397(*)	.002
G3	G4	-64.578(*)	.020

** Significant 0.05 level
G1 Asanas group, G2 Pranayama group, G3 Kriyas group & G4 Control group

Table 4.4.(b) it is seen that after Scheffe's test all the Experimental groups showed statistically significant difference compared to the Control group with respect to resting pulse rate. However, groups G1 to G2, G1 to G3 and G2 to G3 do not differ significantly with respect to resting pulse rate and the same as displayed in the figure 4.4 (c).

FIGURE 4.4 (C) COMPARATIVE BAR CHART OF ADJUSTED POST-TEST SCORES ON RESTING PULSE RATE IN THE EXPERIMENTAL GROUP AND CONTROL GROUP

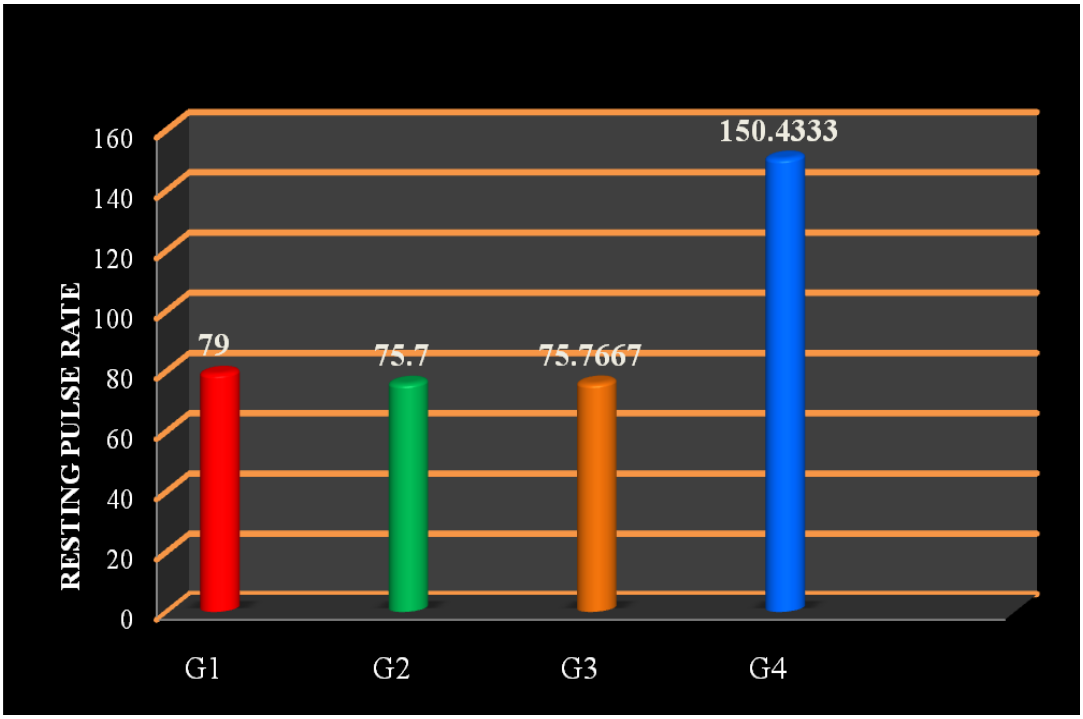

Figure No.4.5.(c) the above figure indicates that resting pulse rate performance decreased significantly over the 16 weeks training period Asanas, Pranayamas and Kriyas training groups; however, the difference among the three groups were significant. The Asanas training group significantly decreased resting pulse rate performance after 16 week

training period. The Pranayamas training groups decreased resting pulse rate performance after 16 week training period. The Kriyas training groups also produce improvement Asanas, training group and Control group. However Control group did not produce any significant improvement on resting pulse rate.

Summary

The purpose of the study was to investigate the **Effect of Asanas, Pranayamas and Kriyas on Physiological variable of Women"**. The 16 weeks of Asanas, Pranayamas and Kriyas training the researcher conducted pre-test performance on Resting pulse rate. Soon after the completion of 16 weeks Asanas, Pranayamas and Kriyas training post test resting pulse rate were measured. The result of post test performance, significant improvement Resting pulse rate of subjects.

Conclusion

Sixteen weeks of Asanas, Pranayamas and Kriyas training has shown Resting pulse rate of subjects improvement of subjects.

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Impact Of Yogic Exercises On Power Of School Children

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Abstract
Yoga is essentially a spiritual discipline based on an extremely subtle Science which focuses on bringing harmony between mind and body. It is an art and science for healthy living. The word "Yoga" is derived from the Sanskrit root yuj meaning "to join", "to yoke" or "to unite". **Methodology** The Purpose of the study was to find out the "**Impact of Yogic Exercises on Power of School Children"** To achieve this purpose 40 female in the age group ranging from 12 to 16 years studying in shri.Basveshwar school Vijayapura Karnataka state were selected randomly as subjects. The Yogic exercises were selected for 12 weeks of training for 40 subjects. Criterion variable Power was selected Measured by using Standing broad jump. It was used for pre -test and post –test. **Result:** The result shows that the 12 weeks of Yogic exercises improve the power Performance. **Conclusion:** Yogic exercises training improve the power Performance. **Keywords:** Yogic exercises, Padmasana, Vajrasana,Tadasana and Power.

Introduction

Yoga is essentially a spiritual discipline based on an extremely subtle Science which focuses on bringing harmony between mind and body. It is an art and science for healthy living. The word "Yoga" is derived from the Sanskrit root yuj meaning "to join", "to yoke" or "to unite".

According to Yogic scriptures, the practice of Yoga leads to the union of individual consciousness with universal consciousness. According to modern scientists, everything in the universe is just a manifestation of the same quantum firmament. One who experiences this oneness of existence is said to be "in Yoga" and is termed as a yogi who has attained a state of freedom, referred to as Mukti, nirvāna, kaivalya or moksha.

"Yoga" also refers to an inner science comprising of a variety of methods through which human beings can achieve union between the body and mind to attain self-realisation. The aim of Yoga practice is to overcome all kinds of sufferings that lead to a sense of freedom in every walk of life with holistic health, happiness and harmony.

Methodology

The procedure adopted in the present research work is related to the selection of subjects, selection of variable, Selection of tests and Statistical techniques.

Selection of Subjects

The Purpose of the study was to find out the "**Impact of Yogic Exercises on Power of School Children"** To achieve this purpose 40 female in the age group ranging from 12 to 16 years studying in Shri. Basaveshwar school Vijayapura Karnataka state were selected randomly as subjects were divided into two equal groups of forty each known as Experimental group and Control group.

Selection of variables

The investigator reviewed through the available relevant related literature and discussed with the experts in the field and also discussed with the research guide before selection of variables for the present research work. The researcher used the availability of technique based on the data researcher done the analysis regarding feasibility; Reliability and the outcome of the results were taken care before finalizing the variables. The variables selected for the present research work Power performance..

Independent Variables	**Dependent Variables**
Yogic exercises	**Motor Fitness Variable**
Padmasan	Power
Vajrasana	
Paschimottanasa	
Tadasana	
Trikonasana	
Garudasana	
Shavasan	
Halsana	
Makarasna	
Bhujangasana	

Selection of Tests

The test items were selected for this study after thorough review of literature as well as consultation with experts, Physical Education Professionals, and also Research supervisor. The selection tests and the criterion variable are presented in the Following table.

Sl. No	Test	Tool	Criterion Measurement
1	Power	Standing Broad jump	The assistant uses the longest recorded distance to assess the subject leg Power.

Statistical techniques

The collected data thought and valid and reliable, would not give us useful meaning in terms of what we need. The data has to be processed with the help of statics, analyzed scientifically, interpreted and concluded intelligently. In this study the data have been collected on variables of power.

The collected data were analyzed with application of't' test to find out the individual effect from base line to post test, Further Mean, SD and t-test between Pre- test and Post-test of

Experimental and Control group was used to determine the significant difference between the treatment means. And it was considered sufficient for the present study.

ANALYSIS OF INTERPRETATION OF DATA

The aim of the research work was find out the "**Impact of Yogic Exercises on power of School Children".** For the purpose of the research study 40 school girls in the age group of 12 to 16 years belonging to the student of Shri.Basaveshwar School Vijayapura Karnataka state were selected as subjects for the present study. The subjects were divided into two groups. Group I treated as Yogic Exercises group, Group II treated as control group.

Yogic Exercises group underwent Yogic training for 12 weeks. The duration of the training session allowed to the experimental groups 12 weeks. The Control group did not participate in the training programme other than their routine work.

Pre and post test data were gathered on power and the same as described in the following table 4.1

Table No.-4: Results of Mean, SD and t-test between Pre- test and Post-test of Experimental and Control group of School Children with respect to Motor Fitness Variable Power.

Group	Test	Mean	SD	T-value	Df	P-value	significant
Experimental test	Pre-test	26.5895	2.77017	5.932	29	.000	S
	Post –test	44.6755	3.17584				
Control group	Pre-test	27.3235	2.19655	1.432	29	.163	NS
	Post –test	26.7607	2.94323				

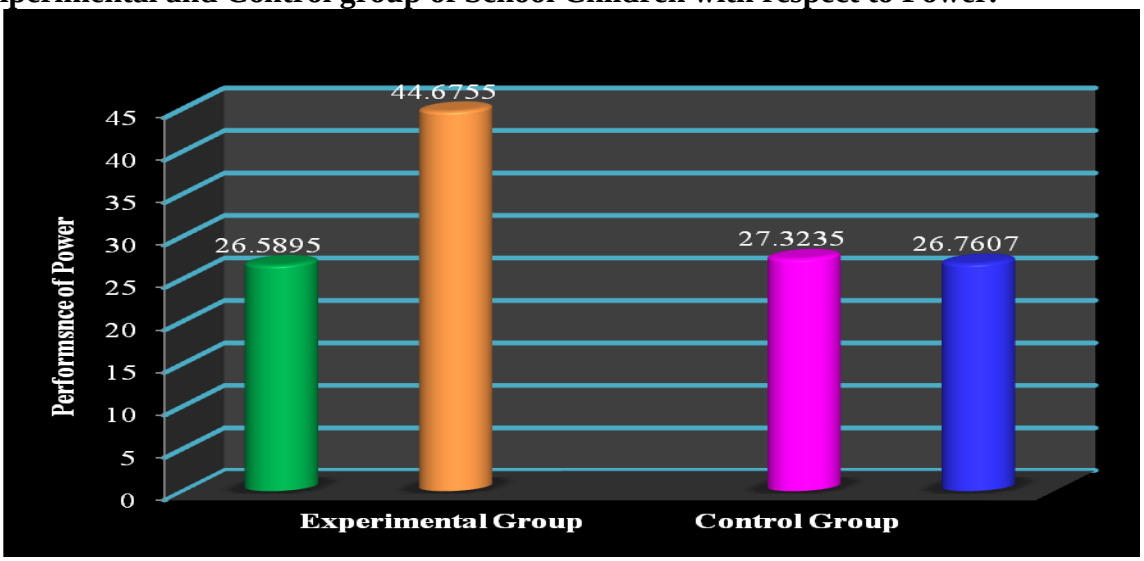
***** Significant at 0.05 level Confidence

Table- 4.1 Shows that the means scores of experimental group of Power of pre test and post test of school Children. It is observed that mean scores of power variable of experimental group of pre test and post test of school children are 26.5895and 44.6755 and their standard deviation are 2.77017 and 3.17584 respectively. The obtained 't Ratio value is 5.932 at 5% level of significance with 29 degree of freedom which is more than the table value (t=1.96), hence the null hypothesis is rejected and alternative hypothesis is accepted. It indicates that the power mean score of pre test and post test of the experimental group is different, which is less in case of pre test group and more in case of post test. It can be concluded that power is increases significantly after giving the yoga training to the subjects.

Shows that the means scores of Control group of power of pre test and post test of school children. It is observed that mean scores of power variable of Control group of pre test and post test of school children are 27.3235and 26.7607 and their standard deviation are 2.19655 and 2.94323 respectively. The obtained 't Ratio value is .1.432 at 5% level of significance with 29 degree of freedom which is less than the table value (t=1.96), hence the null hypothesis is accepted. It indicates that the power mean score of pre test and post test of the control group is found similar.

The power Performance has been displayed in figure 4.1(a).

Figure No.-4: (a) Results of Mean, SD and t-test between Pre- test and Post-test of Experimental and Control group of School Children with respect to Power.



The above the figure 4.1 (a) indicates that the post test values of Experimental group significantly improved the performance of power and also the post test values of power were higher than the pre test values due to 16 weeks of Yogic Exercises training. The control Group pre-test and post-test performance of power shows no improvement.

Summary

The purpose of the study was to investigate "**Impact of Yogic Exercises on Power of School Children".** The 12 weeks of Yogic Exercises training the researcher conducted pre-test performance on power. Soon after the completion of 12 weeks Yogic Exercises training post test Power were measured. The results of post test performance, significant improve power of subjects.

Conclusion

Yogic Exercises training has shown improve Power of subjects.

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Comparative Effect Of Physical Exercise On Some Physiological Parameters And Selected Health Related Fitness Components Among Females And Males

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ABSTRACT
The general objective of this study was to investigate the comparative effects of physical exercise on some physiological parameters and selected health related fitness components among females and males at Samara University College of natural and computational sciences first year students. 50 selected subjects (25 male and 25 female) were participated in different physical exercise programs of varying intensities for 3 consecutive months, i.e. 3 days per week and 60 minutes duration per day. Pre and post training field and laboratory tests were conducted and analyzed for an effect of physical exercise on physiological parameters and health related physical fitness components. Training adaptations were similar in nature and didn't vary among the different training protocols for both female and male participants. The training program was composed of more of strength and endurance exercises. Findings of this study revealed a significant effect of physical exercise on cardio vascular endurance, muscular endurance, muscular strength, flexibility and body composition as well as some physiological parameters, such as relative changes of the level of White blood cell (WBC), Red blood cell (RBC), hemoglobin (HGB), Platelets (PLT), Hematocrit (HCT), Creatinine, Albumin, Triglyceride, and Uric acid. Based on the findings, it has been established that there are no major sex differences in their physiological responses to regular physical exercises. So, it was concluding that physical training had the same positive effect on health related fitness components and physiological changes of both females and males but at different rate due to hormonal activities.
Key words*:* Physical exercise, health related fitness components, Physiological parameters

INTRODUCTION
Physical education programs are designed and intended to promote general health and overall fitness. The exact regime of education may vary among programs, but physical education remains critical in achieving an overall healthy society. The main purpose of physical education is the process of becoming physically active for the rest of our lives reported that the physical education needs of young people today differed from those of the past because of the current speed of social and economic changes.

Today less physical activity is being observed in the population. Physical exercise is important for maintaining physical fitness and can contribute positively to maintaining a healthy weight, building and maintaining healthy bone density, muscle strength, and joint mobility, promoting physiological well-being, reducing surgical risks, and strengthening the immune system. Exercise reduces levels of cortisol, which causes many health problems, both physical and mental. Frequent and regular aerobic exercise has been shown to help prevent or treat serious and life-threatening chronic conditions such as high blood pressure, obesity, heart disease, Type 2diabetes, insomnia and depression.

The beneficial effect of exercise on the cardiovascular system is well documented. There is a direct relation between physical inactivity and cardiovascular, and physical in activity is an independent risk factor for the development of coronary artery disease. Most beneficial effects of physical activity on cardiovascular disease mortality can be attained through moderate-intensity activity (40% to 60%of maximal oxygen up takes, depending on age).

Intensified physical training on the other hand is a person's ability to perform a specific activity by making more intense, stronger or more marked and by increasing in extent. It seems clear that physical training is not designed for achieving muscle failure and it should be done in proper sets with repetitions. This training exercise involves a combination of weight and repetitions, which helps in the maximum development of the muscles.

This study was designed to examine the comparative effect of twelve week physical exercise of strength, endurance and flexibility exercises on physiological parameters and selected health related fitness components day among females and males by using3days perweekand60minutesessions per. The end result of this study may have possible understanding on the comparative effects of physical exercise on physiological aspects and health related physical fitness components among females and males, the exercise trainers, fitness center users, instructors, participants of the study, and physical education institutions in the country. It may also have great significance in improving societal participation in physical activity and achievement in high performance and quality of lives.

The general objective of this study is to investigate the comparative effects of physical exercise on some physiological parameters and selected health related physical fitness components on Samara University first year students.
The specific objectives of this study are:-

- To evaluate the comparative effect of physical exercise in improving cardio respiratory endurance, muscle strength, endurance and body flexibility before and after training among females and males.
- To investigate the comparative effect of intensified physical training among females and males on hematological and biochemical parameters through bio chemical and hematological tests before and after training.

MATERIALS AND METHODS

Study Design and Participants

Experimental Design which is a kind of informal design (i.e. before-and-after without control) was used to conduct this research. The participants of this study were the selected students of first Year College of natural and computational science.

Source of Data

In this study, primary and supportive data sources were used according to the nature of the problem. The primary data were obtained from anthropometric measurements, health and performance related physical exercise interventions and pre-post test measurements in field and laboratory throughout the training program.
The supportive data were obtained from different secondary sources such as different documents, such as books, journals, and the internet.

Data Collection Instruments

The data collection was more quantitative, including a questionnaire /checklist, laboratory and performance test results. The use of these principal data collection instruments was intended to explore arrange of quantitative information. The Physical activity Readiness questionnaire (from now on wards PAR-Q) was prepared based on reviewing the available literatures on similar studies, journals and other sources. The main purpose of the questionnaire was to select the appropriate subjects who would provide authentic, valid and reliable data to answer the general and specific objectives of this research.

Procedures of Data Collection

Based on the objectives of the research, the physical activity readiness questionnaire (PARQ) was distributed for 180 volunteer students in the class. But, the researcher selected 50students (25male and 25female students) from the total population (first year College of natural and computational science students) by considering the PARQ as an inclusion and exclusion criteria. Purposive sampling method was used specifically in the selection process. All selected subjects were at the age of 18–25 and they were active participants in different performance and health related exercise training programs. This resulted in physiological change and performance efficiency for three months (12 weeks) of total training, 3 days per week and 60 minutes per session (including warm up, cool downandstretchingexercises).Theintensitywasprogressivelyincreasedas the subjects adapted themselves to the training.

Weight, body mass index (BMI), different types of flexibility tests, endurance tests such as step test, and strength tests were administered for all participants using work loads of mainly endurance, strength and flexibility exercises by a prior health and performance related fitness tests.

Blood samples were taken from the subjects by laboratory technicians in the university clinic early in the morning before breakfast and any vigorous movement. Laboratory tests like, hematology (HGB, RBC, WBC, PLT and HCT) and clinically biochemistry tests (Creatinine, Albumin, Triglyceride, and Uric acid) were measured and evaluated from the normal values of comparison with head count hematology analyzer.

The experimental field and participants' performance observation was carried out by the researcher. Check lists were used to collect data in an appropriate manner and the appropriate tests and their measurements for physiological change of practical physical training were selected according to collected data.

The gymnasium (fitness center) was used as study area. Before and after the intervention was done, the anthropometric, (height, weight, Body Mass Index, Waist to Hip Ratio) performance tests (step test, push up, sit up, sit and reach flexibility test and shoulder flexion shoulder stretch test) and laboratory tests of different parameters were conducted.

Methods of Data Analysis

The data that were collected through field and laboratory tests, before and after intervention, were analyzed and interpreted. The analyses were carried out by the Descriptive Statistical AnalysisCodeandbyusingSPSSversion16.0software to summarize fitness and performance

status as well as physiological changes. Calculating measures of central tendency like mean and calculating measures of dispersion like standard deviation were also carried out.

RESULTSANDDISCUSSION

Comparative Mean Value among Males and Females

There has been an increased emphasis on physical fitness programs for females, and it has been established that there are no major sex differences in their physiological responses to regular physical exercises. But in each tests of performance efficiency, hematological and clinical bio chemistry the rate at which the change occurs shows difference among two sexes. The exercise type, duration and intensity while the physical exercise training was the same for both females and males. The mean value difference after the training is briefly distinguished as follows.

1. **Mean value of Fitness Components among females and males**

Table 1: Post training Comparative mean Value of males and Female participants' physiological performance test

Variables	**Female Subjects*(N=25)***		**Male Subjects*(N=25)***	
	Mean±SD		**Mean±SD**	
	Pre training	***Posttraining***	***Pre training***	***Posttraining***
Steptest(bpm)	148.6±13.1	106±15.66	140.6±20.91	108.1±8.3
Push uptest	8.6±6.26	42.4±10.18	10.9±6.3	29.7±6.18
Situptest	3.4±2.22	32.2±7.93	7.3±8.01	42.5±7.34
Sit&Reach test(cm)	6.4±4.09	18.6±4.77	5.7±3.74	16.85±3.6
shoulderstretch	5.12±2.58	10.1±4.32	4.15±2.08	9.7±3.49
test(cm) BMI(kg/m^2)	20.5±2.87	21.0±2.89	19.27±1.56	20.01±1.71
Waisttohipratio	0.75±0.06	0.75±0.06	0.8±0.05	0.82±0.29

The above table1shows the mean value of different performance tests in male and female participants of intensified training before and after training. The mean value of Step test in females before training is increased than the test after training. Hence, the result shows that the mean value of the participants indicates that they can improve their cardio respiratory endurance after the training from 148.6 mean values to 106. On the side of male participants also the mean value of step test shows an increase from 140.6 to108.1.The average standard value of the test for males is that100–105beats per minute. So, the mean value after intensified training (108.1) shows an increase but the value is still below average.

The table also shows the increasing mean value of pushup test on both male and female participants from pretrainingtoposttraining.Theaveragevalueofthetestis17–29formales and12–22 for females. Based on this standard value, the females mean value for the test shows remarkable improvement from pre training (8.6) to post training (42.4). It is also true for male participants that the mean value before training (10.9) to after training (29.7).

The above table indicates that the intensified training has an effect on increasing the performance efficiency on muscular strength and endurance by looking at the mean value of sit up test on both male and female participants. The average standard value of this test for females is that 29–32, and for males is 35-38 per minute. According to the change of mean

value from pre training to post training of both female and male participants, an improvement is shown in their performance and shows them as average performers.
The mean value shows an improvement in sit and reach flexibility test after training rather than before. According to Wells K.F and Dillon, E.K., the average standard value of sit and reach flexibility test for females is+1to+10cm and for males is 0to+5cm. As shown on the table theme an value of the test after intensified training in females is+18.6 cm and in males is +16.85 cm. From this result it can be concluded that both males and females possess good level of flexibility.
According to the above table, the mean value of shoulder flexion shoulder stretch flexibility test before the training shows improvement in mean value after training from 5.12to10.1 in case of female participants and from 4.15to9.7 in case of male participants.

The above table also indicates there lative increase of body mass index in both female and male participants. But, the mean value of waist to hipratio in females doesn't show an improvement.

2. Comparative Mean value of Physiological Parameters among females and males

Table 2:- Post training Comparative mean Value of males and Female participants' hematological and clinical biochemistry test

Variables	**MaleSubjects*(N=25)***		**FemaleSubjects*(N=25)***	
	Mean±SD		**Mean±SD**	
	Pre training	***Post***	***Pre training***	***Post training***
***WBC*(Mg/dl)**	5.88±1.76	7.63±2.45	5.57±1.28	6.88±2.03
RBC	4.87±0.51	5.68±0.92	4.73±0.28	5.41±1.26
(Mg/dl)	15.01±1.35		13.83±1.91	14.45±1.8
HGB	17.82±3.39		43.53±5.38	45.33±5.43
(Mg/dl)	46.48±3.44		328±106.08	329.9±97.45
***HCT*(Mg/d**	52.81±7.41		1.24±0.17	0.74±0.18
l)	303.9±96.55		43.74±6.71	44.36±5.07

Table2shows the relative changes of different hematological and clinical biochemistry tests from the test before and after intensified physical training. A sit is shown on the table the mean value of white blood cell count in the test after training is greater than the test before in both female and male participants. When the mean value after training compared with the average standard value, it shows an improvement in both sexes. The relative change of number of red blood cells is shown in post training than pre training. The mean value of hemoglobin before intensified training in male participants (15.01) is greater than the mean value after training (17.82), and also in female participants from pre training (13.83) t post training (14.45). The above table also shows the relative increasing of hematocrite in the test after training than the test before training. The result indicates that the amount of hematocrite increases with exercise. As the mean result of the tests on the table indicates, the amount of platelet in case of males is improved from pre training (303.9) to post training test (304.1). The mean value indicates that the platelet number shows increase in female in counters from328to329.9.

The above table indicates that the number of creatinine amount of the body in both male and female participants shows relative decrease with physical exercise. In males the amount decreases from the test before training (1.2) to after the training (0.86). The average standard amount of creatinine for male individual is that from 0.9to1.5mg/dl. The mean value of male's creatinine test after trainings hows that exercise can affect the level of creatinine amount in the body by decreases from 1.2 to 0.86 below normal level. On the other hand the normal level of creatinine amount in female's body isthatfrom0.7 to1.37 mg/dl.T he mean value of female participants after training in the table shows that physical training decreases the amount of creatinine from pre (1.24) to post (0.74) training.

As the above table indicates the mean value of albumin in both sexes' increases in the test after training than before training. Changes of mean value were shown when triglyceride level is tested after the training than before as the above table indicates. The normal level of triglyceride in the body should be less than150mg/dl for both male and female. As the table shows, its amount shows as light increase on the side of male participants i.e. from 83.1 to83.43. On the side of females the amount of triglyceride has also increased from the test before (72.08) than the test after(77.75). This is because more of male students participated in weight gain activities, such as weightlifting.

As the above table shows, the mean value of uric acid decreases after training than before training. Its level decreases from 6.61 to 4.24 in male participants and from 4.6 to 2.78 in female participants after intensified training. The normal level of uric acid in the body should be 3.5 to 7.1mg/dl for male and 2.6 to 6.0mg/dl for females. A sit can be seen on the post training test mean result, the level of uric acid in male participants' decreases to normal value as a result of intensifiedtraining.Posttrainingmeanlevelofuricacidinfemaleparticipants also decreases.

Summary

- As the results of the study shows the study subjects were able to achieve significant differences in their cardio vascular endurance. Step test is one of the tests which can be used to measure the cardio respiratory endurance. As the test result indicates there is a progressive improvement from pre training tests to post.
- As the mean result of the pre training and post training tests of push up and sit up indicates there is an absolute improvement of muscular strength and endurance. As the result indicates the mean value of females is greater than males.
- In contrast, the result of this study shows that the mean value of both flexibility tests (sit and reach flexibility test and shoulder stretch shoulder flexion test) has improved highly and the value of females is greater than males and can be conclude that females are more flexible than males.
- Results of body mass index and waist to hip ratio after the training indicates that regular physical exercise has an effect on body composition. In this study, the mean result of body mass index specifically increased as the training going on.
- Improvements of some physiological parameters were also occurred as a result of training. The laboratory results show that physical exercise causes several changes in the body that can increase its efficiency and oxygen carrying capacity. As shown in the results, these effects are evident in the changes that occur in blood in response to regular exercise.

Conclusions

Based on the major findings of the study, the following conclusions are stated.

- Most of the increase in muscle size from training is the result of an increase in the size of the muscle fibers, and not an increase in their number. Males develop bigger muscles than females because they have more testosterone, the hormone that affects the development of muscle size.
- Regular physical training has a significant effect on the improvement of health related physical fitness components. Everyone who participates in regular physical exercise will get an improved cardiovascular fitness, become strong, flexible and possess proportional fat and lean tissue.
- During working out, the body delivers oxygen to the cells. The changes of amount of RBC, WBC, HGB, HCT, PLT, creatinine, albumin, triglyceride and uric acid is an indicator for the physiological changes as a result of regular physical exercise.

Recommendations

By considering the major findings and conclusions of the study, it is important to state the following points as are commendation to investigate more effects of regular physical exercise on physiological changes and improvement of health related fitness components for both females and males.

1. It is highly expected from professionals of physical education and sports and related fields to guide and educate on the importance and value of intensified physical training on physiological changes and performance efficiency.
2 To be more beneficial from intensified training in all dimension (physiological, psychological and sociological) the exercise training program needs to be long term and the nutritional status of participants and gender differences should emphasized.
3. Other research's way of investigating the long term effect of regular physical training for both health related as well as performance or skill/athletic physical fitness components and more physiological system changes for both females and males needs to be adopt.
4. The emphasis of future research need to be in Frequency, Intensity, Time (duration), and Type of exercise to became more beneficial physically, mentally and socially from the outcomes and the training programs should designed scientifically.

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Influence Of Aerobic Training On Selected Motor Fitness Variables Among Inter Collegiate Players

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Abstract

the study was intended to analyze the influence of aerobic training on selected motor fitness variables among intercollegiate players. To achieve the purpose, 15 girls from University College of Engineering, BIT Campus, Tiruchirapalli were selected at random as subjects. Their age ranged from 18 to 22 years. The subjects had undergone aerobic training for 8 weeks duration. The following variables were selected as criterion variables namely speed endurance, strength endurance and agility. The concept of dependent f-ratio was employed to find out the significant improvement, if any between the pre and post test means. The result of the study indicated that aerobic training programme had significantly improved the selected criterion variables. Keywords: Strength Endurance, Aerobic Training, Motor Fitness and Speed Endurance

Introduction

Training is not a recent discovery. In ancient times people were trained for military and Olympic endeavors. Today athletes systematically prepare themselves for a goal through endeavor. Athletes are not developed overnight and a coach cannot create miracles by cutting corners through overlooking scientific and methodological theories (Bompa, 1999)

Training is not a recent discovery. In ancient times, people were trained for military and Olympic endeavors. Today athletes systematically prepare themselves for a goal through training. Training represents a long term Endeavour. Athletes are not developed overnight and a coach cannot create miracles by cutting corners through overlooking scientific and methodological theories (Bompa, 1999). Sports training are a basic preparation for better performance through physical exercise. It is based on scientific principles of aiming at education and performance enhancement activities consist of motor movement and action and their success depends to a great extent on how correctly they are performed. Techniques of training and improvement of tactical efficiency play a vital role in a training process.

The main components, which influence the physical performance of an athlete, are strength, speed, agility, endurance, power coordinative abilities. Action potential depends on natural abilities and at the same time fundamentals act as the foundation for excellence (Singh, 1991). And Aerobic Exercise "Aerobic" basically means living or working with oxygen. Aerobics or endurance exercises are those in which large muscle groups are used in rhythmic repetitive fashion for prolonged periods of time.

It refers to a variety of exercises that stimulates heart and lungs activity for a time period sufficiently long to produce beneficial changes in the body. Aerobic exercises include brisk walking. Jogging, swimming, cross- country skiing, hopping, skipping etc., By doing aerobics, the whole body is used and major muscle groups including legs trunk and arms get involved. (Dick, 1980) Aerobics is a good way to decrease our percentage of body fat and to attain the other metabolic benefits of fitness. It is also a very good way to develop muscular-skeletal fitness while building strength, flexibility, and co-ordination. By doing exercise, the whole system of our body carries oxygen-rich air enters through the organs and tissues of the muscles has been called "the aerobic system and for this reason training the system for stamina is called aerobic training. According to Bucher (1983), aerobic exercise is any physical activity that requires the heart rate to reach at least 60% of the maximal heart rate for an extra period of time. Also, it is an activity that can be sustained for an extended period of time without developing an oxygen deficit.

Methodology

The purpose of the study was to analyze the influence of aerobic training on selected motor fitness variables among intercollegiate players. To achieve the purpose, 15 girls from University College of Engineering, BIT Campus, Tiruchirapalli were selected at random as subjects. Their age ranged from 18 to 22 years. The subjects were undergone aerobic training which included continuous running, interval training, fartlek training, etc. for 8 weeks duration in addition to their regular programme of the college. The following variables were selected as criterion variables namely speed, endurance, strength endurance and agility. The relevant data was collected before and immediately after the training programme by using standardized test. The experimental design used in the study was single group random design. The concept of dependent Y-ratio was employed to find out the significant improvement, if any between the pre and post test means. The level of confidence as fixed at .05 level.

Discussion

From the table, the T-ratio values between the pre and post test means of speed, endurance, strength endurance and agility were 4.04, 2.19, 3.12 and 2.89 respectively. Since the obtained T-ratio values are greater than the required table value of 2.14 with df 14, it is understood that aerobic training programme had significantly improved the motor fitness variables selected for this study, namely speed, endurance, strength endurance and agility. The magnitude of improvement of criterion variables due to the influence of aerobic training were 5.13%, 7.67%, 18.18% and 11.05% respectively. Among the criterion variables selected for the study, strength endurance is better developed followed by agility, endurance and speed. Hence it is inferred that a programme of aerobic training would be beneficial in developing motor fitness variables which are essential for better performance in sports and games. The findings of the study was corroborated with the findings of Ramesh and Ravikumar (2002), Gillette and Elsenman (2003).

Summary of mean, standard deviation and dependent V-ratio for the pre and post tests on speed, Endurance, strength endurance and Agility of experimental group

Variables	Pre test Mean ± SD	Post test Mean ±SD	t- ratio	MI
Speed (Sec.)	8.2 ± 0.21	7.8 ± 0.11	4.04*	5.13%

Endurance (Sec.)	139.6 ± 13.24	129.65 ± 12.55	2.19*	7.67%
Strength endurance (Numbers)	18 ± 2.35	22 ± 3.24	3.12*	18.18%
Agility (Sec.)	13.16 ± 1.31	11.85 ± 1.21	2.89*	11.05

*Significant at .05 level,
MI - Magnitude of Improvement
Table value required for significance at.05 level with df 14 is 2.14.

Conclusion

A programme of aerobic training had significantly improved the criterion variables namely speed, endurance, strength endurance and agility. Among the criterion variables, strength endurance was better improved than that of the other variables due to aerobic training.

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Effect Of Different Exercise And Nutrition In Reducing Risk Of Obesity: Systematic Review

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ABSTRACT
The systematic review mainly focuses on the effects of a variety of exercises to reduce the risk of obesity. Primarily, patients' cheek health status in medical centers or hospitals before doing any exercise programs. To reduce obesity and have good, smart, body composition different scholars recommended that they have to perform aerobic exercise for 30 minutes five days per week are good. Obesity is a serious problem for sedentary peoples and caused by excessive accumulation of fat in the body and lack of exercise training to control overweight. It affects daily human quality of spirit and health conditions. Aerobic exercise, resistance training and intensity training are very important to reduce risk of obesity health problems such as high blood pressure, cancer and diabetes. The article reviewed from survey research, experimental and cross sectional research design researches. Lack of regular exercise, sedentary lifestyle and consuming fatty foods leads persons to obesity and overweight. Conclusion engaging in physical activity helps to have good posture and simply reduce the medical costs of persons.
Key words: Aerobic Exercise, Nutrition, Obesity, BMI and CHD

INTRODUCTION
Obesity rate highly increased in America, Mexico, the Netherlands and Hungary, particularly women's because of social inequalities and less education. (Kheir, M. S., &Kheir, A. E. M,2016)) explained on their study obesity and overweight peoples affected in developed and developing nations because of the following factors such as inactive lifestyle, excessive fat intake and sugar sweated beverages, lack of physical activity. Additionally, the results of the study showed that Khartoum high school girls are at risks of obesity and overweight. (Mehrabani, Javad,2018) reviewed that world million people were dying and suffered with hypertension, cancer, fatness and CHD. Reforming nutritional behavior and increasing physical activity and sport were needed.

Obesity, Nutrition and exercise
(Bean, A,1998) explained that eating a high and balanced diets Alcohol 7 kcal (29 KJ), Carbohydrate 4 kcal (17 KJ), Fat 9 kcal (38 KJ) and Protein 4 kcal (17 KJ) amount of energy should contain. Sport scholar researchers recommended a person who engaged in regular physical exercise programs fat contains 20-25 %.(Staiano, A. E., Abraham, A. A., & Calvert, S. L,2012).)study result indicates that intrinsic motivation was significance correlation energy expenditure during play. The researcher concluded that cooperative play enhance motivation and interest of obesity of young peoples.(Brouns, F,1993))described that athletes who suffered with nutritional problems, better to consume appropriate foods based

on training lodes and duration's. Adequate consumption of nutrients is important for reduction of obesity risks.

(Hankey, C., Eley, S., Leslie, W., Hunter, C., & Lean, M,2004))systematic review indicate that knowledge of nutrition and weight management is really important to obesity patients.(Qi, L. ,2014))explained that obesity is a severe problem in the United States and personalized nutritional programs are more important that of traditional eating habits.(BA, S., I, C., JC, S., & WPT, J,2004).)review recommended that to reduce obesity, healthy choices of food and active physical activity programs are important.(Wiklund, P,2016) recommended strategies to reduce obesity, stress on healthy diet and physical activity. Physical activity is controlled mechanisms of energy balance and solution to alleviate the risks of obesity epidemics.

Health risk of obesity

(Tariq Ali, A., & John Crowther, N,2005).)reviewed on health risks associated with obesity. Obesity is a way of increasing body weight and fat mass because body weight and storage of the triglyceride relation between genetic, metabolic, environmental and psychological factors. Obesity is serioushealth risks such as hypertension, type 2 diabetes, cancer, respiratory problem and cardiovascular diseasein developing and developed countries.

(Aien khan Afridi, MahparaSafdar, M. M. A. K. K. and A. K,2003) reviewed on health risk of overweight obesity .obesity is global endemic problem for world community which causes musculoskeletal problems and coronary heart dieses. So prevention, diagnosis and treatments of obesity risks needed to alleviate the challenges. (Aronne, L. J,2008) reviewed on classification and assessment of obesity related health risks. It is important for medical treatments and care of patients based on body mass index, waist circumstances and cardiovascular risk factors. For managements of obesity classification and assessments of patients is required.(Skinner, A. C., Perrin, E. M., Moss, L. A., & Skelton, J. A.,2015) conducted across sectional analysis on cardiometaboloic risk and severity of obesity. The researcher concluded that obese boys and girls suffered with abnormal levels of HDL cholesterol, systolic blood pressure and glucose.

Effects of physical activity to reduce obesity

Most people aware of obesity risks and how to solve the problem.But because less attention, giving majority people suffered with obesity and overweight. Sport and recreational activities are vital sport medicine and treatment for obesity peoples and athletes who participated in sport activities regularly. According to reports of (World Health Organization,2010) peoples who leads an active lifestyle are happier and less stressed as compared with that of inactive peoples. Childhood obesity and overweight were not the concern of African and some Latin countries of low socioeconomic groups of peoples, but developed nation peoples like U.S.A peoples were dying because of obesity risk dieses. Researchers recommended that taking part regularly in physical fitness programs and avoiding excessive high cholesterol food advisable.Modern time in developed nation's obesity, highly affects human health and suffers with diseases of diabetes, cardiovascular diseases and high line pressure. Aerobic exercise brings down the quantity of fatty tissue in the body, lose weight and change physical appearances of individuals.

(Siqiang, G.,2018).) Consuming high cholesterol, fat foods and physical inactivity are serious causes of grater body fat accumulation which leads to obesity and overweight. As (Rocha, P. E. C. P. D., Silva, V. S. D., Camacho, L. A. B., &Vasconcelos, A. G. G. (2015).) in his study states that performing resistance training and aerobic training for a long time helps to reduce and control body weight.

(Waumsley, J., Atter, N., Boyle, S., &Buckroyd, J. ,2011) study described as in England, Scotland and Wales obesity is a serious risk of health such as heart disease, stroke, diabetes, cancer and gall bladder disease and interrupted birthing during sleep. So, peoples better to take part in different exercise and variety fitness programs.

(Psouni, S., Chasandra, M., &Theodorakis, Y. ,2016).Results showed that the person who possess a positive position towards the effects of exercise in reducing risks of obesity have good health and lower body mass indicator (BMI) value as compared with that of people has negative attitudes towards exercise and improper habits of eating nutritionally. Obesity is globally epidemic disease throughout the world because of sedentary lifestyles of peoples and consuming high cholesterol fatty foods.

(World Health Organization,2010) report facts described that millions of peoples died per year because of cardiovascular diseases, diabetes, obesity, cancer, respiratorydiseases, high cholesterol, high blood pressure, low fruits and vegetable intake, inactive lifestyle and smoking cigarette. People's dietary and engaging in exercise training habits affects health conditions. So, participating in a regular exercise program is useful in reducing risks of global chronic diseases.

(Al-Nakeeb, Y., Lyons, M., Collins, P., Al-Nuaim, A., Al-Hazzaa, H., Duncan, M. J., &Nevill, A,2012) conducted survey study on differences in weight status, obesity and way of physical activity relation to gender and age in UK and Saudi Arabiya youth peoples. 2290 both male and females participated in this study. Results of study showed that there is significance relation between body mass indexes, physical activity and passive behavior. The researcher concluded that particularly females in developed countries like UK and Saudi Arabiya youth peoples at the age of 15-17 suffered with sedentary behavior and lack of exercise due to societal and cultural value factors. To have good quality life style peoples better to engage in regular physical activity programs and reducing high fatty cholesterol foods.

(Bo-Yeon Kim*, Dug-Hyun Choi, Chan-Hee Jung, Sung-Koo Kang, Ji-Oh Mok, C.-H. K.,2017)) reviewed from different scholars' research articles that obesity may cause type 2 diabetes, cardiovascular disease and nonalcoholic fatty liver diseases. Diets and exercise helps to reduce weight of persons. Aerobic exercise and resistance training recommended reducing obesity and overweight population. Wight management helps people to improve health conditions and makes active citizens.

(Ross, R., Dagnone, D., Jones, P. J. H., Smith, H., Paddags, A., Hudson, R., & Janssen, I.,2000)) Conducted randomized controlledtrial study on reducing obesity through diets and exercise in obese men. 52 obese men participated in his study. Results of study showed that exercise group reduces 7.5 kg (8%) weight as compared with that of the control group. Based on the results of study concluded exercise without caloric restriction reduces

obesity.Recommended that physical activity without weight reduction important to preventing obesity risks and reduced abnormal accumulation of fat. Peoples better to participate moderate high intensity training 3-5 day per week for 60 mints helps to have good health conditions and minimize obesity.

(Maffiuletti, N. A., Agosti, F., Marinone, P. G., Silvestri, G., Lafortuna, C. L., &Sartorio, A.,2005).)investigated longitudinal study on change in body composition, physical performance and cardiovascular risks. 45 women and 19 men age 30 participated in the study. Concluded that 3 week training program helps in weight reduction, muscle strength and reduce high density lipoprotein and cholesterol crises.

(Al-Thani, M. H.,2017).)examine the influence of obesity in Qatar.Male and female adults participated in moderate physical activity program. There is no significant relation between obesity consumption of balanced diets. But, there is significance relation between physical activity and reducing obesity.

(F., D., G., L., B., L., R., C., J., V., D., C., … L., O. ,2013) conducted a randomized trial study on different modalities of exercise to reduce fat mass and cardiovascular disease. 100 participants age 50-70 years participated in endurance and resistance training programs. Concluded that high intensity training helps to improve accumulation of fat mass and cardiovascular disease.

(Romero Moraleda, B., Morencos, E., Peinado, A. B., Bermejo, L., Gómez Candela, C., & Benito, P. J.,2013).)investigated exercise determines obese patient lipid profiles. 59 women and 61 men age 18-50 years participated in the study in strength training, endurance training and combined group. Results of study showed that all blood lipid profiles improved, i.e. high density lipoprotein cholesterol, no change, Low density lipoprotein cholesterol, Triglyceride and total cholesterol decreased. Based on the result of the study concluded that participating in different training method helps to improve blood lipid profiles of obese patient peoples.

(Miles, L.,2007))review described that physical activity effects on physiological of peoples. itincreases resting metabolic rate, improve body compositions, reduce resting blood pressure and increase capacity of blood in the coronary arteries. Physical activity reduces risk of type 2 diabetes, colon cancer and cardiovascular disease. Most researchers recommended that performing physical activity 30 mints for 3-5 days per a week helps to solve the above mentioned obesity risks.

(Leite, N., Milano, G. E., Cieslak, F., Lopes, W. A., Rodacki, A., &Radominski, R. B.,2009).)conducted study on the effects of physical exercise and nutritional metabolic syndrome of obese adults. 64 boys were participating in the study 12 weeks of cycling, walking and stretching exercise. Results of study showed that systolic blood pressure, body mass index, waist circumstance, fat mass and trigliceloid decrease. High density lipoprotein cholesterol and Vo2 max increase. Patients recommended engaging regular exercise programs and changing dither patterns to leave health lifestyles.

OBJECTIVES

The objectives of the reviewwere to explore different studies which conducted in developed and developing countries on the effects of exercise in reducing risks of obesity. The aim of this systematic review is critically summarizing different scholars' articles and papers.

METHODOLOGY

The review was conducted from 110 articles and only 43 important article data reported from experimental studies, survey research review and cross-sectional research related to the effect of exercise and risk of obesity. Additionally, research uses the *BMI and WHO* report.

DISCUSSION

Changing physical activity and dietary habits are keys to obesity prevention and treatments. (Belay, M. A., c, Reddy, R., & M, S. B.,2013).) study conclude that combined aerobic and resistance exercise training for 12 weeks results in reducing body fat personage and improves the muscular strength capacity. Additionally, engaging physical activity reduces risks obesity health related problems. (Wakayo, T., Whiting, S. J., &Belachew, T,2016).)states that obesity and overweight high risk for developing countries like Africa. Cheap high calories dense foods and limited participation in physical activity serous causes of obesity risks including Ethiopia. So, engaging in regular physical activity and exercise helps to alleviate health problems. (Shaw, K. A., Gennat, H. C., O'Rourke, P., & Del Mar, C. ,2006).) study reported that vigorous activity is more effective than moderate or light intensity exercise in reducing weight loss. In addition, both high and low intensity exercise resulted in reducing systolic blood pressure and serum triglycerides. (Sidney and carols,2013) described that resistance training increase energy expenditure after six months due to decreased metabolism caused by weight loss for greater difficulty in losing weight . (Nazni, P., Vijayakumar, P., &Angamuthu, K. (2006).) experimental study results showed that 30 mints treadmill and walking exercise show in reducing body mass index (BMI), blood sugars, total cholesterol, triglyceride ,low density lipoprotein(LDL) and body fat and increased high density lipoprotein(HDL) at $p<0.05$.tredmill exercise used to reduce risk of obesity and to have good body composition. (Khammassi, M., Ouerghi, N., Hadj-Taieb, S., Feki, M., Thivel, D., & Bouassida, A.,2018))study result showed that 12 weeks high interval training and decreased BMI and fast mass, Vo2 max improved, total cholesterol and triglyceride and low density lipoprotein and high density lipoproteins unchanged on pre and post test results at $P<0.05$. So, high interval training is important to improve BMI, aerobic fitness and lipid profile. (Mbochi, W. R. (2011)) on his cross sectional studies concluded that in Africa, particularly low income socio economic group, overweight and obesity were not problematic because of most people are hard workers and low income poverty. (Al-Hamad, N. M.,1999) described ina cross sectional study on the prevalence of obesity and characteristics founded that Kuwaiti sedentary lifestyle leads to the availability of high food and over feeding leads to hypertension, overweight and obesity. So, Kuwaiti sedentary peoples better to perform regular exercise to reduce the risk of obesity and health problems. (Jayaraj, PP Nair, Reny Napolean, Justin Stephen, Nishanth K, Suresh D,2014) explained on his cross sectional study aimed to evaluate the prevalence of overweight and obesity on college students. Researchers find out the relationship between physical activity, sleeping habits and diets. Results of studies show that 10 % of students suffered with obesity and 44% are overweight. Eventually, concluded that participating regular physical exercise is significant for health and wellness of college medical students.

CONCLUSION

Obesity is caused by genetic factors, environmental, metabolism, endocrine function change, excessive fat, lifestyle and eating habits, drug induced obesity and intestinal problems. Obesity has various risk diseases such as type 2diabets, cancer, and hypertension and leads to overweight. In modern times obesity become a serious epidemic disease in developing and developed countries. To solve the health related problems of obese peoples should have to perform and engaged in aerobic and anaerobic exercise, resistance training and strength training activities. Aerobic exercise reduces lipids in obesity even in the absence of body weight reduction. Resistance training can be helpful in increasing strength and preventing the loss of fat free mass. Aerobic exercise can consume body fat, which intern brings good weight loss effects, also increase blood flow, oxygen transmission capacity, and promotes blood circulation and inner metabolism. Regular exercise is very important to mitigate metabolic and cardiovascular consequences of obesity. Finally, consuming a balance diet and practicing individualized exercise programs is helpful for health lifestyles, persons by reducing risks of obesity. The researcher further recommended that a further systematic review needed for treatments of health, obesity risk and childhood obesity

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Effect Of Breathing Exercises And Mental Training On Stress And Speed Among Kabaddi Players

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Abstract
The Purpose of this study to find out the effect of Breathing Exercises and Mental Training on Stress and Speed among Kabaddi Players. The randomly selected subjects (N=60) were grouped into three groups, namely experimental group I, experimental group II and control group respectively, each consisting of twenty subjects. Pre-tests were conducted for all the subjects on selected psychological and performance variables such as, stress, speed, in kabaddi. The experimental group participated in their respective treatments, experimental group I in breathing exercises and experimental group II in mental training for twelve weeks. The control group was strictly under the supervision of the investigator and did not participate in any special activity except of their routine. Immediately after completion of experimental period, all the subjects were measured of the selected psychological and performance variables which formed Post-Test scores. The difference between the initial and final means was considered as the effect of respective experimental treatments on the subjects. The mean differences were subjected to statistical treatment using ANCOVA. **Key Words**: Stress and Speed

Introduction
The term sports are sometimes extended to encompass all competitive activities in which offense and defense are played, regardless of the level of physical activity. Both games of skill and motor sport exhibit many of the characteristics of physical sports, such as skill, sportsmanship, and at the highest levels, even professional sponsorship associated with physical sports.

Sports that are subjectively judged are distinct from other judged activities such as beauty pageants and body building shows, because in the former the activity performed is the primary focus of evaluation, rather than the physical attributes of the contestant as in the latter.

Objectives Of The Study
The objectives of this study are detailed as below:

- To formulate suitable breathing exercises and mental training that can beneficially alter selected psychological and performance variables for the benefit of kabaddi players.
- To experiment with the breathing exercises and mental training among kabaddi players and to find out the effect of breathing exercises and mental training on selected psychological and performance variables.

- To compare the effect of breathing exercises and mental training on selected psychological and performance variables of kabaddi players to find out which of the two experimental treatment is more useful than the other on selected psychological and performance variables.

Statement Of The Problem

The purpose of the study was to find out the effect of breathing exercises and mental training on stress and speed among kabaddi players.

Hypothesis

It was hypothesized that:

- There would be significant influence due to breathing exercises and mental training on selected psychological variables among kabaddi players compared to control group.
- There would be significant influence due to breathing exercises and mental training on selected performances variable among kabaddi players compared to control group.
- There will not be any significant difference between breathing exercises and mental training on selected psychological and performance variables among kabaddi players.

Delimitations

The study was delimited as follows:

- The study was conducted only on school level men kabaddi players who represented their schools in inter school competitions.
- The subjects were taken from the age group of 16 to 18 years.
- Only 60 randomly selected school level kabaddi players were selected and randomly assigned into three groups, namely, breathing exercise group, mental training group and control group.
- The kabaddi performance variables, touch, kicking, rotation, hold, block were measured subjectively through experts.
- The following are the dependent and independent variables selected for this study.

Limitations

The study was limited in the following way:

- Regular activities pertaining to their day to day routine were not taken into account.
- Certain factors like rational habits like life style, daily routine, diet and climatic conditions were not taken into account in the study.
- The influence of vigorous academic activity of students could have discouraged or motivated the subjects during training and during testing period.
- The heterogeneous characters of the subjects in hereditary and environmental factors were recognized as a limitation.
- The subject's body type and socio-economic status of the students were not taken into consideration, and
- The environmental factors at the time of responding to the experimental study would be attached the responses of the subjects which recognized as a limitation.

Methodology

Sixty school level male kabaddi players aged sixteen to eighteen were randomly selected from different schools in Andhra Pradesh as subjects for this study. All the subjects selected were school level kabaddi players who have represented their school in different local competitions including inter-school level competitions. They were assigned into three different groups, namely, experimental group I, experimental group II and control group consisting of twenty subjects in each group. Experimental group I was considered as breathing exercises group, experimental group II was considered as mental training group and the third group, control group was not provided with any special training.

The requirements of the experimental procedures, testing as well as exercise schedules were explained to the subjects so as to avoid any ambiguity of the effort required on their part and prior to the administration of the study, the investigator got the individual consent from each subject.

Selection Of Variables

The research scholar reviewed the various scientific literature pertaining to breathing exercises and mental training on psychological variables and performance variables of kabaddi from books, journals, periodicals, magazines and research papers. Taking into consideration of feasibility criteria, availability of instruments and the relevance of the variables of the present study, the following variables were selected.

Dependent Variables

1. Stress
2. Speed

Independent Variables

1. Breathing exercises for 12 weeks
2. Mental Training for 12 weeks

Experimental Design

The randomly selected subjects (N=60) were grouped into three groups, namely experimental group I, experimental group II and control group respectively, each consisting of twenty subjects. Pre-tests were conducted for all the subjects on selected psychological and performance variables such as, stress, speed, in kabaddi. The experimental group participated in their respective treatments, experimental group I in breathing exercises and experimental group II in mental training for twelve weeks. The control group was strictly under the supervision of the investigator and did not participate in any special activity except of their routine. Immediately after completion of experimental period, all the subjects were measured of the selected psychological and performance variables which formed Post-Test scores. The difference between the initial and final means was considered as the effect of respective experimental treatments on the subjects. The mean differences were subjected to statistical treatment using ANCOVA.

Criterion Measures

By glancing the literature, and in consultation with professional experts, the following variables were selected as the criterion measures in this study.

1. Psychological variable stress was assessed through Everyly and Gardino's Stress Scale.
2. Speed was measured through 50 M run test and scores recorded in seconds.

The intraclass correlation coefficient obtained for test-retest data are presented in Table I.

Table I

Intra Class Correlation Coefficient of Test – Retest Scores

S.No.	Variables	Coefficient of Correlation
1	Stress	0.84*
2	Speed	0.79*

***** Significant at 0.05 level

Statistical Technique

In this study, random group design was used. The selection of subjects, allotment of groups as control and experimental group were done randomly. Data were collected before and after breathing exercises and mental training on the selected dependent variables. No attempt was made to equate the groups before the commencement of training. Thus, to nullify the differences in the initial means on the post data, analysis of covariance was used. The level of significance was set at 0.05 level. The data obtained were analysed by analysis of variance (ANOVA) and analysis of covariance (ANCOVA). The analysis of variance was used to assess the significance of difference between the pre-test and post-test, for each of the variables on the assisted, resisted and combination of assisted and resisted sprint training groups separately.

Results And Discussions

The randomly selected subjects (N=60) were grouped into three groups, namely experimental group I, experimental group II and control group respectively, each consisting of twenty subjects. Pre-tests were conducted for all the subjects on selected psychological and performance variables such as stress and speed in kabaddi. The experimental group participated in their respective treatments, experimental group I in breathing exercises and experimental group II in mental training for twelve weeks. The control group was strictly under the supervision of the investigator and did not participate in any special activity except of their routine. Immediately after completion of experimental period, all the subjects were measured of the selected psychological and performance variables which formed Post-Test scores. The difference between the initial and final means was considered as the effect of respective experimental treatments on the subjects.

Computation of analysis of variance and post- hoc test - - results on stress

The statistical analysis comparing the initial and final means of Stress due to Breathing exercises and mental training among school level kabaddi players is presented in Table II.

Table II

Ancova Results On Effect Of Breathing Exercises And Mental Training Compared With Controls On Stress

	Breathing exercises	Mental training	Control group	Source of variance	Sum of squares	df	Mean Squares	Obtained F
Pre-Test Mean	25.60	26.50	24.70	Between	32.40	2	16.200	0.70
				Within	1312.00	57	23.02	

Post-Test Mean	21.70	23.80	24.25	Between	74.10	2	37.05	2.04
				Within	1033.15	57	18.13	
Adjusted Post-Test Mean	21.70	23.05	25.00	Between	109.38	2	54.69	26.46*
				Within	115.75	56	2.07	
Mean Diff	-3.90	-2.70	-0.45					

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.16, 2 and 56 (df) =3.16.
*Significant at 0.05 level

As shown in Table II, the obtained Pre-Test means on Stress on Breathing exercises group was 25.60, Mental training group was 26.50 was and control group was 24.70. The obtained Pre-Test F-value was 0.70 and the required table F-value was 3.16, which proved that there was no significant difference among initial scores of the subjects.

The obtained Post-Test means on Stress on Breathing exercises group was 21.70, Mental training group was 23.80 was and control group was 24.25. The obtained Post-Test F-value was 2.04 and the required table F-value was 3.16, which proved that there was no significant difference among Post-Test scores of the subjects.

Taking into consideration of the Pre-Test means and Post-Test means adjusted Post-Test means were determined and analysis of covariance was done and the obtained F-value 26.46 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups.

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 VIII.

Table III

Multiple Comparisons of Paired Adjusted Means and Scheffe's Confidence Interval Test Results on Stress

MEANS				**Required C.I.**
Breathing exercises Group	**Mental training Group**	**Control Group**	**Mean Difference**	
21.70	23.05		-1.35*	1.14
21.70		25.00	-3.30*	1.14
	23.05	25.00	-1.96*	1.14

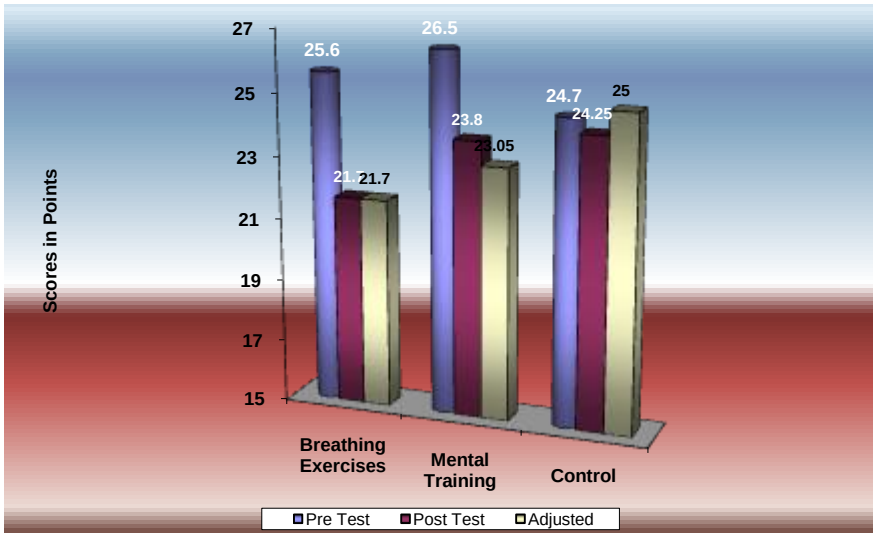
***** Significant at 0.05 level.

The post-hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Breathing exercises group and control group (MD: -3.30). There was significant difference between Mental training group and control group (MD: -1.96). There was significant difference between treatment groups, namely, Breathing exercises group and Mental training group. (MD: -1.35).

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 Stress



Discussions On Findings On Stress

In order to find out the effect of Breathing exercises and Mental training on Stress the obtained pre and Post-Test means were subjected to ANCOVA and post-hoc analysis through Scheffe's confidence interval test.

The effect of Breathing exercises and Mental training on Stress is presented in Table II. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F-value 26.46 was greater than the required table F-value to be significant at 0.05 level.

Since significant F-value was obtained, the results were further subjected to post-hoc analysis and the results presented in Table VIII proved that there was significant difference between Breathing exercises group and control group (MD: -3.30) and Mental training group and control group (MD: -1.96). Comparing between the treatment groups, it was found that there was significant difference between Breathing exercises and Mental training group among school level kabaddi players.

Thus, it was found that breathing exercises was significantly better than mental training and control group in improving Stress of the school level kabaddi players.

Results On Speed

The statistical analysis comparing the initial and final means of Speed due to Breathing exercises and Mental training among school level kabaddi players is presented in Table III.

Table III

Ancova Results On Effect Of Breathing Exercises And Mental Training Compared With Controls On Speed

	Breathing exercises	Mental training	Control group	Source of variance	Sum of squares	df	Mean Squares	Obtained F
Pre-Test Mean	6.89	6.84	6.80	Between	0.08	2	0.04	1.57
				Within	1.38	57	0.02	
Post-Test Mean	6.68	6.70	6.76	Between	0.06	2	0.03	1.33
				Within	1.37	57	0.02	
Adjusted	6.64	6.70	6.80	Between	0.24	2	0.12	38.24*

Post-Test Mean				Within	0.17	56	0.00	
Mean Diff	-0.21	-0.13	-0.04					

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.16, 2 and 56 (df) =3.16.
*Significant at 0.05 level.

As shown in Table III, the obtained Pre-Test means on Speed on Breathing exercises group was 6.89, Mental training group was 6.84 was and control group was 6.80. The obtained Pre-Test F-value was 1.57 and the required table F-value was 3.16, which proved that there was no significant difference among initial scores of the subjects.

The obtained Post-Test means on Speed on Breathing exercises group was 6.68, Mental training group was 6.70 was and control group was 6.76. The obtained Post-Test F-value was 1.33 and the required table F-value was 3.16, which proved that there was no significant difference among Post-Test scores of the subjects.

Taking into consideration of the Pre-Test means and Post-Test means adjusted Post-Test means were determined and analysis of covariance was done and the obtained F-value 38.24 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups.

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 IV.

Table IV

Multiple Comparisons of Paired Adjusted Means and Scheffe's Confidence Interval Test Results on Speed

MEANS				**Required C.I.**
Breathing exercises Group	**Mental training Group**	**Control Group**	**Mean Difference**	
6.64	6.70		-0.07*	0.04
6.64		6.80	-0.16*	0.04
	6.70	6.80	-0.09*	0.04

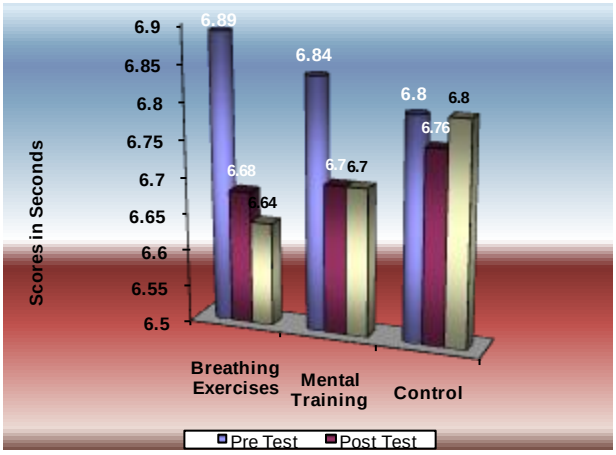
***** Significant at 0.05 level.

The post-hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Breathing exercises group and control group (MD: -0.16). There was significant difference between Mental training group and control group (MD: -0.09). There was significant difference between treatment groups, namely, Breathing exercises group and Mental training group (MD: -0.07).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure II.

Figure II

Bar Diagram Showing Pre-Test, Post-Test And Ordered Adjusted Means On Speed



Discussions On Findings On Speed

In order to find out the effect of Breathing exercises and mental training on Speed the obtained pre and Post-Test means were subjected to ANCOVA and post-hoc analysis through Scheffe's confidence interval test. The effect of Breathing exercises and mental training on Speed is presented in Table IV. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F-value 38.24 was greater than the required table F-value to be significant at 0.05 level. Since significant F-value was obtained, the results were further subjected to post-hoc analysis and the results presented in Table IV proved that there was significant difference between Breathing exercises group and control group (MD: -0.16) and Mental training group and control group (MD: -0.09). Comparing between the treatment groups, it was found that there was significant difference between Breathing exercises and Mental training group among school level kabaddi players. Thus, it was found that breathing exercises was significantly better than Mental training and control group in improving Speed of the school level kabaddi player

Conclusions

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that breathing exercises and mental training significantly reduced psychological variable, stress among school level kabaddi players compared to control group. Comparing between the treatment groups, it was found that breathing exercises was significantly better than mental training in altering anxiety of the subjects.
2. It was concluded that breathing exercises and mental training significantly altered performance variable, speed among school level kabaddi players compared to control group. Comparing between the treatment groups, it was found that breathing exercises was significantly better than mental training in altering speed of the subjects.

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Effect Of Resistance And Sand Training On Blocking And Strength Among Inter Collegiate Kabaddi Players

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Abstract
Purpose of this study to find out the Effect of Resistance and Sand Training on Blocking and Strength among Inter Collegiate Kabaddi Players. The study was formulated as a true random group design, consisting of a pre-test and post-test. The forty five men kabaddi players who represented their colleges in inter collegiate tournaments were randomly selected as subjects (N=45). The subjects were divided into three groups consisting of 15 in each group. The groups were assigned as Experimental Groups I, II, and group V. Experimental group I was given experiment resistance training, experimental group II was given sand training and the third one was considered as control group which did not underwent any special treatment. Pre-test was conducted for all forty five (N=45) subjects on selected performance variables such as, speed, strength agility, touching, kicking, rotation, hold, and block. The experimental groups participated in their respective, training such as, resistance training and sand training for twelve weeks. The control group was did not underwent any experimental training. Immediately after the experimental period post-test was conducted on the above said dependent variables after a period of twelve weeks. The pre and post-test scores on selected criterion variables were tabulated and tested for statistical significance using ANACOVA. In all cases 0.05 level was fixed to test the hypothesis of this study. **Key Words**: Blocking and Strength

Introduction
Sports in the present world have become extremely competitive. It is not the mere participation or practice that brings out victory to an individual. Therefore, sports life is affected by various factors like physiology, biomechanics, sports training, sports medicine, sociology and psychology etcetera. All the coaches, trainers, physical educational personals and doctors are doing their best to improve the performance of the players of their country. Athlete players of all the countries are also trying hard to bring laurels, medals for their countries in International competitions.

Limitation
- Heredity and environment factors which will contribute to mental efficiency could not be controlled.
- The day to day activities and life style could not be controlled.
- The environmental factors at the time of responding to the experimental study would be attached the responses of the subjects which recognized as a limitation.

Delimitation
The study was delimited in terms of concerns and sample as follows:
- Only Kabaddi men players were are selected for the study.
- The age of the subjects were ranged from 19 to 25 years.
- Only the following performance related variables were selected for the study namely, leg explosive strength and blocking

Methodology

The purpose of the study was to find out the effect of resistance and sand training on selected performance variables among intercollegiate kabaddi players. To achieve the purpose of this study, forty five intercollegiate level kabaddi players from different colleges in Andhra Pradesh were selected. The selected subjects' age group was ranging from nineteen to twenty five years. The subjects were randomly divided into three groups and each group consists of fifteen subjects. Experimental group one underwent resistance training and experimental group two underwent sand training for twelve weeks, whereas the control group did not participate in any special training.

Selection Of Variables

The investigator reviewed the available scientific literatures pertaining to the resistance training, sand training from books, journals, periodicals, magazines and research papers on performance variables and performances of kabaddi players. Based on the consideration of feasibility criteria, availability of instruments and the relevance of the variables to the present study, following variables were selected.

Dependent variables

1. Strength
2. Block

Independent Variables

1. Experimental Group I - Resistance Training for 12 weeks
2. Experimental Group II - Sand Training for 12 weeks

Experimental Design

The study was formulated as a true random group design, consisting of a pre-test and post-test. The forty five men kabaddi players who represented their colleges in inter collegiate tournaments were randomly selected as subjects (N=45). The subjects were divided into three groups consisting of 15 in each group. The groups were assigned as Experimental Groups I, II, and group V. Experimental group I was given experiment resistance training, experimental group II was given sand training and the third one was considered as control group which did not underwent any special treatment. Pre-test was conducted for all forty five (N=45) subjects on selected performance variables such as, speed, strength agility, touching, kicking, rotation, hold, and block. The experimental groups participated in their respective, training such as, resistance training and sand training for twelve weeks. The control group was did not underwent any experimental training. Immediately after the experimental period post-test was conducted on the above said dependent variables after a period of twelve weeks. The pre and post-test scores on selected criterion variables were tabulated and tested for statistical significance using ANACOVA. In all cases 0.05 level was fixed to test the hypothesis of this study.

Criterion Measures

The following criterion measures were adopted to measure the test.

1. Strength was measured using vertical jump test.
2. Performance variables block were measured objectively by three experts.

The correlation of coefficient correlation obtained for the tests variables were given in Table I.

Table I

Intra Class Correlation Coefficient of Test – Retest Scores

S.No	Variables	Coefficient of Correlation
1	Strength	0.89*
2	Blocking	0.82*

***** Significant at 0.05 level

Resistance Training

The experimental groups underwent resistance training for a period of twelve weeks. The experimental group had practices by wearing weight jackets in their body with different weights. They were also had practices on the sandy run way.

The training schedule for resistance training group was detailed in Table II.

Table II

Showing Schedule of Resistance Training to Experimental Group I

S.No.	Resistance Training	I and IV Weeks		V & VIII Weeks		IX to XII Weeks	
		Repe-titions	Sets	Repe-titions	Sets	Repe-titions	Sets
1	Light weight Jackets	4	2	4	3	4	4
2	Heavy weight Jackets	4	2	4	3	4	4
3	Heavier weight Jackets	4	2	4	3	4	4
4	Sandy Run way	4	2	4	3	4	4

Table III

SCHEDULE OF SAND TRAINING

Days	Monday	Wednesday	Friday
First 4 weeks	1 ½ km Beach running	2 km Beach running	2½ km Beach running
Second 4 week's	Beach running + 1 ½ km plus Hopping and Bounding (repetition)	Beach running + 2 km plus hopping, bounding High knee & speed repetition.	Beach running + 2½ km plus hopping, bounding High knee & speed repetition.
Third 4 week	Beach running + 2 km plus Hopping and Bounding repetition.	Beach running + 2 ½ km plus Hopping, Bounding High knee & Speed Repetition.	Beach running + 3 km plus Hopping, Bounding High knee & Speed Repetition.

Statistical Techniques

To find out the effect of resistance training and aerobic training on selected anthropometric and skill related fitness variables among intercollegiate kabaddi players, the pre-test and post-test scores were analysed by using ANCOVA statistical technique. When the F-ratio was found to be significant, Scheffe's post-hoc test was used to find out the paired mean significant difference (Thirumalaisamy, 1998).

RESULTS AND DISCUSSIONS

This chapter deals with analysis of data and discussions on the results presented. The purpose of the study was to find out the effect of resistance and sand training on selected performance variables among intercollegiate kabaddi players. To achieve the purpose of this study, forty five intercollegiate level kabaddi players from different colleges in Andhra Pradesh were selected. The selected subjects' age group was ranging from nineteen to twenty five years. The subjects were randomly divided into three groups and each group consists of fifteen subjects. Experimental group one underwent resistance training and experimental group two underwent sand training for twelve weeks, whereas the control group did not participate in any special training. Based on the consideration of feasibility criteria, availability of instruments and the relevance of the variables to the present study, following variables were selected.

I. Performance related variables

1. Strength

2. Performance variables

1. Block

Pre-test was conducted for all forty five (N=45) subjects on selected performance related and performance variables such as strength and block. The experimental groups participated in their respective, training such as, resistance training and sand training for twelve weeks. Immediately after the experimental period post-test was conducted on the above said dependent variables after a period of twelve weeks. The pre and post-test scores on selected criterion variables were tabulated and tested for statistical significance using ANACOVA.

COMPUTATION OF ANALYSIS OF VARIANCE AND POST- HOC TEST RESULTS ON STRENGTH

The statistical analysis comparing the initial and final means of Strength due to Sand training and Resistance training among inter collegiate level kabaddi players is presented in Table V.

Table V

ANCOVA RESULTS ON EFFECT OF SAND TRAINING AND RESISTANCE TRAINING COMPARED WITH CONTROLS ON STRENGTH

	SAND TRAINING	RESISTANCE TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre-test Mean	53.80	54.80	52.60	Between	36.40	2	18.20	0.62
				Within	1234.40	42	29.39	
Post-test Mean	62.73	58.93	53.73	Between	612.40	2	306.20	6.87*
				Within	1872.80	42	44.59	
Adjusted Post-test Mean	62.68	58.12	54.60	Between	489.17	2	244.58	8.74*
				Within	1147.21	41	27.98	
Mean Diff.	8.93	4.13	1.13					

Table F-ratio at 0.05 level of confidence for 2 and 42 (df) =3.16, 2 and 41 (df) =3.16.
*Significant at 0.05 level

As shown in Table VIII, the obtained pre-test means on Strength on Sand training group was 53.80, Resistance training group was 54.80 was and control group was 52.60. The obtained pre-test F-value was 0.62 and the required table F-value was 3.16, which proved that there was no significant difference among initial scores of the subjects.

The obtained post-test means on Strength on Sand training group was 62.73, Resistance training group was 58.93 was and control group was 53.73. The obtained post-test F-value was 6.87 and the required table F-value was 3.16, which proved that there was significant difference among post-test scores of the subjects.

Taking into consideration of the pre-test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F-value 8.74 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups.

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 VIII.

Table VI

Multiple Comparisons of Paired Adjusted Means and Scheffe's Confidence Interval Test Results on Strength

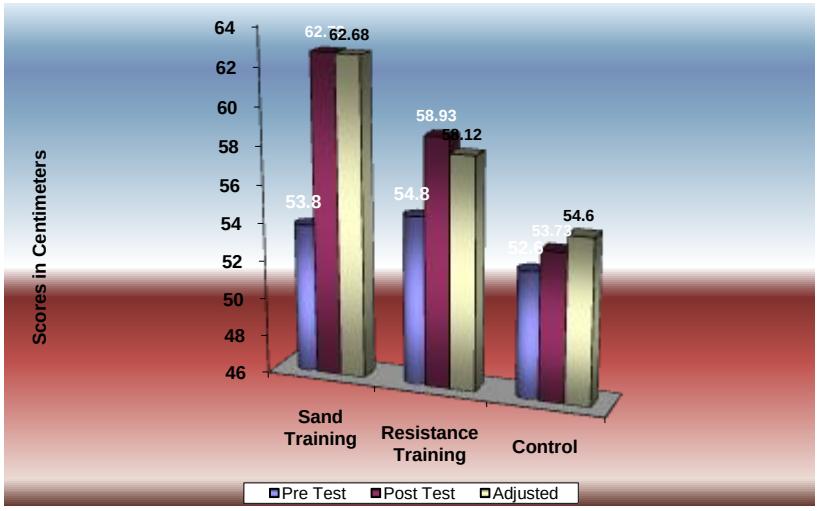
MEANS				Required C.I.
Sand training Group	Resistance training Group	Control Group	Mean Difference	
62.68	58.12		4.57	4.89
62.68		54.60	8.08*	4.89
	58.12	54.60	3.51	4.89

***** Significant at 0.05 level

The post-hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Sand training group and control group (MD: 8.08). There was insignificant difference between Resistance training group and control group (MD: 3.51). There was no significant difference between treatment groups, namely, Sand training group and Resistance training group (MD: 4.57).

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 STRENGTH



DISCUSSIONS ON FINDINGS ON STRENGTH

Strength of the kabaddi players was measured through vertical jump. In order to find out the effect of Sand training and Resistance training on Strength, the obtained pre and post-test means were subjected to ANCOVA and post-hoc analysis through Scheffe's confidence interval test.

The effect of Sand training and Resistance training on Strength is presented in Table VIII. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F-value 8.74 was greater than the required table F-value to be significant at 0.05 level.

Since significant F-value was obtained, the results were further subjected to post-hoc analysis and the results presented in Table VIII proved that there was significant difference between Sand training group and control group (MD: 8.08) and there was no significant difference between Resistance training group and control group (MD: 3.51). Comparing between the treatment groups, it was found that there was no significant difference between Sand training and Resistance training group among inter collegiate level kabaddi players.

Thus, it was found that sand training was better than Resistance training and control group in improving Strength of the inter-collegiate level kabaddi players.

RESULTS ON BLOCK

The statistical analysis comparing the initial and final means of Block due to Sand training and Resistance training among inter collegiate level kabaddi players is presented in Table VII

Table VII

ANCOVA RESULTS ON EFFECT OF SAND TRAINING AND RESISTANCE TRAINING COMPARED WITH CONTROLS ON BLOCK

	SAND TRAINING	RESISTANCE TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre-test Mean	11.67	11.80	11.93	Between	0.53	2	0.27	0.08
				Within	142.67	42	3.40	
Post-test Mean	13.67	14.47	12.47	Between	30.40	2	15.20	4.96*
				Within	128.80	42	3.07	
Adjusted Post-test Mean	13.78	14.47	12.36	Between	34.73	2	17.36	24.37*
				Within	29.21	41	0.71	
Mean Diff	2.00	2.67	0.53					

Table F-ratio at 0.05 level of confidence for 2 and 42 (df) =3.16, 2 and 41 (df) =3.16.
*Significant at 0.05 level

As shown in Table vii, the obtained pre-test means on Block on Sand training group was 11.67, Resistance training group was 11.80 was and control group was 11.93. The obtained pre-test F-value was 0.08 and the required table F-value was 3.16, which proved that there was no significant difference among initial scores of the subjects.

The obtained post-test means on Block on Sand training group was 13.67, Resistance training group was 14.47 was and control group was 12.47. The obtained post-test F-value was 4.96 and the required table F-value was 3.16, which proved that there was significant difference among post-test scores of the subjects.

Taking into consideration of the pre-test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F-value 24.37 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated groups.

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 VIII.

Table VIII

Multiple Comparisons of Paired Adjusted Means and Scheffe's Confidence Interval Test Results on Block

MEANS				Required C.I.
Sand training Group	Resistance training Group	Control Group	Mean Difference	
13.78	14.47		-0.69	0.78
13.78		12.36	1.42*	0.78
	14.47	12.36	2.11*	0.78

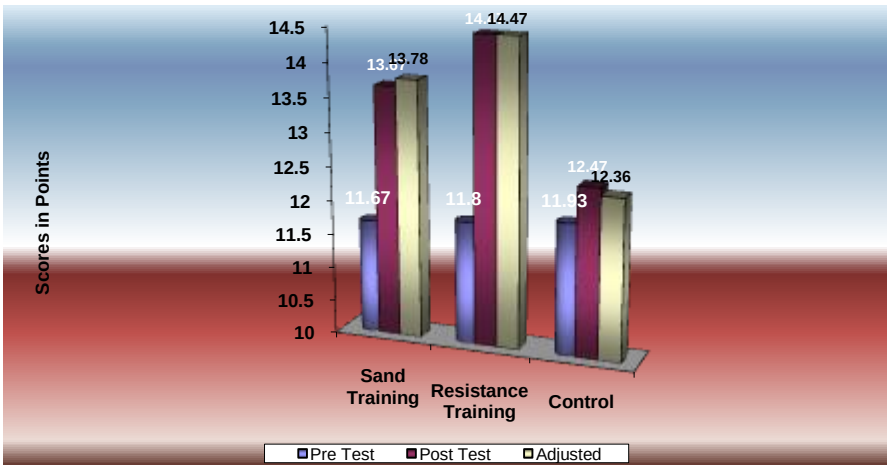
***** Significant at 0.05 level

The post-hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Sand training group and control group (MD: 1.42). There was significant difference between Resistance training group and control group (MD: 2.11). There was significant difference between treatment groups, namely, Sand training group and Resistance training group (MD: -0.69).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure II.

Figure II

BAR DIAGRAM SHOWING PRE-TEST, POST-TEST AND ORDERED ADJUSTED MEANS ON BLOCK



DISCUSSIONS ON FINDINGS ON BLOCK

In order to find out the effect of Sand training and Resistance training on Block the obtained pre and post-test means were subjected to ANCOVA and post-hoc analysis through Scheffe's confidence interval test.

The effect of Sand training and Resistance training on Block is presented in Table VIII. The analysis of covariance proved that there was significant difference between the experimental group and control

group as the obtained F-value 24.37 was greater than the required table F-value to be significant at 0.05 level.

Since significant F-value was obtained, the results were further subjected to post-hoc analysis and the results presented in Table VIII proved that there was significant difference between Sand training group and control group (MD: 1.42) and Resistance training group and control group (MD: 2.11). Comparing between the treatment groups, it was found that there was significant difference between Sand training and Resistance training group among inter collegiate level kabaddi players.

Thus, it was found that sand training and Resistance training were significantly better than Sand training and control group in improving Block of the inter collegiate level kabaddi players.

CONCLUSIONS

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that 12 weeks sand training and resistance training significantly improved performance related variable strength of the kabaddi players, as the obtained F-value of 8.74 was significant at 0.05 level. The paired mean comparisons further proved that there was no significant difference between sand training and resistance training in altering strength of the kabaddi players.
2. It was concluded that 12 weeks sand training and resistance training significantly improved performance variable block of the kabaddi players, as the obtained F-value of 24.37 was significant at 0.05 level. The paired mean comparisons further proved that there was no significant difference between sand training and resistance training in altering block skill of the kabaddi players.

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Effect Of Aerobics, Resistance And Concurrent Training Aerobic And Resistance Training On Speed And Resting Heart Rate Among College Men Students

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Abstract

Purpose of this study to find out the effect of aerobics, resistance and concurrent training aerobic and resistance training on speed and resting heart rate of college men students. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (n=80) were randomly assigned to four equal groups of twenty college men students each. The groups were assigned as Experimental Groups- I, II, III and control group respectively. Pre-tests were conducted for all the subjects on selected biomotor and physiological variables such as, speed, resting heart rate, and formed initial scores of the subjects the experimental groups participated in their respective training programmes for 12 weeks. Immediately after completion of the experimental period of 12 weeks, all the subjects were measured of their selected biomotor and physiological variables through standard tests which formed the final scores. The difference between the initial and final mean scores was considered as the effect of respective experimental treatment on the subjects. To test statistical significance of the differences, statistical tool ANCOVA was used. In all cases 0.05 levels was fixed to test the hypothesis of the study. **Key Words:** Speed and Resting Heart Rate

INTRODUCTION

Evolution of human life started from the movement. Human beings have been very creative and active nature and physical activity has been part of their life all-long since evaluation. For primitive man, search for good and shelter was the first physical activity was necessitated by his instinct for survival physical activity was also the first m ode of communication, it was also a means of expression, as human beings evolved culturally, emotionally and socially physical activity also evolved. As the society become more and more complex leading towards the modern age physical activity came to be recognized as an organized and supervised form of education.

Aerobic Exercises

The word aerobic meaning with oxygen to represent idea, even so the dynamics of the idea are more complicated than implied by the definition. Aerobic can be viewed as an intricate system of bodily supply and demand. That is the body needs energy for any kind of activity and the need is filled by burning off the foods that eat. Oxygen is the spark the fuel needs to burn regardless aerobics is the word in general use. The fact is that **Cooper** (**1969**) codified and organized what fitness means to many people.

Resistance Training

Resistance Training involves the application of elastic or hydraulic resistance to muscle contraction rather than gravity. Weight training provides the majority of the resistance at the beginning, initiation joint angle of the movement, when the muscle must overcome the inertia of the weight's mass. After this, point the overall resistance alters depending on the angle of the joint. In comparison, hydraulic resistance provides a fixed amount of resistance throughout the range of motion, depending on the

speed of the movement. Elastic resistance provides the greatest resistance at the end of the motion, when the elastic element is stretched to the greatest extent.

Objectives Of The Study

This research is to find out answers to the following research questions:

1. Does participation in Aerobics, Resistance training and concurrent training of Aerobic and Resistance Training would improve speed of college men students.
2. Does participation in Aerobics, Resistance training and Concurrent training of Aerobic and Resistance Training would improve resting heart rate of college men students.

Statement Of The Problem

The purpose of the present study was to determine the effect of aerobics, resistance and concurrent training aerobic and resistance training on speed and resting heart rate of college men students

Hypotheses

The following hypotheses were formulated on the basis of available literature, the subject knowledge and experience of the research scholar.

1. It was hypothesized that "there will be significance difference on selected biomotor variables such as speed, due to aerobics, resistance training and concurrent training of aerobics and resistance training among college men students compared to control group".
2. It was hypothesized that "there will be significance difference on selected physiological variables such as resting pulse rate, due to aerobics, resistance training and concurrent training of aerobics and resistance training among college men students compared to control group.
3. It was hypothesized that "there will be no significant difference on selected biomotor and physiological variables among experimental groups, namely, aerobic training, resistance training and concurrent aerobic and resistance training among college men students".

Delimitations

The following delimitations were recorded for this study.

1. The study was delimited to eighty college men students selected from different colleges in Andhra Pradesh.
2. In the present study, random method of sampling was used.
3. In distribution of samples to experimental group used in the study, the present study was confined to equal number of samples, each group consisting of 20 men. The age of the samples for the present study was confined to the range of 21–25 years.
4. For the purpose of the study, treadmill exercises were considered as aerobic training for college men students.
5. For the purpose of the study, resistance training consisting of weight training were considered as resistance training.
6. For the purpose of the study concurrent training consists of both treadmill training and weight training for the college men students.
7. As biomotor variables, the present study was confined to speed as physiological variables; the present study was confined to resting heart rate.
8. The duration of the treatments for the present study was confined to six days a week for 12 weeks as total period.

Limitations

The study was limited in the following ways, which would be taken into consideration at the time of findings of this study.

a. The influence of certain factors like life style, daily routine work, diet and other factors on the results of the study were not taken into consideration.

b. No attempt has been made to control the factors like air resistance, intensity of light atmosphere and temperature during training and testing period.
c. The difference in economic and educational back ground of the subjects was not taken into consideration.
d. The knowledge of the subjects in exercise science and their previous experiences in doing physical activities were not taken into consideration.
e. Since the subjects were motivated orally during testing and training periods no attempt was put to differentiate their level of motivation.
f. The psychological stress and other factors which affect the metabolic function were not taken into consideration.
g. The heredity of the subjects and its influence on the selected criterion variables.

Methodology

To facilitate the study 80 college men students from different colleges in Andhra Pradesh were randomly selected as subjects and their age was between 21 to 25 years. The subjects were from different colleges and expressed' willingness to participate in the research programme were got by explaining the usefulness of this research, the benefits of incorporating different training methods in the daily routine and the resultant health benefits. Thus, all the subjects selected for this study were volunteers. The selected subjects were assigned into four groups consisting of 20 in each group. The first group served as aerobic exercise group, group two served as resistance training group, third group served as concurrent training group and fourth group served as control group. The requirements of the experimental procedures, testing as well as exercise schedules were explained to the subjects so as to avoid any ambiguity of the effort required on their part and prior to the administration of the study, the investigator got the individual consent from each subject.

Selection Of Variables

The research scholar reviewed the various scientific literatures pertaining to the different forms of aerobic exercises, resistance training and concurrent training and its effects on biomotor abilities and physiological variables among different groups from books, journals, periodicals, magazines and research papers. Taking into consideration of feasibility criteria, availability of instruments and the relevance of the variables of the present study, the following variables were selected.

Dependent Variables

a. Speed
b. Resting Heart Rate

Independent Variables

1. Twelve weeks of aerobic exercises in treadmill.
2. Twelve weeks of resistance training in multi gym.
3. Twelve weeks combined aerobic exercises in treadmill and resistance exercises Multi Gym.

Experimental Design

The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (n=80) were randomly assigned to four equal groups of twenty college men students each. The groups were assigned as Experimental Groups- I, II, III and control group respectively. Pre-tests were conducted for all the subjects on selected biomotor and physiological variables such as, speed, resting heart rate, and formed initial scores of the subjects the experimental groups participated in their respective training programmes for 12 weeks. Immediately after completion of the experimental period of 12 weeks, all the subjects were measured of their selected biomotor and physiological variables through standard tests which formed the final scores. The difference between the initial and final mean scores was considered as the effect of respective experimental treatment on the subjects. To test statistical significance of the differences, statistical tool ANCOVA was used. In all cases 0.05 levels was fixed to test the hypothesis of the study.

The interclass correlation coefficient obtained for test-retest data are presented in Table I.

Table I

Intra Class Correlation Coefficient of Test – Retest Scores

S.No.	Variables	Coefficient of Correlation
1	Speed	0.92*
2	Resting Heart Rate	0.82*

***** Significant at 0.01 level

Subjects Reliability

The interclass correlation value of the above test and retest also indicated subject reliability as the same subjects were used under similar conditions by the same tester. The co-efficient of reliability were significant at 0.01 levels, for the above test under investigation.

Training Programme - Experimental Group I: Aerobic Training

Experimental group I underwent treadmill exercises training. The training schedule consists of selected exercises, duration, rest period are given in Table II.

Table II

Training Schedule For Experimental Group I - (Aerobic Training)

S.No.	Description of Exercises	Time	Sets	Rest in between Sets
1	Low pace walking	2 mts	2	30 seconds
2	Medium pace walking:	2 mts	2	30 seconds
3	30^{o} Inclination (uphill) Walk	2 mts	2	30 seconds
4	Fast pace walking	2 mts	2	30 seconds
5	30^{o} declination (downhill) walk	2 mts	2	30 seconds
6	Low pace running	2 mts	2	30 seconds
7	Medium pace running:	2 mts	2	30 seconds
8	30^{o} Inclination (uphill) running	2 mts	2	30 seconds
9	Fast pace running	2 mts	2	30 seconds
10	30^{o} declination (downhill) running	2 mts	2	30 seconds

Schedule of aerobic exercises shown in Table II was followed by experimental group for aerobic training for six days in a week for 12 weeks with a brief warm up at the beginning and cool down at the end.

Experimental Group II (Resistance Training)

After the completion of multi gym exercises as scheduled in Table III, the subjects underwent cool down session for 5 minutes with slow walking.

Table III Schedule Of Gym Exercises For Experimental Group II (Multi Gym Training)

S.No.	Description of Exercises	Sets	No. of Repetitions
1	Bench Press	2	15
2	Flyes	2	15
3	Behind the Neck Press (Standing)	2	15
4	Leg Presses	2	20
5	Squats	2	15

6	Leg Extensions	2	15
7	Seated Rows	2	15
8	Wide Grip Pull downs	2	15

The experimental group underwent resistance training for six days in a week days, thus experimental group II underwent resistance training for 12 weeks. Each session started with a brief worm up and brief cool down sessions.

Experimental Group III (Concurrent Training)

Experimental group III underwent concurrent training consisting of aerobic training and resistance training. This group under aerobic training on 3 days in a week days alternatively, namely, Monday, Wednesday and Friday as showed in Table II. And on Tuesday, Thursday and Saturday underwent resistance training in multi gym as shown table III. Thus experimental group underwent concurrent training of aerobic and resistance training for 12 weeks.

Computation Of Analysis Of Covariance And Post-Hoc Test - - Results On Speed

The descriptive statistics comparing the initial and final means of variable Speed due to aerobic training, Resistance training, concurrent training and control groups of college men is presented in Table 4.1

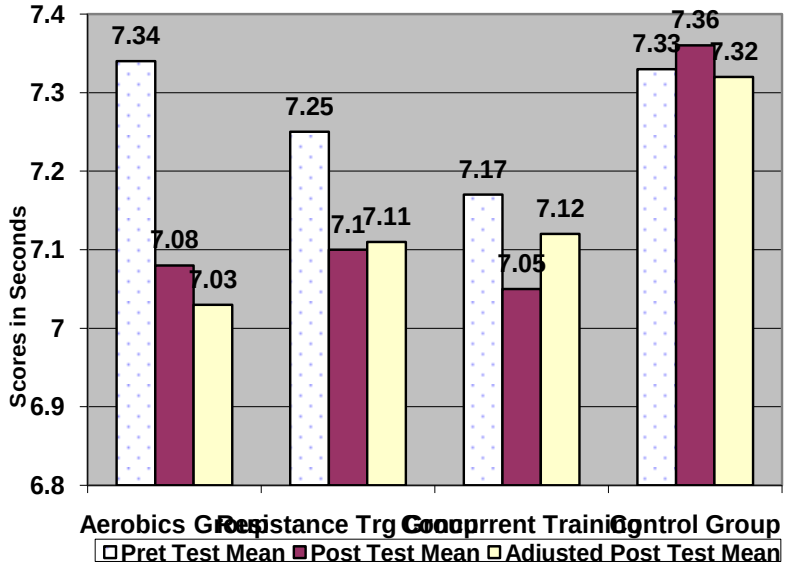
Table 4.1 Descriptive Statistics on effect of Aerobic training, Resistance training, Concurrent training and Control Groups of College Men

Groups	Test	Mean	Standard Deviation	RANGE	
				Min.	Max.
Aerobic training	Initial	7.34	0.32	6.80	7.70
	Final	7.08	0.17	6.80	7.30
	Adjusted Mean	7.03			
Resistance training	Initial	7.25	0.31	6.80	7.90
	Final	7.10	0.26	6.70	7.70
	Adjusted Mean	7.11			
Concurrent training	Initial	7.17	0.42	6.70	8.00
	Final	7.05	0.33	6.70	7.80
	Adjusted Mean	7.12			
Control Group	Initial	7.33	0.33	6.70	7.70
	Final	7.36	0.32	6.70	7.80
	Adjusted Mean	7.32			

Table 4.1 shows that the pre-test mean on Speed of aerobic training group was 7.34 with standard deviation $\pm$ 0.32 pre-test mean of resistance training group was 7.25 with standard deviation $\pm$ 0.31, the pre-test mean of concurrent training group was 7.17 with standard deviation $\pm$ 0.42, the pre-test mean of control group was 7.33 with standard deviation $\pm$ 0.33. The descriptive statistics on post-test mean on Speed of aerobic training group was 7.08 with standard deviation $\pm$ 0.17 post-test mean of resistance training group was 7.10 with standard deviation $\pm$ 0.26, the post-test mean of concurrent training group was 7.05 with standard deviation $\pm$ 0.26, the post-test mean of control group was 7.36 with standard deviation $\pm$ 0.32. The adjusted mean on Speed on aerobic training group was 7.03, resistance training group was 7.11, concurrent training group was 7.12 and control group was 7.32, as shown in Table 4.1.

The obtained mean values on the experimental and control groups were presented in Figure I.

Figure I Bar Diagram Showing Pre, Post And Adjusted Means On Speed Due To Aerobic, Resistance And Concurrent Training Among College Men



The results on descriptive statistics proved that physiological variable Speed was improved by reduction of running time. And to test statistical significance of the differences, the obtained data on Speed using ANCOVA was presented in Table 4.2.

Table 4.2

Computation Of Analysis Of Covariance Due To Aerobic, Resistance And Concurrent Training And Control Group On Speed Among College Men

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-test Mean	Between	0.38	3	0.13	1.05
	Within	9.22	76	0.12	
Post-test Mean	Between	1.26	3	0.42	5.53*
	Within	5.79	76	0.08	
Adjusted Post-test Mean	Between	0.90	3	0.30	31.00*
	Within	0.72	75	0.01	

Required $F_{(0.05),\,(df\ 3,75)} = 2.77$

* Significant at 0.05 level of confidence

As shown in Table 4.2, the obtained F-ratio of 1.05 on pre-test means of the groups was not significant at 0.05 level as the obtained F-value was less than the required table F-value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage. The results presented in Table 4.2, the obtained F-ratio of 5.53 on post-test means of the groups was significant at 0.05 level, as the obtained F-value was greater than the required table F-value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups at initial stage. Taking into consideration of the pre-test means and post-test means, adjusted post-test means were determined and analysis of covariance was done. The obtained F-value on adjusted means was 31.00. The obtained F-value was greater than the required value of 2.77 and hence, it was accepted that there was significant differences among the adjusted means on the Speed of the subjects.

Results On Resting Heart Rate

The descriptive statistics comparing the initial and final means of variable Resting heart rate due to aerobic training, Resistance training, concurrent training and control groups of college men is presented in Table 5.1

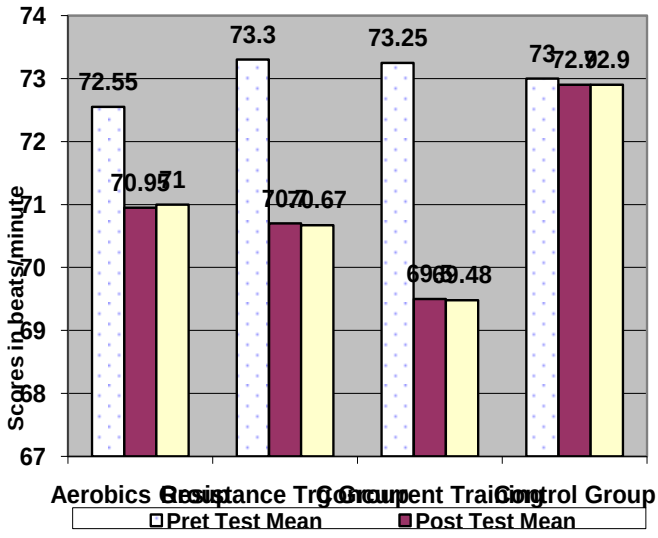
Table-5.1 Descriptive Statistics on effect of Aerobic training, Resistance training, Concurrent training and Control Groups of College Men

Groups	Test	Mean	Standard Deviation	RANGE	
				Min	Max
Aerobic training	Initial	72.55	1.90	70.00	76.00
	Final	70.95	1.39	69.00	73.00
	Adjusted Mean	71.00			
Resistance training	Initial	73.30	1.49	70.00	75.00
	Final	70.70	1.42	69.00	74.00
	Adjusted Mean	70.67			
Concurrent training	Initial	73.25	1.83	70.00	76.00
	Final	69.50	2.35	65.00	72.00
	Adjusted Mean	69.48			
Control Group	Initial	73.00	2.10	69.00	76.00
	Final	72.90	2.20	69.00	76.00
	Adjusted Mean	72.90			

Table 5.1 shows that the pre-test mean on Resting heart rate of aerobic training group was 72.55 with standard deviation ± 1.90 pre-test mean of resistance training group was 73.30 with standard deviation ± 1.49, the pre-test mean of concurrent training group was 73.25 with standard deviation ± 1.83, the pre-test mean of control group was 73.00 with standard deviation ± 2.10. The descriptive statistics on post-test mean on Resting heart rate of aerobic training group was 70.95 with standard deviation ± 1.39 post-test mean of resistance training group was 70.70 with standard deviation ± 1.42, the post-test mean of concurrent training group was 69.50 with standard deviation ± 1.42, the post-test mean of control group was 72.90 with standard deviation ± 2.20. The adjusted mean on Resting heart rate on aerobic training group was 71.00, resistance training group was 70.67, concurrent training group was 69.48 and control group was 72.90, as shown in Table 5.1.

The obtained mean values on the experimental and control groups were presented in Figure -II

Figure II Bar Diagram Showing Pre, Post And Adjusted Means On Resting Heart Rate Due To Aerobic, Resistance And Concurrent Training Among College Men



The results on descriptive statistics proved that physiological variable Resting heart rate was improved. And to test statistical significance of the differences, the obtained data on Resting heart rate using ANCOVA was presented in Table 4.14.

Table 5.2 Computation Of Analysis Of Covariance Due To Aerobic, Resistance And Concurrent Training And Control Group On Resting Heart Rate Among College Men

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-test Mean	Between	7.05	3	2.35	0.69
	Within	258.90	76	3.41	
Post-test Mean	Between	119.04	3	39.68	11.09*
	Within	271.95	76	3.58	
Adjusted Post-test Mean	Between	120.61	3	40.20	11.20*
	Within	269.17	75	3.59	

Required $F_{(0.05),\ (df\ 3,75)} = 2.77$

*Significant at 0.05 level of confidence

As shown in Table 5.2, the obtained F-ratio of 0.69 on pre-test means of the groups was not significant at 0.05 level as the obtained F-value was less than the required table F-value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage. The results presented in Table 5.2, the obtained F-ratio of 11.09 on post-test means of the groups was significant at 0.05 level as the obtained F-value was greater than the required table F-value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups at initial stage. Taking into consideration of the pre-test means and post-test means, adjusted post-test means were determined and analysis of covariance was done. The obtained F-value on adjusted means was 11.20. The obtained F-value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the Resting heart rate of the subjects. Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table 5.3

Table 5.3 Multiple Paired Adjusted Means Comparisons between varied physical exercises among college men on Resting heart rate

Aerobic training Group	Resistance training Group	Concurrent training Group	Control Group	MEAN DIFF	C.I
71.00	70.67			0.33	1.71
71.00		69.48		1.52	1.71
71.00			72.90	-1.90*	1.71
	70.67	69.48		1.19	1.71
	70.67		72.90	-2.23*	1.71
		69.48	72.90	-3.43*	1.71

*****Significant at 0.05 level.

The post-hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence, the required confidence interval was 1.71. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level. Aerobic training Vs Control Groups (MD: -1.90). Resistance training Vs Control Groups (MD: -2.23). Concurrent training

Vs Control Groups (MD: -3.43). The following paired mean comparisons were less than the required confidence interval and were not significant at 0.05 level. Aerobic training Vs Resistance training Groups (MD: 0.33). Aerobic training Vs Concurrent training Groups (MD: 1.52). Resistance training Vs Concurrent training Group (MD: 1.19).

Conclusions

Within the limitations and delimitations of the study, the following conclusions were drawn:

1. It was concluded that aerobic dance, resistance training and concurrent training significantly improved biomotor variable speed, as the obtained F-value was greater than the required table F-value to be significant at 0.05 level. The paired adjusted mean comparisons on speed proved that aerobic training, resistance training and concurrent training were significantly better than control group in improving speed of college men. The comparisons on effect of these experimental protocols proved that aerobic training was significantly better than resistance training and concurrent training of college men.
2. It was concluded that physiological variable resting heart rate can be significantly altered through aerobic training, resistance training and concurrent training compared to among college men. The comparative effect between treatment groups proved that there were no significant differences among aerobic training, resistance training and concurrent training among college men in altering resting heart rate.

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Analysis on the effects of endurance exercise training On plasma HDL cholesterol levels depend on levels of Triglycerides

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Abstract
The present study compared the responses of numerous lipoprotein-lipid variables to a 16-week endurance exercise training program in men categorized on the basis of baseline TG and HDL cholesterol concentrations: (1) low TG and high HDL cholesterol (normolipidemia), (2) low TG and low HDL cholesterol (isolated low HDL cholesterol), (3) high TG and high HDL cholesterol (isolated high TGs), and (4) high TGs and low HDL cholesterol (high TG/low HDL cholesterol). A series of physical and metabolic variables was measured before and after the training program in a sample of 200 men enrolled in the Health, Risk Factors, Exercise Training. At baseline, men with high TG/low HDL cholesterol had more visceral adipose tissue than did men with isolated low HDL cholesterol and men with normolipidemia. The 0.4% (not significant) exercise-induced increase in HDL cholesterol levels in men with isolated low HDL cholesterol suggests that they did not benefit from the "HDL-raising" effect of exercise. In contrast, men with high TG/low HDL cholesterol showed a significant increase in HDL cholesterol levels (4.9%, **P**<0.005). Whereas both subgroups of men with elevated TG levels showed reductions in plasma TGs (≈−15.0%, **P**<0.005), only those with high TG/low HDL cholesterol showed significantly reduced apolipoprotein B levels at the end of the study (−6.0%, **P**<0.005). Multiple regression analyses revealed that the exercise-induced change in abdominal subcutaneous adipose tissue(10.6%, **P**<0.01) was the only significant correlate of the increase in plasma HDL cholesterol with training in men with high TG/low HDL cholesterol. Results of the present study suggest that regular endurance exercise training may be particularly helpful in men with low HDL cholesterol, elevated TGs,and abdominal obesity. **Key Words:** HDL cholesterol, triglycerides, exercises training, coronary heart disease.

Introduction
Regular endurance exercise is a widely recognized modality to raise plasma HDL cholesterol levels, which is one of the metabolic adaptations contributing to the reduced risk of coronary heart disease (CHD) observed among physically active and fit individuals. Although a low plasma HDL cholesterol concentration is often accompanied by an elevated triglyceride (TG) level associated with abdominal obesity and an insulin resistance-hyperinsulinemic state, some individuals are characterized by low HDL cholesterol levels without obesity or hypertriglyceridemia, a condition that has been referred to as isolated hypoalphalipoproteinemia. Previous studies from our laboratory have shown that subjects with isolated low HDL cholesterol were neither characterized by hyperinsulinemia nor by visceral obesity. Although studies have suggested that patients with isolated low HDL cholesterol syndrome may be at increased CHD risk, it appears very difficult to increase HDL cholesterol levels in these individuals by diet, weight loss, or pharmacotherapy. Because subjects with isolated low HDL cholesterol have normal body weight and fat content, we have hypothesized that they may be less responsive to endurance exercise–induced improvements of the lipoprotein-lipid profile than are subjects with low HDL cholesterol, elevated TG concentrations, abdominal obesity, and hyperinsulinemia. Therefore, the aim of the present study was to compare the lipoprotein-lipid responses to a 20-week endurance exercise training program in men with low HDL cholesterol levels but with or without high TG concentration.

Methodology

Endurance Exercise Training Program

The training program has already been extensively described. Participants trained under supervision in the clinical centers on a cycle ergo meter (Universal Aerobic cycle) for 60 sessions by using the same standardized training protocol. They were required to complete the 60 sessions within 21 weeks. They could not exercise >1 session per day, >4 sessions per week, or <1 session per week. As well, they could not get ahead by >2 sessions or fall behind by >2 sessions. Participants who knew that they might miss a few sessions were encouraged to train 4 times per week for 2 weeks to build up a reserve. Program adherence was monitored several times per week. Participants were contacted when they appeared to be falling behind, and a plan was developed to bring them back on schedule as soon as possible. To determine each person's training intensity, heart rate (HR), power output, and oxygen intake (V_{O2}) obtained during the 3 baseline cycle ergo meter tests were plotted to determine the average HR and power output associated with 55%, 65%, 70%, and 75% of his/her maximum V_{O2} (V_{O2max}) before training. These HR and power output values were then used throughout the training program. Training sessions during the first 2 weeks began at an HR associated with 55% VO2max for 30 minutes. Either duration or intensity was then increased each 2 weeks until the 14th week of training, when participants exercised at the HR associated with 75% of their initial VO2max for 50 minutes. This was then maintained for the next 6 weeks.

Statistical Analysis

Pearson product moment correlation coefficients were used to quantify associations between variables. Men were divided into 4 subgroups according to baseline fasting plasma TG and HDL cholesterol concentrations: (1) normolipidemia (n=62), (2) isolated low HDL cholesterol (n=38), (3) isolated high TGs (n=38), and (4) high TG/low HDL cholesterol (n=62). Cutoff values were 1.34 and 0.92 mmol/L for TG and HDL cholesterol, respectively, which corresponded to the 50th percentiles of their respective distributions. Differences among men with various baseline fasting lipoprotein-lipid phenotypes were tested for significance by using ANOVA with the Duncan multiple range test. Paired t tests were used to examine the significance of the changes in physical and metabolic variables within each subgroup of men. In all analyses, $P<0.05$ was considered significant. Analyses were conducted with the SAS statistical package.

Result And Analysis

Variables	Normolipidemia Isolated Low	HDL Cholesterol	Isolated High	TGs
Subjects	62	38	38	62
TGs,mmol/L	0.94±0.22	0.93±0.22	1.77±0.39	2.45±1.09
HDL C mmol/L	1.12±0.14	0.81±0.07**	1.05±0.21	0.75±0.10
Apo A-1 g/L	1.23±0.12	1.01±0.10	1.28±0.12	1.07±0.12
ApoB,g/L	0.77±0.20	0.73±0.19	1.05±0.20	1.06±0.22

Table shows the baseline pre training plasma lipoprotein profile of the 4 subgroups of men. Although men with high TG/low HDL cholesterol had higher plasma TG (by design), cholesterol, and apo B concentrations than did normolipidemic men, men with isolated low HDL cholesterol levels had lower plasma cholesterol and apoA-I levels but similar apoB levels compared with the levels in normolipidemic men. Thus, the higher total cholesterol/HDL cholesterol ratio noted among subjects with isolated low HDL cholesterol resulted solely from the very low HDL cholesterol concentrations. However, high plasma cholesterol and low HDL cholesterol levels contributed to the high total cholesterol/HDL cholesterol ratio observed in men with high TG/low HDL cholesterol compared with normolipidemic men. Men with high TG/low HDL cholesterol were also clearly hyperinsulinemic and, presumably, more insulin resistant at baseline than were the other subgroups of subjects.

Discussion

It is well established that low plasma HDL cholesterol levels are associated with an increased risk of CHD.[19,20] Indeed, a low HDL cholesterol concentration has been shown to be the most prevalent abnormality of the Lipoprotein-lipid profile reported among men with documented CHD.21 In this regard, the recently published results of the Veterans Affairs High-Density Lipoprotein Intervention Trail (VAHIT) Study36 clearly show that pharmacotherapy aimed at increasing plasma HDL cholesterol levels reduces the risk of CHD, even in the absence of any change in plasma LDL cholesterol levels; this latter finding is commonly observed when CHD patients with low HDL cholesterol levels are treated with a fibrate such as gemfibrozil.

Summary

In summary, results of the present study suggest that regular endurance exercise is particularly helpful to improve the lipid lipoprotein profile of men with low HDL cholesterol levels along with abdominal obesity and elevated TG concentrations. However, it appears that subjects with low HDL cholesterol levels as an isolated trait are much less responsive to endurance exercise training; at least as far as their plasma lipoprotein profile is concerned. This finding is concordant with the common observation that it is very difficult in clinical practice to increase the cholesterol content of HDL among subjects with low HDL cholesterol concentrations, when the latter is an isolated lipoprotein characteristic.

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Role Of Ayurveda In Sports Medicine

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Abstract:
Sports injuries are injuries occur to sportsperson participating in sporting events. In many cases, these types of injuries are due to overuse of a part of the body. When injuries occur due to sudden impact, the body reacts to that condition, which may leads to hamper motor & sensory activity of actively active body parts. During the course of sports activity sportsperson experiences shoulder pain, knee pain and back pain. In Ayurvedic classics, it is pointed out that Vata dosha is responsible for most of the bodily activity & the same is vitiated during the deranged activity or over use of particular joint, which is responsible for variety of pain specially confined to muscle, joint and ligaments. Sport injuries are a kind of traumatic diathesis in which Vata dosha is provoked that may leads to pain at the site of affliction. Such types of injuries require special care to save the afflicted body parts. Current treatment modalities in modern medicine are oral steroidal and non-steroidal anti-inflammatory drugs (NSAIDs), which have a high incidence of intolerable gastrointestinal side effects and other systemic side effects. So, there prolong use is not justifiable in sportsperson. In this concern ancient Indian healing system, Ayurveda addresses various therapeutic techniques & medicaments that can help a lot to the sports person. In practice, there are different treatment modalities for injuries such as uses of drugs, dietetics as well as practices of rehabilitation through Abhyanga (medicated oily massage), and Swedana (medicated fomentation). Sthanika vasti therapy (localized medicated vasti) aids to pacify the vitiated Vata there by relieving the pain & stiffness. Besides, Ayurveda also advocates herbal paste (lepa) for external application in the affected areas aid temporarily relief along with diverse heat modalities along with special poultice made up of rice gruel with oil make the joint more stable & viable. **Keywords:** Ayurveda, Ayurvedic therapy, Sport, Sport injury, Yoga

Introduction

Sports injuries are injuries that occur to athletes participating in sporting events. In many cases, these types of injuries are due to overuse of a part of the body when participating in a certain activity. When injuries occur due to sudden impact, the body reacts to that condition, which leads to immobility, pain and other inflammatory responses. More common and less traumatic causes include lifting, reaching, and pulling movements that strain the muscles and tendons or sprain ligaments surrounding the joint. Injury may or may not be realized during activity. Discomfort may develop days later. Repetitive movements like swimming, tennis, weightlifting, baseball, basketball and football could lead to joints pain and ligaments injury. Daily tasks like housework, raking leaves or manual labor can lead to shoulder joint pain, knee pain and back pain over time. In Ayurvedic classics, it is pointed out that Vata dosha get vitiated during over activity during sports activity, which is responsible for most of the bodily pain. Sport injuries are a kind of traumatic diathesis in which Vata dosha is provoked that may leads to pain at the site of affliction. Sports injuries require special care so that the damage to the body-part does not become permanent. Ayurveda treatment methods impart greater benefits to the sportsperson from actively pursuing the sport. Following injuries are common in sportsperson during the sport activity. In ancient literature like Vedas and in classics of Ayurveda the concept of Marma was limited to the war science and Marma points were mainly considered as only fatal points i.e., trauma to them leads to debility or even death as these are seat of Prana (life energy). As Prana effects all aspects of a person that is – physical, mental, social as well as spiritual, so Marma may be assumed to be those important seats of psycho-neuro-endocrino- immunological pathways which may be influenced in order to regulate the physical, mental and spiritual functions. In the present era its applied aspect, that is, stimulation of these Marma by means of Abhyanga (massage), Mardana

(Acupressure), Aroma therapy, Pranic healing, Herbs (lepa), Raktamokshana (bloodletting) and Agnikarma (heat application),etc is utilized to treat disease but Marma chikitsa, a therapy practiced by few practitioners to stimulate these Marma points directly by applying pressure, vibrating tendons, pinching or application of hot and cold pastes, oils and ointment on Marma depending on the type of Marma had emerged as new dimension in nonpharmacological treatment of Ayurveda.

Relevence of Ayurveda: Ayurveda is art and science of life. The term Ayurveda combines two Sanskrit words AYU which means life and Veda which means knowledge or science. Ayurveda related about prevention and curative both aspects. Although there had been many innovations and additions to the practice of Ayurveda subsequently, but principles of Ayurveda remain the same. That is the beauty of this life science.

Sports Injury Related Conditions in Ayurveda:

i. Bhagna: Bony injuries
ii. Kandaragatvata : Tendon injury Ligament versus tendon
iii. Mamsagatvata : Sprain, & Fatigue syndrome
iv. Sandhimukta: Joint injuries (dislocation, & subluxation).
v. Snayugatvata: Ligament, Nerve & Bursa injuries

Treatment protocols in Ayurvedic sports medicine

i. Management of injuries
ii. Rehabilitation of injuries
iii. Active mobilization
iv. Passive mobilization
v. Strengthening

Sports injury as per Ayurveda Concepts as:

i. Bhagna(fractures & dislocations)
ii. Sadyovrana (acute wounds).
iii. Snayugata Vaata (Tendon & Ligament injury)
iv. Vrana (wounds)
v. Vranashotha (inflammatory conditions)

There can be no doubt that modern medicine is well-equipped to diagnose and repair damaged bodies following an accident. But when the x-rays have been taken and eliminated the possibility of any internal problem and the standard course of treatment has been commenced, how can Ayurveda assist any further on the road to recovery?

In the first place, Ayurveda has a huge range of herbal medicines which are highly effective in speeding up the healing process and relieving pain. These include medicines which are specific to the repair of bone, muscle, tendons, cartilage, nerves and every other conceivable type of tissue, as well as targeting any organ which might be in need of support and can be designed for either internal or external application.

In addition to supplying appropriate medicines, which are always selected according to the patient's unique constitution, Ayurvedic treatment will include dietary advice to help accelerate the repair process. For example certain diets are very helpful in bone repair while others may slow the process down – citrus fruits should certainly be avoided for the time being. Healing foods Include goat's meat, crustatceans (in particular the abalone) for bone healing, and sesame seed and avocado for repairing the nerve channels.

Yogic practices, even breathing exercises, are not generally recommended at this time as they can interfere with the healing process. An exception is Nadi Shodhana as this opens the channels and helps in pain management.

Shoulder injury:

More common and less traumatic causes include lifting, reaching and pulling movements that strain the muscles and tendons or sprain ligaments surrounding the shoulder joint. Injury may or may not be realized during activity. Repetitive movements of shoulder joints in variety of games such as swimming, tennis, baseball and football may lead to develop shoulder injury in sportsperson. These overuse type injuries are not only minimizing the daily activity but also limits their sport activities. Daily tasks like housework, raking leaves or manual labor can lead to shoulder pain in due course of time. Long term shoulder problems are more likely when pain develops gradually or discomfort is recurrent over a period of time. Chronic pain is often triggered by prior injuries, especially if original injury was severe or was not allowed to heal completely. The events preceding pain or discomfort will provide clues behind original cause even if the exact incident is not evident. Most cases of shoulder pain are not serious and respond to simple treatments. Shoulder injury can cause weakness, tenderness and loss of full joint mobility. When pain develops suddenly or related to direct trauma, stop all strenuous activities to prevent aggravation of injury, increasing the damage and delayed healing. Most shoulder pain is related to muscle or tendon strain. Muscle spasms may develop as strained muscles swell after injury. Rest and gentle stretching will help the muscles relax. Most injuries will not require X-Ray or other imaging studies (Keller 2007). It is suggested that if occur stop activity immediately. Apply ICE Wrap sealed ice bag in towel and apply to injury as soon as possible. Keep on injury for 20 minutes and repeat every 2-3 hours for the first 48 to 72 hours. Under most circumstances, this will help to reduce swelling and pain. Early care can accelerate the healing. In most cases shoulder pain progressively improves over a course of 2-3 days, but pain and soreness can persist for weeks depending on injury and the choice of daily activity. During recovery, exercise with caution to prevent re-injury. Appropriate, slow, gradual rehabilitation can reduce healing time and help to prevent reinjury (schiffert health center 2010).

Low back pain: Low back pain is neither a disease nor a diagnostic entity of any sort. The term refers to pain of variable duration in an area of the anatomy afflicted so often that it has become a paradigm of responses to the external and internal stimuli. The incidence and prevalence of low back pain are roughly the same but such types of pain ranks high as a cause of disability and inability to work, as an interference with the quality of life and as a reason for medical consultation. In most of the cases of low back pain in sportsperson, the cause is obscure and only in few cases had direct link to some defined organic existing disease. The lower back is subject to a great deal of strain in many sports activities. Sports activities, such as repetitive impact (e.g. running), a twisting motion (e.g. golf), or weight loading at the end of a range-ofmotion (e.g. weightlifting) are greater concerned with damage to the lower back (Sawyer et al; 2012) Running and jogging are excellent forms of aerobic exercise and can become an enjoyable part of one's daily routine. However, running involves repetitive jarring of spine and can worsen a current or emerging back problem. Joints and discs are jarred and compressed by the force of the body leaving the ground and landing on every stride when running or jogging. Back muscles had to work to keep the body upright and in good posture during running. Other muscles associated with the kinetic chain (this is a linkage system that connects the muscles and joints of the body through the facial system) may also influence back pain while running. Use form that reduces the "up and down" stride motion and focuses on forward motion while running; this means leading with the chest, keeping the head tall and balanced over the chest. Wear topquality cushioned running shoes many sports medicine physicians advocate running with the added cushioning of high quality running shoes to help protect the joints and spine from the jarring impact of running. While this approach is controversial, some studies indicate that running barefoot may be preferable than running with shoes. If this is an approach that sounds attractive, it is advisable to start slowly, first by walking barefoot and on a soft surface, such as grass or sand, and slowly progressing

to walking on a hard surface, running on a soft surface and possibly running on a hard surface. Consider running on softer surfaces, such as grass, a padded track or treadmill rather than concrete or asphalt. Maintaining strong abdominal muscles and core body muscles will help stabilize the lower back while running, which in turn will help with keeping proper form and focusing on the forward motion. In general, swimming is an excellent form of low impact aerobic conditioning that is easy on the back and spine. Unlike running or many other forms of aerobic exercise, with swimming there is practically no impact on the spinal structures. The water supports the body, relieving stress on all joints in the body. For many with osteoarthritis or other forms of joint pain or severe back pain, pool therapy and light swimming is part of the recommended therapy. Use proper form for front strokes, such as the crawl or breaststroke, while swimming; keep body level in the water (hold lower abdominal muscles up and in) and keep the head straight rather than lifted. If preferable, swim with side or back strokes instead of front strokes. Roll the body to the side and keep the chin in when taking breaths during the crawl, rather than jerking the head backward, to reduce the amount of movement in the neck while swimming. Use a snorkel to eliminate the need to move the head for breaths. Wear goggles to reduce improper head movements when trying to keep water out of the eyes. Use flotation devices (noodles, boards, life preservers, wet vest) to maintain proper form when swimming. As a general rule, before one begins or makes changes to a weightlifting routine, it is important to know the condition of one's back and keep weight amounts within personal limits. If anyone has experienced back pain, it is advisable to first get an evaluation from a primary care physician, chiropractor, physiatrist or other spine specialist before beginning lifting weights. Specific guidelines that are useful in helping to prevent back injury include: Use less weight, but do more repetitions when lifting weights. Consider using a training machine rather than free weights for certain weightlifting exercises. This point is important to discuss with both a spine specialist and trainer, understanding there is a trade-off. A machine may reduce stress on the back (for example, quadriceps done sitting at a machine versus squats holding weights) and can generally be used by someone with little or no supervision. But free weights add propriocaption (selfregulation of posture and movement in response to the free weights) that a machine does not. Proprioception is an added benefit in helping enhance the body's balance and stability. Use a spotter when working with free weights to protect the back from possible sudden movement or excess strain. Consider wearing a belt for weightlifting (first ask the recommendation of an athletic trainer or spine specialist, as there are conflicting studies on the merits of belts). Some spine specialists maintain that while there is no concrete evidence that a belt protects the back while weightlifting, it does help as a reminder to maintain proper form. Do not perform exercises such as the clean-and-jerk, dead-lift, snatch or squat without proper supervision, because these exercises may pose greater risk for back injury and back pain. Treatment for chronic back pain remains notoriously difficult, and no single panacea has emerged. Often, surgery is offered as an ultimately desperate last measure, but almost always it is unjustifiable and usually fails to provide permanent relief (Thomas et al: 2012).

Knee Pain:

Knee joints are predisposed to variety of injuries of the extensor mechanism because the hip joints are wider than the knees in a neutral standing position. The natural Y-shaped configuration to the leg bones prognoses uneven contraction of the quadriceps and problems such as hyperextension of the knees make these natural imbalances even worse. As a result, when person contract the quadriceps to straighten the leg, the unevenness of the contraction tends to pull the kneecap to the outside. The greater pull of the outermost quadriceps the vastus lateralis is the innermost quadriceps the vastus medialis is mostly responsible for counter acting this pull. This muscle tends to be weak and underused, while the outer thigh muscle tends to be stronger from overuse. In fact physical therapists consider exercises to strengthen this neglected muscle key in the rehabilitation of knee injuries. The kneecap is designed to slide along a groove in the femur, and it has to move smoothly within that groove to do its job well. If it goes "off track" and it often does, it grinds away at the cartilage underneath and destabilizes the knee. The ensuing wear and tear is a key reason for knee replacement surgery, which a lot of people believe is nieces scary because they think the cartilage is "gone." But

the truth is that cartilage can grow back, albeit slowly. The main problem is that if we don't correct the imbalance pull of muscles on the kneecap, we will continue to grind our cartilage down faster than our body can replenish it. When the kneecap slides straight up and down the femoral groove the joint remains healthy if it slides up and to the outside, it will grind away the cartilage and damage the joint (Cheung et al: 2014).

Management of sports injuries through Yoga & Ayurveda

Yoga therapy is a holistic practice and form of therapy that includes breathing techniques, movements, and exercises along with psycho-physiological regimen. It is well documented in traditional Yoga texts and mentioned in the contemporary books of Ayurveda (Internal medicine). Besides, nowadays it is widely used by scholars of western science and other scholars of alternative system of medicine for regaining balance and wellbeing in healthy person as well as in ailing one. At the core of its practice, Yoga seeks to assist each patient at aligning with their body's own innate state of breathing, being and healing. Through its comprehensive approach, Yoga therapy assists patients in managing not only the symptoms of their problems but also the sources of their overall pain and suffering, leading to a more longer lasting benefits in all areas of life. In Yoga therapy the therapist acts as a guide to assist the student in becoming aware of all parts of themselves and including uniting them with their own innate ability to heal. This yoking process occurs at three main interconnected levels such as the energy body, mind and physical body. Yoga poses which are performed in erect posture such as Tad asana, Vrikshasana, Ardhachakrasana, Katichakrasana, Trikonasana, padahastasana etc are beneficial in cases of shoulder and knee injury. While Yoga poses such Bhujangasana, Shlabhasana, Dhanurasana etc are performed in laying posture, found effective in back pain. Ayurveda advocates variety of therapeutic measures for the prevention and cure of ailing ones since antiquity. For minor injury in sportsperson, medicated or non-medicated oleation (snehana) as massage, fomentation (swedana) with medicated herbs in the form of water vapor or without water vapor as sweating purposes and local vasti therapy with medicated oil is quite beneficial. In case of major injury above mentioned measures along with herbal, herbo-mineral, mineral and mercurial preparation are employed for therapeutic purposes under the concerned experts.

Kativasti/Prishthavasti: A time-honored intensive treatment highly recommended for relieving fatigue of the upper or lower back pain. Kativasti is a therapeutic application in which wearable warm medicated oil is poured into a black gram dough ring and placed on the spot of pain or discomfort. The deep fomentation of the medicated oil radiates through the muscles releasing tension, stiffness and reduces intensity of pain. The duration of kativasti is maintained for a period of 45 minutes for significant result. A light massage with the spa's therapeutic oil enhances the benefits of this treatment, leading to deep relaxation and comfort. At least three treatments of Kativasti or Prishthavasti are recommended for maximum benefit. It not only minimizes the intensity of pain and stiffness by pacifying vatadosha but also improve the quality of life of sportsperson.

Pichu: An authentic traditional treatment for relieving stress and stiffness of joints or back. Cotton and linen pads 'Pichu', soaked in hot medicated oils are gently placed on affected joints or back for a period of 30 minutes to offer immediate relief from pain and discomfort. The warmth of the soaked pads seeps into the body and induces a deep sense of relief. Short, gentle and rhythmic massage strokes followed by a medicated herbal pack further alleviate stress and enhance the healing process and impart soothing effect. At least three treatments of Pichu are recommended for maximum benefit.

Sthanikavasti: This treatment is useful in inflammatory and degenerative conditions of the spine. The therapeutic oil remains placed over the affected areas by making a circular bund with a semi solid paste of black gram powder that holds hot medicated oil followed by a soothing massage for a period of 45 Minutes.

Prishtha mardana: It is also as back treatment. The first casualty is commonly observed in sportsperson is the shoulder and back, which is affected with pain, stiffness and tension. This

treatment has been created to eliminate stress and bring relief through back and deep shoulder massage with or without medicated oil for a period of 60 minutes. After back treatment fomentation is advocated for better result.

Champi: It is known traditional Indian head massage. This technique is traditionally performed by barber at the end of hair cutting and by servant to the owner for variety of problems related to hair and head. Traditionally it was believed that this luxuriant technique promotes hair growth; restore the natural shine and glossiness of the hair. Now it is developed at many spas's center as specific therapy for the management of tension and problems related to neuromusculo-skeletal. For this purpose leaves of different plant (such as Amla, Brahmi, Jatamansi, Curry leaves and Neem) are used along with medicated oil for head massage for a period of 45 minutes to propagate long lasting and enriching benefits. This massage releases muscular tension from the head, neck and shoulders, creating a deep sense of relaxation and joy as well as clarity of thought. So, it can utilize for the care and cure of sportsperson under well trained therapist.

Patra swedana: A variety of herbs with high medicinal value are packed in leaf bundles which are then soaked with medicated oil used to massage the body for a period of 30 minutes for better effects. It is an additional therapy to any of the above mentioned therapies. It not only relieves the joint pain but also helpful in removing stiffness of the body, improving blood circulation and improving the functions of joints & muscles.

General treatment approach

In general, the following treatment options are what your Ayurveda doctor would choose from in case of sports injuries

- Internal medicines: Ayurvedic herbal formulations have a wide range of effects, from healing injuries to relieving pain. Injury-specific medications can help rebuild tissues, bones, cartilages, etc., and help in complete rejuvenation.
- Subtle massages with antiinflammatory natural oils can help with pain relief.
- Applying pressure in core focal points of the body (marmas) provide relief from joint pain and muscular strain. This also improves circulation to these parts of the body. The process involves applying a lepa of medicinal herbs at the site of injury. After some time, a pressure is applied at specific points of the body.
- Bandaging specific parts of the body is a great option to manage fractures or injuries where maintaining immobility is critical for a cure.
- Diet: Managing diet is critical to recovering completely from sports injuries – this involves avoiding salty and heavy food, as well as sugar and citrus food, but increasing the intake of whole grain bread and cereals, proteins including meat and legumes, and food that enable tissue growth.
- Of course, as the musculoskeletal injury heals, monitored physiotherapy sessions, yogasana, and detoxification helps complete recovery.

Thus, although Ayurveda doesn't have a category for sports medicine, it has the required artillery to defeat sports injuries. But select an expert Ayurveda doctor who can accurately identify the condition and choose the right treatment option.

Discussion:

The above mentioned measures act directly to pacify vitiated Vatadosha through Ayurvedic pharmacodynamic i.e. rasa, guna, virya, vipaka & prabhava. Thus, these measures minimize the intensity of pain, check joint stiffness and improve mobility of joints. Indirect way it act on vital point i.e. Marma point; to enlightened hidden inner healing power, by virtue of this act it vitalize the whole systems of body in general and locally it check the painful mechanism, which is generated during sports injury. This noxious stimulus on the Marma points through deep pressure, vibration, massage etc leads to unpleasant sensation or tingling sensation causing activation of some pathways in the body

systems having multifactorial effects like having beneficial influences on the chemical environment of nearby joints, facilitation of tissue repair processes, segmental inhibitory processes within the central nervous system and activation of descending inhibitory pathways projecting from the brain to spinal cord. The peripheral pathway may consist of activation of the afferent fiber mainly A delta and C fibers which carry stimulation to CNS where it may stimulate, the descending noxious inhibitory control (DNIC) system, which is an endogenous pain modulating system, lead to decrease in pain sensation and relaxation. Beside these measures certain classical Ayurvedic drugs such Sanjeevani vati, Agnitundi vati, Tab. Godanti bhasma, Dashamulaghana vati, Ashwagandha churna along with medicated oil such as Mahanarayana tail, Panchaguna taila, etc and certain neo formulation such as Rhumagold Tab & oil, Jointcare Tab & oil, etc. are effective under prescription of Ayurvedic scholar in the cases sports injury.

Conclusions:

We finally conclude that back, knee and shoulder injury is usually not a disease but a constellation of symptoms that usually, which are observed in sportsman in their day to day practice. The back pain is emerged as biggest obstacle in variety of sports activity followed by knee and shoulder injury. But there management in modern medicine is not up to the mark, required other remedial measures to solve the problems of sports injury. In this concern, the standing poses of healthy yoga provide powerful and effective means for strengthening and stabilizing knees & shoulder, helping to overcome structural imbalance. While lying poses of Yoga therapy provide effective relief in back pain. Ayurvedic approaches such as preparatory parts of panchakarma and pacificatory measures including marma therapy; are emerged as newer healing tools in injured sports man in recent years.

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A Comparative Study On Stress And Coping Styles Between College Athletes And Non-Athletes

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Abstract
This study aimed to investigate the differences in stress levels and coping styles between college athletes and non-athletes. The sample of the present study comprised 100 college students (50 athletes and 50 non- athletes).Coping style developed by Hamby, Grych, & Banyard, (2013) and perceived stress scale (PSS) developed by Cohen, Karmarck and Mermelstein (1983) were administered to all the samples for the purpose of data collection. The data were statistically analysed by using t-test. The result showed that college athletes did not differ from non-athletes in their stress level. But on coping style the result revealed that athletes are significantly differing from non-athletes.
Keywords: Athletes, Stress, Coping, College students

Introduction
College is a stressful time for many students as they go through the process of adapting to new educational and environments. As stressors accumulate an individual's ability to cope or readjust can be overtaxed, depleting their physical and psychological resources. Stress has been identified as crucial in sport, influencing performance as well as social functioning (Jones &Hardy, 1990).College students are put under intense pressure and have stressors surrounding them in every aspect of their lives. Freshmen especially are thrown from an atmosphere where they have existed in for eighteen years into a brand new college environment where nothing is familiar (Bamuhair et al. 2015); Wilson & Pritchard, (2005). Suddenly they are responsible for a multitude of things they may not have had to be responsible for before. These include, but are not limited to: picking a schedule of classes, making sure their major is the best one for them, making new friends and maintaining existing relationships, figuring out how to manage their time effectively, deal with finances, feeding themselves, getting their homework done, and if they have a job, working in addition to going to classes (Bamuhair et al. 2015); Wilson & Pritchard, (2005). With each of those responsibilities comes a multitude of stressors.

Moeini et al. (2008) found that, as an individual reported experiencing higher stress levels, he/she reported having lower self efficacy, believing in his/her ability to manage those high stress levels, which, in turn, had a negative impact on mental health status. Students with high levels of stress reported lower self esteem and also viewed themselves as less healthy (Pierceall & Keim, 2007). Adolescents and college students tend not to have had enough variety of life experiences to establish effective coping mechanisms, so there is potential for negative effects on their mental and physical health (Ben-Zur, 2009); Day & Livingstone, 2001; Moeini et al. 2008).

At most universities, both student athletes and non-athletes have the same relative academic stressors in their lives, but it is possible that they have different sources of stress. College athletes report more sources of stress in their life than non-athletes (Wilson & Pritchard, 2005). These sources of stress include: time management, missing class due to team travel burnout, fear of failure, dealing with team dynamics, anxiety, depression, and self-esteem issues (Wilson & Pritchard, 2005). There is evidence that athletes report higher numbers of stressors in their lives and higher levels of both intrinsic and extrinsic stressors (Alsentali & Anshel, 2015) than their non-athletic counterparts (Wilson & Pritchard, 2005).

Unlike non-athletes, student athletes have to deal with the pressures of participating in a sport, the pressures of performing well academically to stay on the team, and the other stressors faced by non-student athletes. Currently, there are strides being taken to ensure athletes have a way to decompress after stressful events, become mentally prepared before a significant game or match, and be healthy as a whole not just physiologically (Rumbold, Fletcher, & Daniels, 2012). Sports psychologists are in high-demand as professional teams realize the value of having their players mentally healthy. They train the mind just as any sports trainer helps train a specific area of the body (Rumbold, Fletcher, & Daniels, 2012). Athletes in general are also more prone to what (Lazarus and Folkman as cited in (Gan & Anshel, 2009) refer to as acute stress, which occurs suddenly and is perceived to be unpleasant and can result from executing the wrong play, losing, injury, poor performance, negative comments from coaches or teammates, and bad calls made by referees (Alsentali & Anshel, 2015; Gan & Anshel, 2009; Holt & Mandigo, 2004; Nicholls et al. 2006).

There have been relatively few studies comparing student-athletes' stress levels and coping styles to those students that are not involved in athletics. (Mark Anshel 1997, 2000) has dedicated his research to studying how athletes, at all levels, handle their stress levels and what coping mechanisms they employ given certain stress. There are different aspects to athletes' selection of coping styles and coping effectiveness of: perceived stress level, perceived controllability of the stressor, burnout, physical activity level, and mindset (Alsentali & Anshel, 2015). Not everyone has the same coping strategies to deal with stress in their lives and not all athletes have the same coping strategies (Anshel et al. 2000); Azizi, 2011).

Overall coping effectiveness is related to what kind of coping styles an individual employs for different situations (Nicholls et al.2006). Coping with stressful events as a whole is not something that happens one time, it is an on-going process, (Nicholls et al. 2006). Learning to cope is the same as learning any other basic skill: practice results in better execution. Older, master athletes, tend to use more positive approach coping styles simply because they have less stress associated with their sport as they have successfully mastered the skill associated with their individual sport, (Hoar,Evans, & Link, 2012).

Objectives

The present study has the following objectives

- To identify the stress level of college athletes and non athletes.
- To find out the coping styles of college athletes and non-athletes.

Hypothesis

H1: Significant differences exist between college athletes and non college athletes in terms of perceived stress.

H2- Significant differences exist between college athletes and non athletes in terms of coping style.

Methodology

The sample comprised 100 college students (N = 50 athletes and N= 50 non-athletes) studying graduation in different colleges of Cuttack and Bhubaneswar. All the college athletes have participated in various State and National level competitions in sport. Participants ranged in age from 18-25 years (mean age= 21.5 years).

Instruments

The following instruments were used for collecting the data from the sample.

Perceived Stress Scale (PSS)

Stress was measured, using Perceived Stress Scale (PPSS), developed by (Cohen, Kamarck and Mermelstein 1983). PSS has been widely used. Its reliability and validity have been established

(Cohen and Williamson, 1988). The scale measures the degree to which situations in one's life are appraised to be stressful. It comprises 10 items. For each item, the respondents are required to score between 0 to 4 (0 for never, 1 for almost never, 2 for sometimes, 3 for fairly often and 4 for very often), Scoring is reversed for item nos. 4, 5, 7 and 8. Scores ranging from 0-13 indicate low stress, 14-27 indicate medium stress and 28-40 indicate high stress.

Coping Scale

Coping styles of athletes and non athletes was measured by using the coping scale by Hamby, Grych, & Banyard, 2013. There are 13 items in this questionnaire. Each answer category was assigned a value from 4 to 1. Higher scores indicate higher levels of coping. Internal consistencies (coefficient alphas) is found to be (0.91). Validity was established in the main sample with strong correlations with other measures of regulatory strengths, such as Anger Management (r = .57) and Endurance (r = .63), and with measures of well-being, such as Subjective Well-being (r = .53) and Posttraumatic Growth (r = .65).

Procedure

The instruments used in this present study were complied and printed out in English. The respondents filled up the questionnaire individually in the presence of the researcher in their off college hours.

Analysis And Results - TABLE-1 - Significance of mean difference between athletes and non athletes on stress

Groups	N	Mean	Sd	t-value
Athletes	50	18.80	4.95	1.03
Non-athletes	50	19.86	5.24	
df= 98				

To study the significance of mean difference between college athletes and non-athletes on perceived stress, t-test was applied. The results revealed that college athletes are not differing from non athletes on perceived stress. The mean and the standard deviation score of athletes in perceived stress is found to be (M=18.80 and Sd =4.95). And the mean and standard deviation score of non athletes on perceived stress is found to be (M=19.86 and Sd =5.24). it means both athletes and non-athletes are experiencing stress.

TABLE -2- Significance of mean difference between athletes and non athletes on coping style

Groups	N	Mean	Sd	t-value
Athletes	50	38.22	3.74	3.95**
Non-athletes	50	34.98	4.53	
Df=98, P<.01				

To study the significance of mean difference between college athletes and non-athletes on coping style, t-test was applied. The results revealed that college athletes are significantly differing from non athletes in their coping style. The mean and the standard deviation score of athletes on coping style is found to be (M=38.22 and Sd = 3.74). And the mean and standard deviation score of non athletes on coping style is found to be (M=34.98 and Sd =4.53.). The t-test is found to significant at .01 level of significance.

Discussion

The objective of the present study was to find out the stress level of college athletes and non athletes. In proving the first hypothesis the result is found to be insignificant. The result revealed that the college athletes are not differing from non-athletes in their stress level. There was no significant difference between the two groups in perceived stress levels as both groups are reported stress. Athletes did not report higher levels of stress than non-athletes. There was not a significant difference

so both groups reported the same levels of stress in their life. This finding contradicts the finding by Wilson and Pritchard (2005) that athletes report higher stress levels. However, Wilson and Pritchard (2005) found that athletes report a wider variety of stressors and therefore higher stress levels based on each category and this current research focused on overall perceived stress.

The result of the present study showed that athletes are differing from non athletes in their coping style. The second hypothesis is proved. This means athletes are significantly differing from non-athletes in their coping style. The result could be due to the fact that athletes are facing more stress in day to day life both in the field of study and in sport. They are exposed to variety of situations and handling the crisis in their own way. As a result of which the athletes could able to cope in a better way compared to non athletes. This finding is supported by the research studies done by (Hoar,Evans, & Link, 2012), that older, master athletes, tend to use more positive approach coping styles simply because they have less stress associated with their sport as they have successfully mastered the skill associated with their individual sport.

Conclusion

The present study is an attempt to explore the stress and coping style of both college athletes and non athletes. From the result it is concluded that both college athletes and non athletes are experiencing stress in their day to day life. On the other hand in coping style college athletes are differing from non-athletes. From the result it is concluded that stress management programmes should be introduced to teach the college students to manage their stress.

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Solutions Contribute To Increasing People's Spending On Sports Activities In Can Tho City, Viet Nam

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Abstract:
This research has been conducted with the desire to develop the movement of sports practicing in Can Tho City in general by solutions to contribute to the increase of spending for sports of the people. Through the research results by quantitative and qualitative research methods, the current situation of expenditure has been found and 07 solutions have been proposed to contribute to increasing the people's spending for sports activities in Can Tho City.
Keywords: Solutions, Spending, Sports, People, Can Tho City

Introduction

Sports consumption is to use sports practicing services to meet the demand for health promotion, physical development, prevention and restriction of diseases as well as fostering qualities and spirit: activeness and creation, exchange. Consumption of sports is the type of consumption of life services. Thus, sports consumption is very diverse in many different forms such aspracticing sports; watching sports; reading books on sports; sports training; other activities related to sports, but within the scope of the study that only researching on sports consumption through sports practicing to enhance health and entertainment. According to concepts and views of sports sociology and economics, "Consumers of sports practicing services are people who practice sports".Can Tho is a city of Vietnam, the most modern and developed city in the Mekong Delta, the fourth largest city in the country by population size and the fifth largest city in the country by role and position as well as the economic scale. However, in order for sports activities to be more and more concerned, the mass sports movement is more widely developed in the following years, there should be plans, solutions and orientations to be proposed through the researchesand assessments fromthe current situation in practicing sports, the need to participate in sports practicing and the impact of economic rules on the need to participate in sports practicing, factors affecting the workout process and especially the spending, the level of spending on sports of the people ... Therefore, to contribute to ensuring the sustainable development of sports in Can Tho, the study "**Solutions contribute to increasing people's spending on sports activities in Can Tho City, Viet Nam**" are necessary to be implemented.

Methods: The research process uses the following methods: Method of reading, analyzing and synthesizing documents; Method of sociological investigation and statistical mathematical method on SPSS 22.0 software. Sample: The survey was conducted on 487 subjects who are people living in Can ThoCity and 22 experts (managerial officers and scientists related to sports activities). Research space: surveying people in the 9 districts in the Can ThoCity, Viet Nam.

RESULTS

Actual situation of spending for sports activities of people in Can Tho City

Actual situation of average spending for sports activities of people in Can Tho City

The results presented in detail in Table 2.1 show the current status of average spending on sports activities of the people as follows: the spending on "Practicing equipment and tools" is most spent by the peoplein the range "From 200,000 to less than 300,000 VND" (accounting for 31.2%). Next, people spend the most for "Cost of participation in the yard" in the range "From 20,000 to less than 200,000 VND" (accounting for 33.9%). Next, spending for "Professional learning expenses" is most spent by the people with the highest rate in the range "From 200,000 to less than 300,000 VND"

(accounting for 30.8%). Along with that is spending for "Travel expenses", people also spend in the range "From 200,000 to less than 300,000 VND" accounting for the highest proportion (35.9%). Meanwhile, spending in the range "From 500,000 to less than 700,000 VND" accounts for the highest percentage, being spent by the people on "expenses for meals and body fostering" (accounting for 24.2%).In addition, "Expenses for sanitation and health" are also spent by people in the range "From 200,000 to less than 300,000 VND", accounting for the highest proportion (35.5%). Finally, the "Other costs" such as the cost of participating in the competition, the sponsorship cost for the tournament... are the most spent by the people in the range "From 500,000 to less than 700,000 VND".

Actual situation of average cost of a person/year participating in sports activities of people in Can Tho City

After the research process, it shows the average cost of a person/year participating in sports activities of the people in Can Tho City is 4,237,474 VND/person. Since then, the average cost of one person/month for sports activities is 353,123 VND/person. From the average spending results of people when participating in sports activities for 1 year, the author compares with the average income per person per year. The comparison results in Table 2.2 show that the average monthly income of people in Can ThoCity is 6,740,833 VND/person/month. Meanwhile, the average spending of people for sports activities is 353,123 VND/person, accounting for 5.23% of income.

Table 2.1: Actual situation of average spending per person per year participating in sports activities of people in Can Tho City

Average spending /a person/sports activities		Average income / person	
Average monthly	Annual average	Average monthly	Annual average
353.123	4.237.474	6.708.333	80.500.000

Proposed solutions to contribute to increasing people's spending on sports activities in Can Tho City

In this study, based on SWOT tool to find out the strengths, weaknesses, opportunities and challenges of the sports movement and people's spending for sports activities in Can Tho City. Through the results of the SWOT analysis, the information collected will support to identify and propose solutions to develop the sports movement and people's spending for sports activities in Can Tho City. From the results of current spending and the SWOT analysis, the study proposes solutions to contribute to the development of the sports movement and increase the spending of people for sports activities in Can Tho City including the contents as follows: After building a system of solution groups to contribute to the development of the sports movement and the spending of people for sports activities in Can Tho City, the topic has sent samples of interviews to experts to assess the agreement level of each solution in the solution groups developed (according to Likert assessment system - 5 levels).

Meaning of the average value of Likert scale used in expert survey

The Likert scale used in the topic is:

1: Absolutely disagree 2: Disagree 3: No idea4: Agree 5: Absolutely agree

Total number of votes issued is 25 votes, the response rate is 22 votes (accounting for 88%). Statistical results obtained include the following contents:

Assessment results of experts on solutions to develop the sports movement and people's spending for sports activities in Can Tho City

Group 1: Solution group of enhancing communication work so that families can use reasonably income for sports

In particular, the most appreciated solution is “Through schools, ask teachers to promote and encourage each household to use expenses for children to practice extracurricular sports with specific levels" (Mean = 4.55).

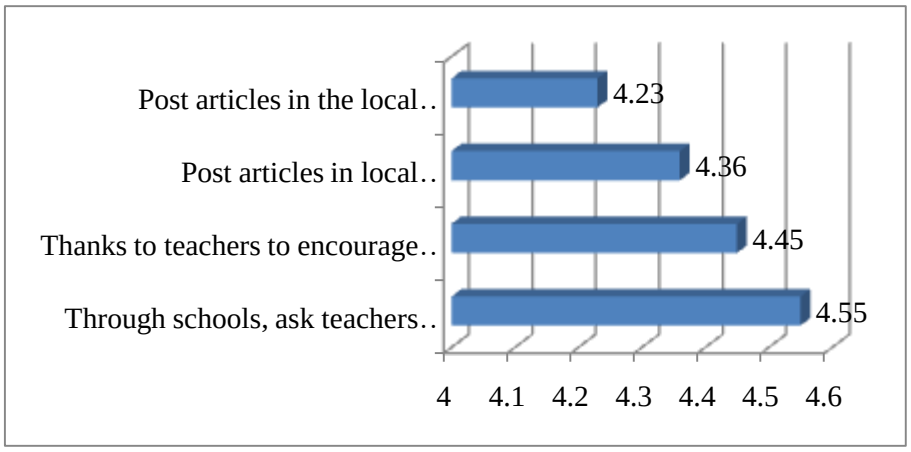


Chart 2.1: Expert assessment of solutions in the solution group to enhance communication for families to know the proper use of income for sports

Group2: Solution group for training instruction to increase the capacity of using sports facilities

There are 07 solutions in the solution group for training instruction to increase the capacity of using sports facilities. In particular, the most appreciated solution is the "Guidelines for practicing and popularizing Swimming" (Mean= 4.59).

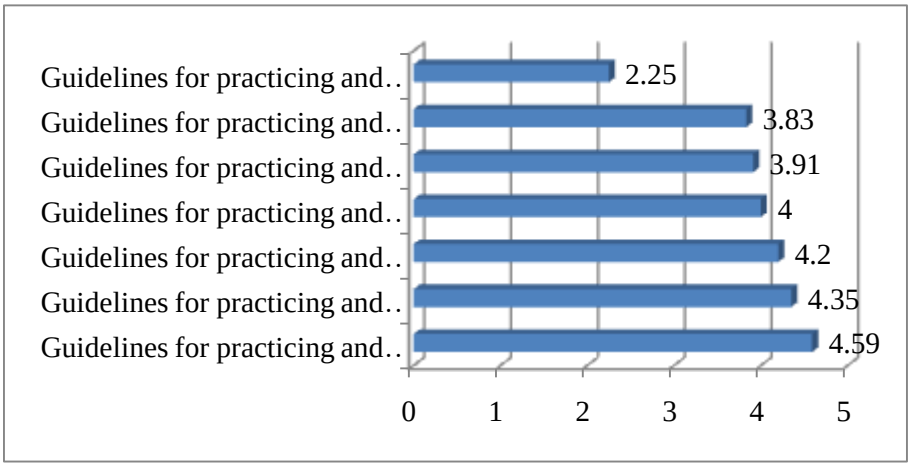


Chart 2.2: Expert assessment of solutions in the solution groupfor training instruction to increase the capacity of using sports facilities

Group3: Solution group to guide people to use idle time for sports

The survey results show that all 03 solutions are highly agreed by experts, in turn: "Guiding the sports practicing time to people during the day" (Mean = 4.36);

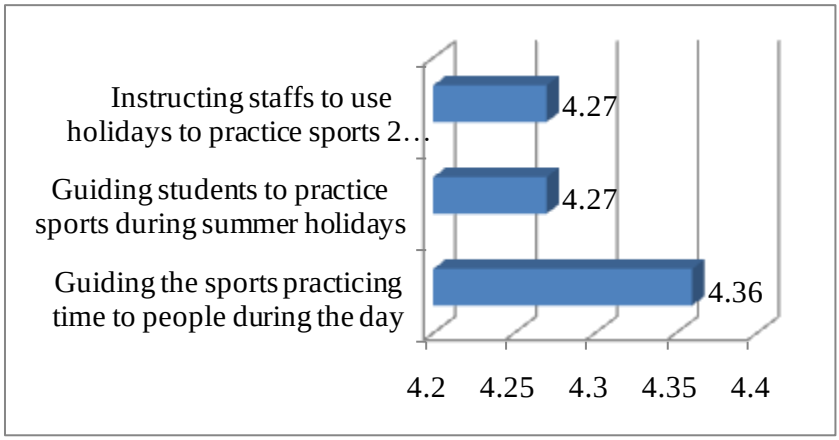


Chart 2.3: Evaluation results of experts on solutions in the solution group to guide people to use idle time for sports

Through the evaluation results of experts, all 03 solutions in the solution group to guide people to use idle time for sports are highly agreed by the experts.

Group4: Solution group for further development of sports facilities and announcement of the address of sports facilities

There are 03 solutions in the solution group to develop more sports facilities and announce the address of sports facilities. Through survey results, experts agree all 03 solutions. In particular, the most appreciated solution is "Developing more sports training grounds in schools and residential areas" (Mean = 4.27).

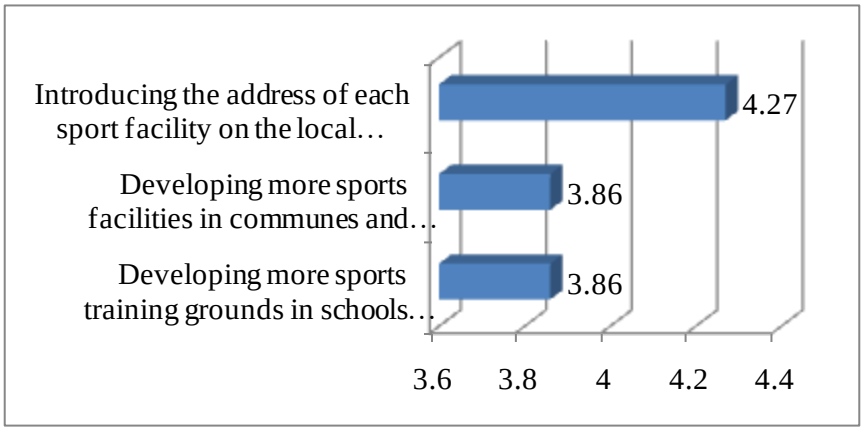


Chart 2.4: Expert assessment of solutions in the solution group to develop more sports facilities and announce the address of sports facilities

Group 5: Solution group to encourage the opening and introduction of sports goods stores

There are 05 solutions in the solution group to encourage opening and introduction of sports goods stores. According to the survey results, there are 04 solutions highly agreed by experts in turn: "Proposing Can Tho province to have policies to encourage sports goods business (selling equipment, tools, sports clothes)" (Mean= 4.23);

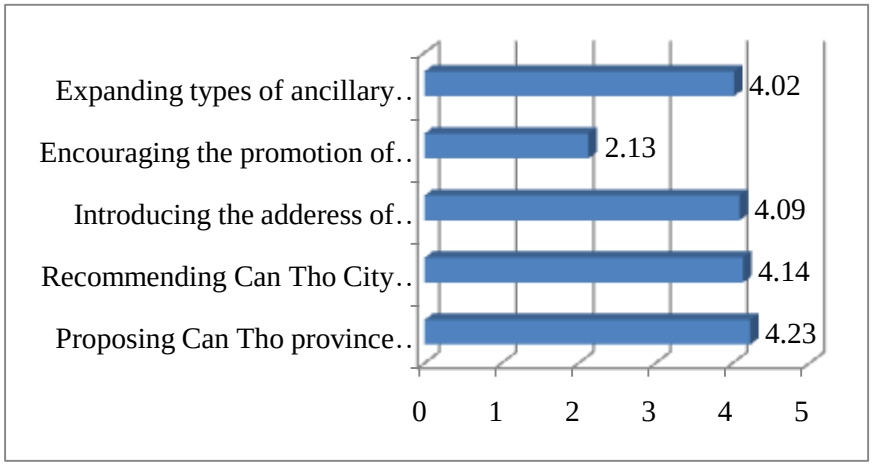
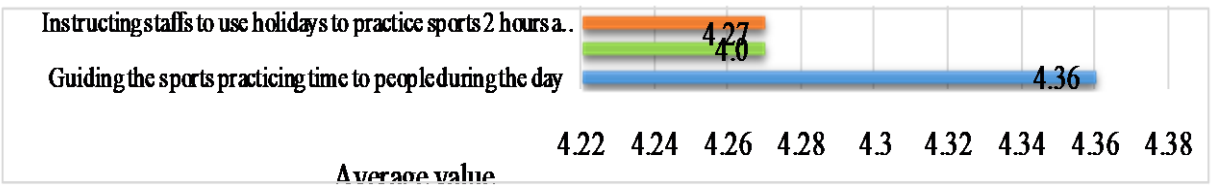


Chart 2.5: Expert evaluation of solutions in the solution group to encourage opening and introduction of sports goods stores

Group5: Solution group for developing and advertising sports practicing service facilities

Through the survey results, there are 07 solutions highly agreed by experts, respectively: "Developing the service facilities for sports training, especially in Swimming, Tennis, Badminton" (Mean= 4.65);



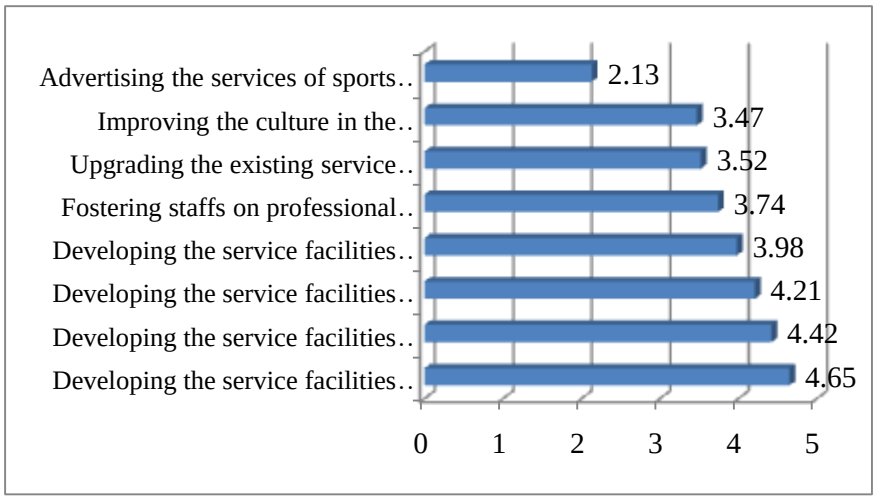


Chart 2.6: Expert evaluation of solutions in the solution group to develop and advertise sports training service facilities

Group7: Solution group on socialization of sports

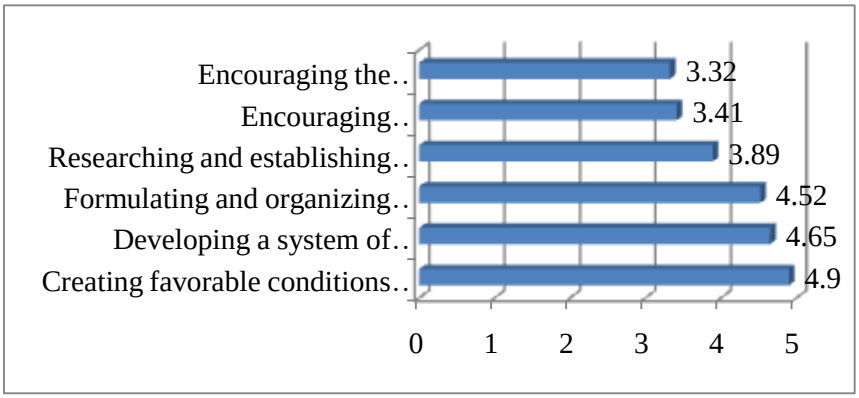


Chart 2.7: Expert evaluation of solutions in the solution group on socialization of sports

There are 6 solutions in the solution group on socialization of sports. Through the survey results, all 6 solutions are agreed by experts, respectively: "Creating favorable conditions and having mechanisms, policies to encourage and attract social forces (enterprises, social organizations and individuals) directly participating in organizing sports activities and building sports facilities, sports organizations" (Mean = 4.9);

Conclusion

Through the statistical results of the topic, most people spend on average for sports activities from 200,000 VND to less than 500,000 VND and mainly spend on training tools and equipment for people to participate in practicing sports. Current situation of average spending per person per year participating in sports activities of people in Can Tho City obtained the following results: with the average monthly income of people in Can Tho City is 4,237,474 VND/person, their average spending for sports activities is 353,123 VND/person, accounting for 5.23% of income.

From the research results, 7 solution groups that have been identified to develop sports movement and increase people's spending for sports activities in Can ThoCity are: Solution group to strengthen communication work so that families know how to use reasonable income for sports including 4 solutions; Solution group on training guidelines to increase the capacity of using sports facilities including 5 solutions and Solution group to guide people to use idle time for sports including 3 solutions; Solution group for developing more sports facilities and announcing the addresses of sports facilities including 3 solutions; Solution group to encourage the opening and introduction of sports goods stores including 4 solutions; Solution group on developing more and advertising sports training service facilities including 7 solutions and Solution group for socialization of sports including 6 solutions. These are objective scientific bases, contributing to support the sports in general as well as the spending for sports of the people in Can ThoCity better in the future.

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A Comparative Study On Health Related Fitness Of Tribals And Non Tribals Of Kodagu District, Karnataka

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Introduction

Physical fitness concerned with major area of search of physical and mental well-being of human being. The major components of physical fitness are the health related and performance related physical fitness. The health related fitness mostly known as the aerobic capacity consisted mainly with the cardio respiratory endurance, flexibility, upper body strength endurance, abdominal strength endurance and body composition. The benefits of good health related fitness in day to day life is very well known to human being. Walking for long time or running for daily work Is the cardio respiratory fitness, lifting something is application of strength, having maximum angular movement with economic use of force of different body parts through the joint is flexibility and good stature with proper muscle mass without extra fat is good body composition requires a certain level of health related fitness. This is also important during childhood and adolescence period for proper growth and development. Information about the status of health related fitness is a very crucial public health related issue for the tribal population of kodagu who are having a very poor socio economic condition and traditional culture. Hence in order to get some information about health related fitness of tribal's school going boys and compare those with other higher economic class, the present study was planned

Methodology

The purpose of this study was to compare the health related fitness among tribal and non tribal school boys of kodagu district, Karnataka. To achieve the purpose of the present study, tribal and non-tribal boys were selected as subjects from kodagu district. Their ages ranged from 12 -18 years. The variables selected were cardio respiratory endurance measured by Harvard Step test, abdominal strength endurance measured by sit ups, upper body strength endurance measured by push-ups, flexibility measured by V-sit and reach and body mass index measured by skin fold caliper. The data was collected with the help of two other physical education professionals. The other fitness components except the cardio respiratory endurance were measured in the school hall and finally the cardio respiratory endurance was measured in field. After collecting the data the calculations were done through statistics and the analysis were done accordingly.

Analysis And Interpretation Of Data

This investigation was finding a comparative study on health related fitness of tribe and non tribe of kodagu district Karnataka. Thirty tribe and thirty non tribe students were taken as subject for this study. Their health related fitness was estimated on the basis of five components of health such as muscular strength, muscular endurance, cardio respiratory endurance, flexibility and body composition For the related components the test was conducted such as push up, sit up, Harvard step test, sit and reach and skin fold caliper test. The statistical analysis to which the data subjected has been presented in this chapter the mean value for each item of performance and standard deviation for each value and T value was tabulated below.

Table 1 The Statistical Values for the Harvard Step Test

Statistical Value	Tribe	Non Tribe
Number of samples	30	30
Mean	53.1	54.7
Standard deviation	2.509	6.204
T value	1.309	

Note: The values are measured for 30 subjects each at 0.5 level of significance and 58 df. The values are measured in calculated units

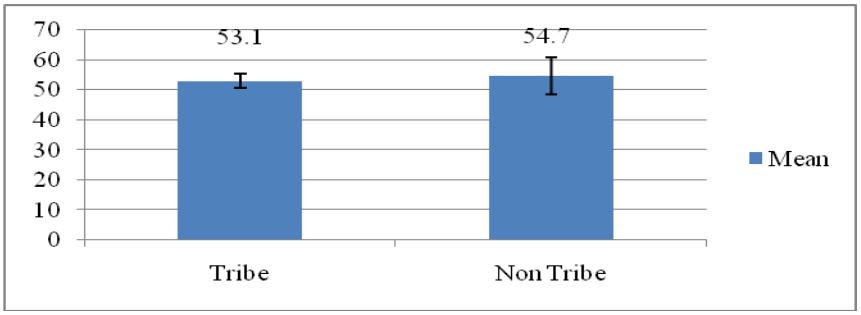

Figure 1. The performance of subjects in Harvard Step test

Above table and Figure shows that the calculated value for Harvard step test among tribes and non tribes students of kodagu. The calculated T value is 1.309. The mean value of tribe is 53.1 and mean value of non tribe is 54.7. The standard deviation of tribe is 2.509 and non tribe has 6.204. Hence it clearly shows that non tribal students have more cardio respiratory fitness as indicated by their performance in the Harvard step test when compared to non-tribal students. But the T value is less than the critical value for 58 df (2.0017) which indicates that the difference is not significant. Therefore the null hypothesis is accepted and research hypothesis is rejected.

Table 2

The statistical values for the sit and reach

Statistical value	Tribe	Non Tribe
Number of samples	30	30
Mean	19.366	10.8
Standard deviation	3.726	4.319
T value	8.225	

Note: The values are measured for 30 subjects each at 0.5 level of significance and 58 df. The values are measured in calculated units

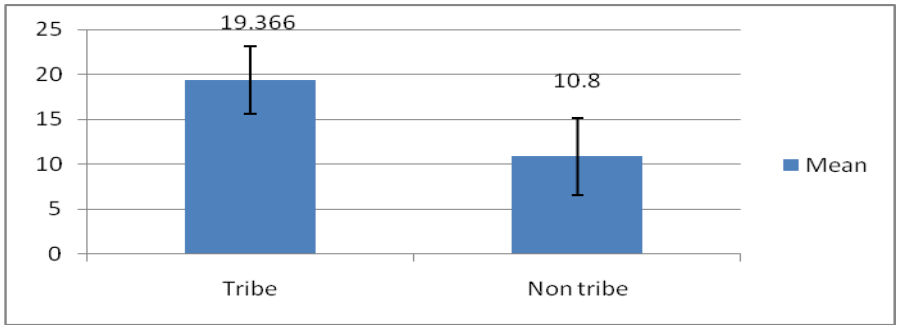

Figure.2. The performance of subjects in sit and reach test

Above table and Figure shows that the calculated value for Sit and reach test among tribes and non tribes students of kodagu. The calculated T value is 8.225. The mean value of tribe is 19.36 and mean value of non tribe is 10.8. The standard deviation of tribe is 3.726 and non tribe has 4.319. Hence it clearly state that tribe students has more ability to performe the Sit and reach test, and it also shows that they have good Flexibility compare to non tribe students. But the T value is more than the critical

value for 58 df (2.0017) which indicates that the difference is not significant. Therefore the null hypothesis is rejected and research hypothesis is accepted.

Table-3

The statistical values for the push up test

Statistical Value	Tribe	Non Tribe
Number of samples	30	30
Mean	28.66	22.56
Standard deviation	6.16	6.70
T value	3.668	

Note: The values are measured for 30 subjects each at 0.5 level of significance and 58 df. The values are measured in calculated units

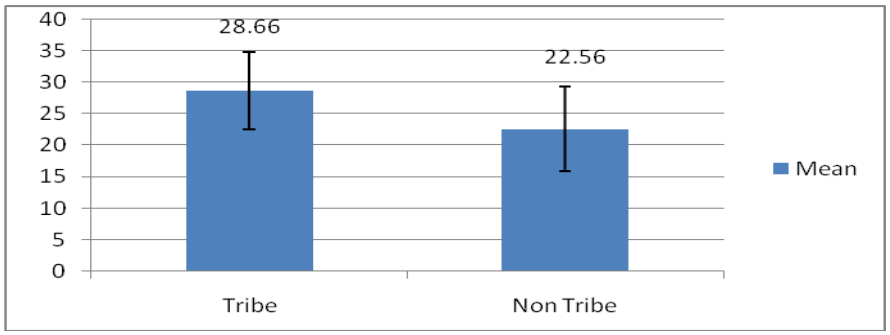

Figure .3 The performance of subjects in push up test

Above table and Figure shows that the calculated value for Push up test among tribes and non tribes students of kodagu. The calculated T value is 3.668. The mean value of tribe is 28.66 and mean value of non tribe is 22.56. The standard deviation of tribe is 6.16 and non tribe has 6.70. Hence it clearly state that tribe students has more ability to performe the push up test, and it also shows that they have good muscular strenght compare to non tribe students .But the T value is more than the critical value for 58 df (2.0017) which indicates that the difference is not significant. Therefore the null hypothesis is rejected and research hypothesis is accepted.

Table-4

The Statistical Values for the Sit up Test

Statistical Value	Tribe	Non Tribe
Number of samples	30	30
Mean	28.1	26.3
Standard deviation	4.91	8.93
T value	0.96	

Note: The values are measured for 30 subjects each at 0.5 level of significance and 58 df. The values are measured in calculated units

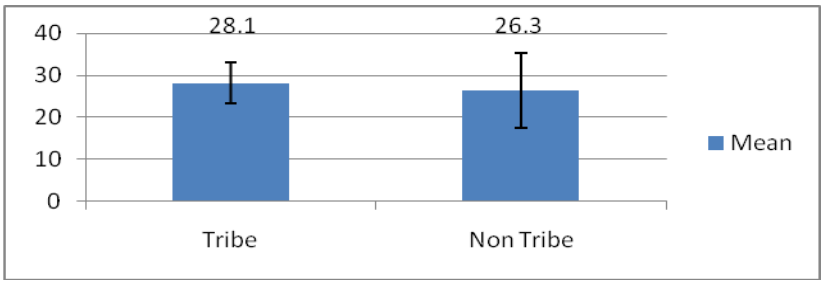

Figure.4. The performance of subjects in sit up test

Above table and Figure shows that the calculated value for sit up test among tribes and non tribes students of kodagu. The calculated T value is 0.96. The mean value of tribe is 28.1 and mean value of

non tribe is 26.3. The standard deviation of tribe is 4.91 and non tribe has 8.93. Hence it clearly state that tribe students has more ability to performe the sit up test, and it also shows that they have good muscular endurance compare to non tribe students. .But the T value is less than the critical value for 58 df (2.0017) which indicates that the difference is not significant. Therefore the null hypothesis is accepted and research hypothesis is rejected.

Table-5

The Statistical Values for Body Composition (Fat Percentage)

Statistical Value	Tribe	Non Tribe
Number of samples	30	30
Mean	1.09	1.08
Standard deviation	0.003	0.009
T value	2.66	

Note: The values are measured for 30 subjects each at 0.5 level of significance and 58 df. The values are measured in calculated units

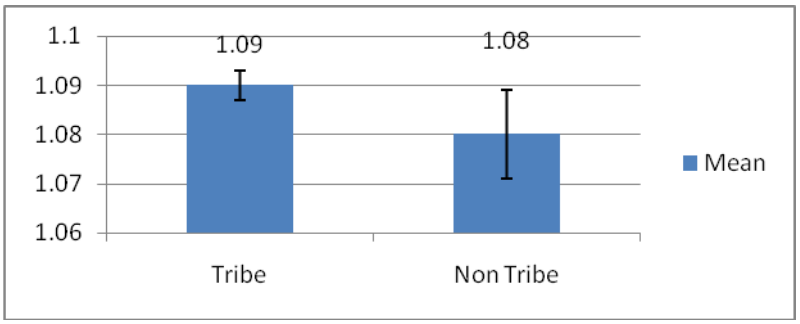

Figure.5. The performance of subjects in skin fold caliper test

Above table and Figure shows that the calculated value for skin fold caliper test among tribes and non tribes students of kodagu. The calculated T value is 2.66. The mean value of tribe is 1.09 and mean value of non tribe is 1.08. The standard deviation of tribe is 0.003 and non tribe has 0.009. Hence it clearly state that tribe students has less fat content in the body , and it also shows that they have good body composition compare to non tribe students. .But the T value is more than the critical value for 58 df (2.0017) which indicates that the difference is not significant. Therefore the null hypothesis is rejected and research hypothesis is accepted.

Table.6

The Total Mean Value of Tribal and Non Tribal

Health related fitness variable	Tribe	Non Tribe
Cardio respiratory Endurance	53.1	54.7
Flexibility	19.36	10.8
Muscular Strength	28.67	22.56
Muscular Endurance	28.1	26.3
Fat percentage	1.084	1.078

Note: The values are measured for 30 subjects each at 0.5 level of significance and 58 df. The values are measured in calculated units

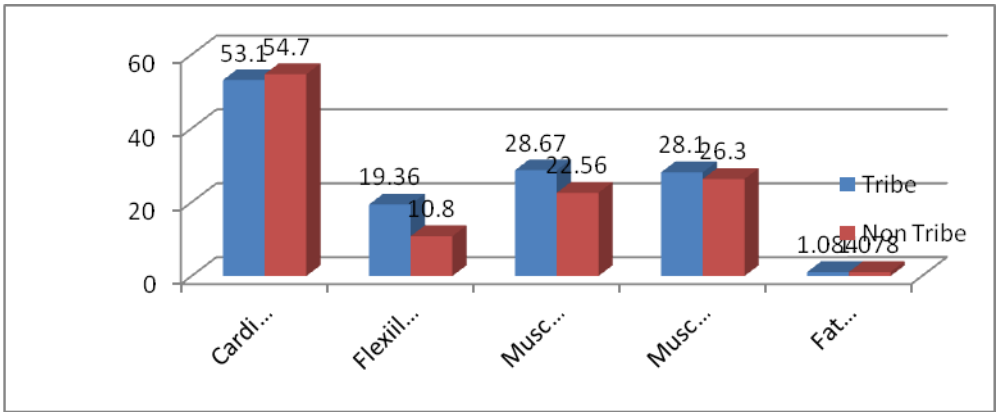

Figure.5. The performance of subjects in skin fold caliper test

As per the table and Figure shows that tribal student has more ability to perform the test except in Harvard step test. In all other test tribal students has more ability to perform the test. This table shows that tribal students have more flexibility, muscular strength, muscular endurance and body composition compare to non tribal students. But in cardio respiratory endurance non tribal student has more ability to perform.

Summary, Conclusion And Recommendation

Health fitness is a fine tuning to the human body which is a main engine. It enables us to perform up to our potential. Fitness can be described as a condition that helps us look, feel and do our best. More specifically, it is: "The ability to perform daily tasks vigorously and alertly, with energy left over for enjoying leisure time activities and meeting emergency demands. It is the ability to endure, to bear up, to withstand stress, to carry on in circumstances where an unfit person could not continue, and is a major basis for good health and well-being."

Through the process of hard labor the tribal's of our country usually keep themselves busy in order to earn their livelihood. Such functional aspects designed their special structure which is benefitting for attaining such type of work successfully. These functional aspects based on the Specific structure, physical and motor fitness components which are also consider being pre-requisite factors for successful. slight difference between tribal and non-tribal's are noticed i.e., customs, rituals of living, physical fitness, skills, body structure, body composition, hemoglobin content, blood pressure etc. Majority of the peoples believe that the tribal people are stronger and physically fitter than others because of their self development, healthy atmosphere, daily hard work, genetic factors and environmental conditions

In the process of sustenance and development, man was required to employ various types of fitness, out of which fitness variables like strength, endurance, flexibility was of paramount importance. A desirable level of fitness was accepted at entry level for couple of jobs and professional training. Tribe and non tribe students were one such field of endeavour. One of the very important factors responsible for the performance in competitive sports is health related fitness. Good health fitness helps to quick improve in the performance of tribe and non tribe students. it require more fitness to participate in higher level of sports. Good health fitness helps to achieve better performance and attain goal with in minimum time

The study was taken by the researcher to measure the health related fitness of variables of tribal and non tribal. The researcher selected high school boys participant of tribe and non tribes of Kodagu district. Total 30 tribe and 30 non tribe students were administered Health related fitness tests to find out the level of health related fitness which was statistically analyzed. In this study, the collected data was statistically administered and the results were analyzed. The Hypothesis were rejected and accepted as per with the result. The results were concluded and interpreted within the lines (aims and

objectives) of the study. Further suggestions and recommendations for future research were also included.

Conclusion

On the basis of the data analysis the following conclusions are made:

- The cardio respiratory endurance of non tribal students is better than the tribe students. This shows that their cardio endurance level is slightly high compare to tribe students.
- The muscular endurance of tribe students is better than the non tribal students. This shows that their muscular endurance level is slightly high compare to non tribe students.
- The muscular strength of tribe students is better than the non tribal students. This shows that their muscular strength level is slightly high compare to non tribal students
- The flexibility of tribe students is better than the non tribal students. This shows that their flexibility level is slightly high compare to non tribal students
- The body composition of tribal students is better than the non tribal students. This shows that their body composition and fat content in the body is slightly better than the non tribal students.

Recommendations

Considering the existing comparative study of health related fitness between tribal and non tribal students of kodagu district following recommendations regarding the implications and suggestions for further studies were as under:

- This type of study can be conducted on different college and university level students.
- This type of study can be conducted on different age group and gender subjects.
- This type of study can be conducted on large numbers of subjects.
- This type of study can be conducted on subjects staying in different districts / states and urban / rural area.
- This type of study can be conducted on different games players participating in indoor / outdoor and team / individual games and sports.
- The study provides an opportunity to physical education teachers and coaches, to spot-out the talents of the students and to select potential boys for different sports and games.
- Through this study boys can be encouraged to participate in physical fitness program.
- It is recommended to carry out similar study with different physical variables.
- A similar study may be conducted by selecting biochemical variables.
- Similar study may be conducted throughout the States and Nation.

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Effect Of Proprioceptive Exercises With Agility Training On Dribbling Among Field Hockey Players

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Abstract
The present study was undertaken to analyze the effect of proprioceptive exercises with agility training on selected skill related performance variables among hockey players. The investigator has selected sixty male inter collegiate hockey players at random from Acharaya Nagrarjuna University hockey team Guntur, Andhra Pradesh. Their age ranged from 18-23 years. The subjects chosen for the study were divided into four equal groups and designated as three experimental group and control group namely Group 'A' underwent proprioceptive Exercises [PEG], Group 'B' underwent agility training [ATG], Group 'C' underwent combined proprioceptive exercises and agility training [PEATG] and Group 'D' act as control group [CG] did not participated in any of the training programme apart from their regular activities. The trainings were given for a period of twelve weeks. The data were collected before and after the training by conducting Zig Zag dribbling. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels. The results of the study showed that three experimental groups significantly improved than control group.
Keywords: – proprioceptive exercises - agility – dribbling.

Introduction
Proprioception exercises mean sense of self-movement and body position or the body's ability to sense where all of its body parts are relative to each other and to objects in its environment. Without this sense, very normal activities would be very difficult. proprioception refers to the conscious awareness of body and limbs and has several distinct properties: passive motion sense, active motion sense, limb position sense, and the sense of heaviness (Goldscheider, 1898). proprioceptive training can yield meaningful improvements in somatosensory and sensorimotor function (Joshua et al., 2014).

Agility as a "rapid whole body movement with change of velocity or direction in response to a stimulus" (Sheppard and Young 2006). Aleem (2018) found in the study that agility and technique had close relation with the dribbling ability in hockey, technique also had relationship with the dribbling ability and dribbling performance was better if the player had a good agility and technique

Dribbling ability in hockey game refer player to move faster with the ball in a zigzag manner or in any direction with a good control over the ball. Field hockey is a multiple high intensity activity sport with a multidirectional nature. The ability to change direction rapidly while maintaining balance without loss of speed—that is, agility—is therefore an important physical component necessary for successful performance in field hockey. Elite field hockey players also need high level technical skills such as being able to dribble without losing running speed. For a technically good player, dribbling is essentially an automatic process, and the better players distinguish themselves by their running speed while dribbling the ball **(Reilly T** *and Bretherton 1986)*

Statement Of The Problem
The purpose of the study was to investigate the "Effect of proprioceptive exercises with agility training on dribbling among hockey players".

Hypothesis

1. It was hypothesis that there will be a significant improvement in dribbling after the twelve weeks of proprioceptive exercises, agility training and proprioceptive exercises with agility training as compared with control group.
2. It was hypothesis that proprioceptive exercises with agility training would be superior than the prorioceptive exercises group and agility training group on dribbling

Methodology

The purpose of this study was to find out the influence of proprioceptive exercises with agility training on dribbling. To achieve the purpose of the study 60 inter collegiate hockey players were selected at random from Acharaya Nagarjuna University. Their age ranged from 18 to to 23 years. The subjects chosen for study was divided into four groups namely Group 'A" proprioceptive Exercises [PEG], Group 'B' agility training [ATG], Group 'C' combined proprioceptive exercises and agility training [PEATG] and Group 'D' act as control group [CG] was restricted to participate in any of the training programme other than their regular activities. Each groups consisted of fifteen hockey players. Training was given three days in a week for twelve weeks. The subject were tested on dribbling at the beginning (Pre-test) and at the end of the experimental period (Post-test). To measure the Zig Zag dribbling were used respectively because of their simplicity and availability of necessary facilities, instrument and equipment's. The analysis of data on dribbling have been examine by ANCOVA for each variables separately in order to determine the differences if any among the group at pre and posttest.

Table: I Analysis of Covariance for zig zag dribbling on Pre Test and Post Test Data of Experimental and Control Groups (In Seconds)

Tests	PEG	ATG	PEATG	CG	Source of variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pre Test									
Mean	9.11	8.97	8.90	9.07	B	0.397	3	0.132	0.504
SD	0.55	0.51	0.52	0.44	W	14.69	56	0.262	
Post Test									
Mean	7.97	7.87	7.58	9.15	B	21.65	3	7.21	30.11*
SD	0.47	0.55	0.50	0.41	W	13.42	56	0.240	
Adjusted Post Test Mean	7.89	7.91	7.68	9.10	B	18.58	3	6.19	256.93*
					W	1.32	55	0.02	

Significant at 0.05 level of confidence

(Required table value at 0.05 level of significant with df 3 and 56 is 2.77 and df 3 and 55 is 2.77)

The above table-I shows that there is a significant difference in dribbling among the four groups such as PEG, ATG, PEATG and CG. Since the calculated 'F' value required being significant at 0.05 level for 3,57 and 3, 58 degree of freedom is 2.77, but the calculated values of dribbling post and adjusted posttest 'F' values are 30.11 and 256.93 respectively. Which are higher than the tabulated value. Since the obtained 'F' ratio is found significant. The significant differences exist in the adjusted post test mean, further multiple comparison test was applied Scheffe's post hoc test and results are presented in the table II.

Table -II The Scheffes Test for the Mean Differences Between Paired Mean of Groups on zig zag dribbling (In Seconds)

Mean Value				MD	C.I
PEG	ATG	PEATG	CG		
7.89	7.91	-	-	0.02	0.14
7.89	-	7.68	-	0.21*	
7.89	-	-	9.10	1.21*	
-	7.91	7.68	-	0.23*	
-	7.91	-	9.10	1.19*	
	-	7.68	9.10	1.42*	

Significant at 0.05 level of confidence

The above table-2 reveals that there is significant difference among pairs adjusted posttest means between PEG and PEATGCTG, PEG and CG, ATG and PEATG, ATG and CG, PEATG and CG in relation to dribbling.

Hence it also observed that there is no significant differences exist between PEG and ATG. It is clearly showed that there is significant improvement in dribbling due to the influence of as PEG, ATG and PEATG when compared with control group. It also shows that PEATG is significantly better than the PEG and ATG in relation to dribbling. The pretest and posttest mean values of the four groups have been graphically presented in figure-1

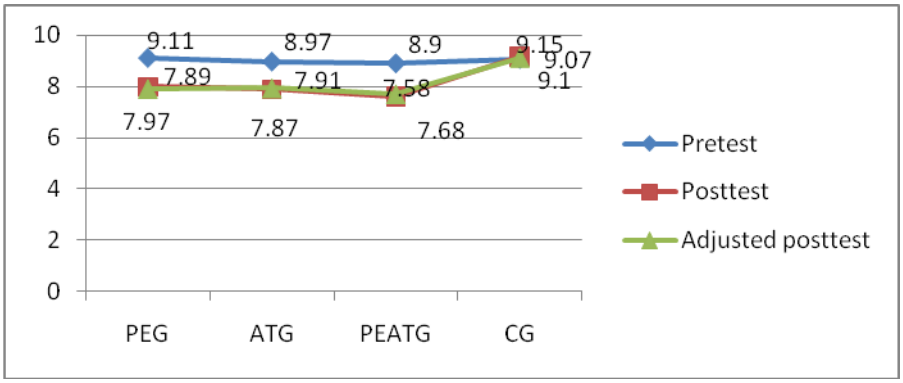

Figure :1Bar diagram showing the pretest, posttest and adjusted posttest mean of experimental group and control groups on zig zag dribbling [In seconds]

Discussion on Hypothesis

1. The first hypothesis says that there may be significant difference between experimental group and control group on dribbling. The result of the study shows that there were significant differences exist between experimental group and control group. Hence the research hypothesis is accepted.
2. The second hypothesis says that proprioceptive exercises with agility training would be superior than the proprioceptive exercises group and agility training group on dribbling. Hence the research hypothesis is accepted.

Discussion and Findings

The result of the study reveals that after the twelve weeks of Proprioceptive exercise [PEG], Agility training [ATG] and proprioceptive exercises with agility significantly improved dribbling. The finding of the study are aligned with the following *studies Ganesh et al., (2014), Muniyappan and Vallimurugan (2017), Kavitha et al., (2016), Shelvam and Baljit (2016)* as an effective method to improve dribbling.

Conclusions:

Zig zag dribbling was significantly improved by the Proprioceptive exercise [PEG], Agility training [ATG] and proprioceptive exercises with agility training [PEATG] when compared with control group and Combined training [PEATG] was superior than isolated training PEG and ATG.

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MAGNIFICENT PROMOTION OF MUSCULAR STRENGTH AND BREATH HOLDING TIME AMONG COLLEGE MEN VOLLEYBALL PLAYERS DUE TO THE SELECTED PLYOMETRIC AND CIRCUIT RESISTANCE TRAINING

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Abstract

The purpose of the study was to investigate the magnificent promotion of muscular strength and breath holding time among college men volleyball players due to the selected Plyometric and circuit training. To achieve the purpose of the study, forty five volleyball players were selected from Alagappa University affiliated colleges as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=45) were randomly assigned to three equal groups of fifteen subjects each. The groups were assigned as Plyometric training Group (PLT), Circuit Resistance Training Group (CRT) and Control group (CG) in an equivalent manner. The two groups were participated the training for a period of twelve weeks to find out the outcome of the training packages. The three groups were statistically analyzed by using analysis of covariance (ANCOVA). **Key words: Plyometric training, Circuit Resistance Training, Volleyball Players**.

Introduction

Volleyball is a team sport in which two teams of six players are separated by a net. Each team tries to score points by grounding a ball on the other team's court under organized rules. A number of consistent techniques have evolved in volleyball, including spiking and blocking (because these plays are made above the top of the net, the vertical jump is an athletic skill emphasized in the sport) as well as passing, setting, and specialized player positions and offensive and defensive structures.

Plyometric refers to exercises that allow the muscle to contract eccentrically before explosive contraction which enable the muscle to reach maximum explosive strength in a shortest period of time. The training aims at linking strength with speed to produce power. In this training the body weight of an athlete is used as resistance. All the forms of jumping exercises, wall bar exercises, pull-ups, skipping, rope climbing, sit-ups, etc. are the various forms of Plyometric exercises. Since Plyometric put great stress on the muscular-skeletal system, it is better to practice after developing the basic strength through weight training. In order for Plyometric training to be at its most effective it should follow a phase of maximal strength training . The purpose of Plyometric is to improve the athlete's capacity to apply more force more rapidly. **Solanikidis K, (2008).**

Anek A,(2011) the circuit training exercise program and to examine the effects of the circuit box jumping exercise program on bone formation, bone desorption, physical fitness of the premenopausal males. **Petit PD, (2010)** whole-body circuit training programs with different frequency and peak-to-peak displacement settings on knee extensor muscle strength and power. The underlying mechanisms of the expected gains. **Deschenes MR, (2006).,** Weight lifting, or resistance training, is a potent stimulus to the neuromuscular system. Depending on the specific program design, resistance training can enhance strength, power, or local muscular endurance. These improvements in performance are directly related to the physiologic adaptations elicited through prolonged resistance training. Optimal resistance training programs are individualized to meet specific training goals. **Katula JA**, ***(*2008)**

conducted a study on. Enhancing quality of life in older adults: a comparison of muscular strength and power training. Although progressive resistance strength training (ST) has been found to improve various measures of physical functioning in older adults, the benefit to quality of life is unclear.

Methodology

The purpose of the study was to investigate the magnificent promotion of muscular strength and breath holding time among college men volleyball players due to the selected Plyometric and circuit training. To achieve the purpose of the present study, forty five volleyball players from were selected as subjects from Alagappa University affiliated colleges at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups. The investigator selected the following variables for the present investigation.

TABLE - I

S.no.	Variables	Test items	Units
1	Muscular Strength	Push-Up	Counts
2	*Breath holding time*	Manual	Seconds

True randomized experimental group design has been employed with three groups, namely Plyometric training group, Circuit Resistance training group and control group with 15 subjects each. Group I and II participated their respective treatments for a period of twelve weeks and no training were given to the control group. The three groups were statistically analyzed by using analysis of covariance (ANCOVA).

Results and Discussion

The detailed procedure of analysis of data and interpretation were given below,

Table-II Summary of Descriptive Statistics on Selected muscular strength and breath holding time among College Men Volleyball Players

S.No	Variables	PLTG		CRTG		CG	
		Pre-Test Mean	Post-Test Mean	Pre-Test Mean	Post-Test Mean	Pre-Test Mean	Post-Test Mean
1	Muscular Strength	13.46	15.60	13.46	15.40	13.53	13.46
2	Breathe holding time	16.33	18.33	16.13	18.86	16.13	16.06

PLYG = Plyometric Training Group
CRTG = Circuit Resistance Training Group
CG = Control Group

The table II shows that the pre and post test means of three groups on selected muscular strength and breathe holding time of college men volleyball players.

Table – III Analysis of Variance of Pre Test Scores on Selected muscular strength and breath holding time among College Men Volleyball Players

Sl. No	Variables	Source of Variance	Sum of Squares	Df	Mean Squares	F-Value
1	**Muscular Strength**	**BG**	**.044**	**2**	**.022**	**.006**
		WG	**167.20**	**42**	**3.981**	
2	*Breath holding time*	**BG**	**.400**	**2**	**.200**	**.027**
		WG	**310.80**	**42**	**7.400**	

***** P < 0.05 Table F, df (2.42) (0.05) = 3.21

In table III, the results of analysis of variance of pre test scores on Muscular Strength (.006), Breath Holding Time (.027) were lesser than the table value of 3.21 indicating that it was not significant for the degrees of freedom (2,42) at 0.05 level of confidence indicating that the random sampling was successful.

Table – IV Analysis of Variance of Post Test Scores on Selected muscular strength and breath holding time among College Men Volleyball Players

Sl. No	Variables	Source of Variance	Sum of Squares	Df	Mean Squares	F-Value
1	Muscular Strength	BG	41.64	2	20.82	6.78*
		WG	128.93	42	3.069	
2	*Breath holding time*	BG	66.31	2	33.15	4.64*
		WG	300.00	42	7.143	

***** P < 0.05 Table F, df (2.42) (0.05) = 3.21

In table IV, the results of analysis of variance of post test scores on Muscular Strength (6.78*), Breath Holding Time (4.64*) were greater than the table value of 3.21 indicating that it was significant for the degrees of freedom (2,42) at 0.05 level of confidence.

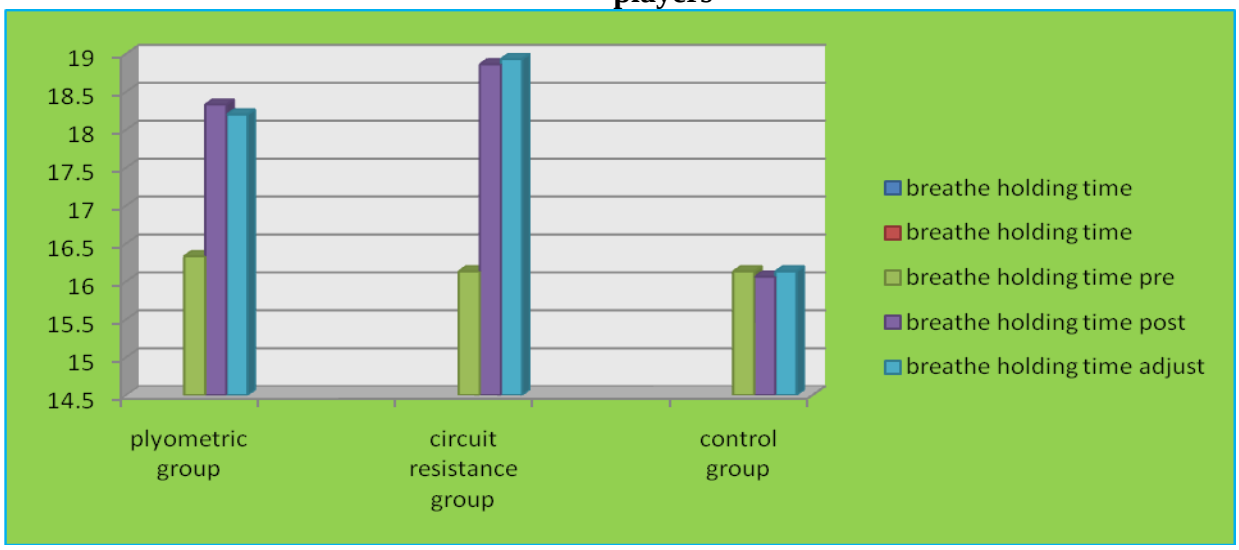
Table-V Analysis of Co-Variance of Pre Test Scores on Selected muscular strength and breath holding time among College Men Volleyball Players

Sl. No	Variables	Source of Variance	Sum of Squares	Df	Mean Squares	F-Value
1	Muscular Strength	BG	43.93	2	21.96	79.87*
		WG	11.26	41	.275	
2	*Breath holding time*	BG	63.35	2	31.67	84.90*
		WG	15.29	41	.373	

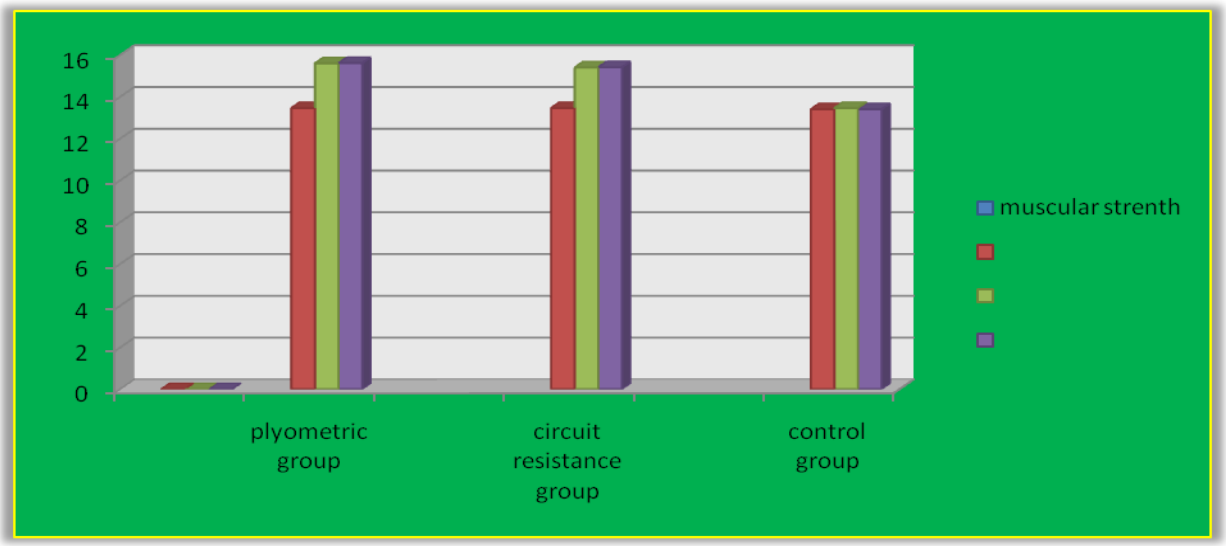
***** P < 0.05 Table F, df (2.41) (0.05) = 3.22

In table V, the results of analysis of covariance of adjusted post test scores on Muscular Strength (79.87*), Breath Holding Time (84.90*) were greater than the table value of 3.22 indicating that it was significant for the degrees of freedom (2,41) at 0.05 level of confidence.

Bar diagram of muscular strength and breath holding time among college men volleyball players



Bar diagram of muscular strength and breath holding time among college men volleyball players



Conclusions

In the light of the study undertaken with certain limitations imposed by the experimental conditions, the following conclusions were drawn.

- The result of the study reveals that there was a significant improvement in the experimental groups on selected variables when compared to the control group after the completion of Plyometric training and Circuit Resistance training
- The Plyometric training group has showed better performance on muscular strength than the other two groups.
- The Circuit Resistance training groups also showed better performance on breath holding time than the other two groups.

Recommendation

- The result of this study can be used by physical directors and coaches as aid in screening and selecting team players.
- It is recommended by that the same study may be repeated by selecting subjects belonging to different age groups and levels of achievement other than those employed in the present study.
- The trainers and coaches can modify their training methods with respect to the findings of this study.

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Sports Participation And Emotional Coping Ability Among Athletes In Iligan City, Philippines

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Abstract
This study aims to examine the inter-correlation between sports participation and emotional coping ability among athletes and whether sports participation predicts emotional coping ability. The Emotion Regulation Questionnaire (ERQ) developed by Gross, J.J., & John, O.P. (2013) was used to measure the emotional coping ability of athletes, while Sport Participation Model Questionnaire (SPMQ) developed by Aicenena (2012) was used to evaluate the athletes' sports participation. The respondents of this study were the of 1015 athletes from different Colleges and State University in Iligan City, Philippines, aged 17-19 and have played multiple sports in a local level . Moreover, descriptive statistics was used to assess the demographic profile of the respondents, while linear regression was used to measure the relationship between sports participation and emotional coping ability. Results show that sports participation is negatively correlated with emotional coping ability of athletes in terms of cognitive reappraisal. However, sports participation is also positively correlated with emotional coping ability in terms of expressive suppression. This implies that the more the athletes participate in sports, the lesser they attempt to reinterpret an emotion-eliciting situation in a way that alters its meaning and changes its emotional impact. In like manner, the more the athletes participated in sports, the more they attempt to hide, inhibit or reduce on going emotion-expressive behavior. This concludes that sports participation is a significant predictor of emotional coping ability of athletes in terms of cognitive reappraisal and expressive suppression. **Keywords***:* Sports Participation, Emotional Coping Ability, Athletes, Expressive Suppression, Cognitive Reappraisal

Introduction
The athletes' physical, social, psychological, and emotional functioning is never static or fixed, but instead these outcomes are always dynamic and changing. Athletes engaging in sport face multiple demands and challenges, including performance concerns, conflicts with teammates, opponents, or coaches, pressure to perform, poor referee calls, and injuries. Sport is something very inspirational for young people because it does not build character, instead, it reveals it.

Athletes can experienced disappointment when they do not perform up to their potential, lose an important game, sustain an injury, and do not make the team and lose a starting point. In addition to these performance pressures, they need to take certain course requirements, maintain full-time student status, and earn a minimum grade point average. They also need to follow the policies and procedures set forth by the college and university they attend while managing the stereotypes professors, staff, and other students may hold regarding student athletes including "dumb jocks", "over privileged", "lazy", and "motivated to be at school in order to play his or her sport" (Fletcher et al, 2003). Particularly, sport participation places both physical and psychological demands on athletes. From youth leagues to the professional level, athletes are forced to cope with the stresses that arise from competing head-on with others in activities that are important to the athletes and to others, such as parents, coaches, and peers. Some athletes learn to cope successfully with these stresses, and for them sports are enjoyable and challenging. Others who are unable to cope up in finding sport participation become a stressful and threatening experience. There is no question that people differ in their ability to cope successfully with stressful situations. Such differences result primarily from the attitudes and coping skills that are learned during the childhood and adolescent years. Athletic characters can be an

important arena in which such skills are learned. In a sense, the athletic experience can be a sort of laboratory for trying out and mastering ways of dealing with stress. Through their athletic experiences younger age athletes can develop attitudes. Beliefs and coping skill mechanism that can carry over into other areas of their lives. Childhood is the best time to learn stress-management skills.

In fact, among virtually all ages and body types, participating in sports encourages everything from cardiovascular conditioning to the ability to operate as a part of a team. While some commonly lauded benefits transcend the physical, the emotional effects of sports rarely enter the discussion. Just as the same game can strengthen your body or give you a bone fracture, sports have both positive and negative emotional effects. Emotional regulation through coping is critical for successful performance and positive adaptation (Crocker, Kowalski, & Graham, 2002; Uphill & Jones, 2012). Indeed it is necessary for athletes to constantly improve or develop new physical, cognitive, behavioral, and emotional skills to successfully meet the demands of increasingly more difficult athletic competitions (Hanim, 2000).

On the other hand, within the sport context, emotions are ever present when events are judged to be important and when personal and social goals are engaged. An athlete feels anger when an opponent is thought to be cheating, whereas joy is experienced when a valued goal is achieved. He/she then often senses anxiety before a championship match, sadness after an unexpected loss, pride when overcoming and accomplishing a difficult or challenging goal, and a guilt or shame after violating an idealized standard of behavior. These emotions are not just phenomenological subjective experiences, they strongly influence actions, performance, decision-making, and social functioning in sports and life (Hackfort, 1999; Smith & Lazarus, 1990). Emotions are a response to situations that are automatically or reflectively interpreted by the person as potentially threatening, harmful, or beneficial (Moors, 2013; Smith & Lazarus, 1990). Athletes may feel emotional problems anytime — in school, home, and public places; with parents, teachers, classmates, coach, and friends. Athletes should be aware of these things on what emotional problems are and how to deal with it.

Moreover, some emotions such as guilt, shame, and pride are contingent on higher order cognitive processing that considers self-awareness, self-representations, and social and moral standards (Lazarus, 1991; Tangney & Tracy, 2012). Emotions are often express in action, for example, when we are afraid we want to avoid things outright; when we are anxious we tend to inhibit actions; when we are angry we want to strike out; when we are happy we desire to be with others, and when we are guilty we need to engage in reparative behavior. Ekman (1999) stated that emotions are not only felt at an individual level, they are also are expressed through verbal and nonverbal means. Students who feel stress, anxiety, aggression, mania, moodiness, weeping, sensitiveness, and insensitiveness are engaging with emotional problems. Thatcher, Jones, &Lavalle (2012) views that the interplay between emotion and coping up is a critical factor in determining, through its influence on key psychology functions, and athlete's potential success in competitive sport.

Furthermore, coping can be described in terms of strategies, tactics, responses, cognitions, or behavior. Actual coping is a phenomenon that can be noticed either by introspection or by observation, and it includes internal events as well as overt actions. Lazarus and Folkman (1984) have defined coping as a dynamic process of cognitive and behavioral attempts to deal with internal or external demands which are experienced as taxing or exceeding the individual's resources. With new fact, Lazarus (1991), defined cognitive and behavioral efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources of a person. So coping can be employed as one of the strategies to overcome such problem in the athletes.

Crocker, Kowalski, and Graham (1998) and Lazarus (1999) said that coping represents an individual's cognitive, affective, and behavioral efforts to manage specific external and/or internal demands. Athletes must develop a range of cognitive and behavioral coping skills to manage the competitive

stressors they face (Scanlan, Stein, &Ravizza, 1991). Different coping strategies have to be employed by athletes as they have face different critical situation. Kristiansen, Roberts and Abrahamsen (2007) said that different sports have different sources of stress, and consequently participants require special strategies to cope successfully in their particular field. The ability to regulate emotion is necessary for adolescents to cope with everyday stressors and major life events. Sports participation has been linked to the ability to cope and regulate emotion.

Moreover, the ability to cope with stress in competition is an integral part of successful performance in elite sport, and athletes must develop a range of cognitive and behavioural coping skills to deal with stress (Dugdale, Eklund, & Gordon, 2002; Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999). The descriptions given by athletes when asked how they cope with stressful competitions are often vague, because some athletes are not conscious of their coping efforts. There are many situations that elite athletes must cope with, where athletes may feel that dealing with a stressful experience during competition is either threatening or challenging. Also, different sports have different sources of stress and consequently require special strategies to cope successfully (Gould, Eklund, & Jackson, 1993; Gould, Finch, & Jackson; Holt & Hogg, 2002; Pensgaard& Roberts, 2003).

Objective

This study aims to examine the inter-correlation between sports participation and emotional coping ability among athletes and whether sports participation predicts emotional coping ability.

Methods

Descriptive-correlation method was employed in determining the inter-correlation among sport participation and emotional coping ability among athletes. The data was taken from athletes of the different Colleges and University in Iligan City, Philippines in first semester, school year 2018-2019. Purposive sampling procedure was utilized. A total of 1015 student-athletes answered a packet of questionnaire which consists of three parts. Part I was the demographic profile of the respondents whichcontains the athlete's age, gender, school, type of sport, and level of participation. Part II was the Emotion Regulation Questionnaire (ERQ) developed by Gross, J.J., & John, O.P. (2013). It is a 10-item scale designed to measure respondents' tendency to regulate their emotions in two ways: (1) Cognitive Reappraisal (defined as The attempt to reinterpret an emotion-eliciting situation in a way that alters its meaning and changes its emotional impact (Gross and John, 2003)) with a cronbach alpha of 0.881 and (2) Expressive Suppression (The attempt to hide, inhibit or reduce on going emotion-expressive behaviour (Gross and John, 2003)) with a cronbach alpha of 0.763. Finally, Part III was the Sports Participation Model Questionnaire (SPMQ) which developed by Aicenena (2002). The SPMQ which has a cronbach alpha of 0.873 was composed of seventy questions, where the subjects were to choose "agree" or "disagree" with each statement reflecting on how they feel about the sport in general, in youth sport or school sport, and how they feel about their team mates, coaches or even their opponent.Data analysis was carried out in several steps using the SPSS Version 20.0. Estimation-maximization technique of imputation was utilized to replace values that were missing at random. Linear regression was conducted to test if sports participation predicts emotional coping ability among athletes.

Results And Discussion

Table 1. General information of sample size. (N = 1, 015)

General Information	Frequency 1015	Percentage
Age (Years)		
17-19	505	49.8%
20-22	379	37.3%
23-25	62	6.1%
26-28	15	1.6%

29-31	1	.1%
32-34	3	.3%
Gender		
Male	479	47.2 %
Female	507	50%
Bisexual	1	.1%
Type of Sports		
Badminton	132	13.0%
Table tennis	9	.9%
Lawn tennis	7	.7%
Karate do	6	.6%
Taekwondo	8	.8%
Basketball	168	16.6%
Volleyball	125	12.3%
Frisbee	16	1.6%
Futsal	45	4.4%
Baseball	1	.1%
Billiard	1	.1%
Chess	9	.9%
Swimming	2	.2%
Softball	5	.5%
Netball	1	.1%
Arnis	1	.1%
Football	3	.3%
Martial arts	1	.1%
Sepaktakraw	4	.4%
Soccer	1	.1%
Cycling	1	.1%
Multiple sports	462	45.5%
Level of Participation		
Interschool	23	2.3%
Local	781	76.9%
Regional	127	12.5%
National	35	3.4%
International	5	.5%

The table shows that most of the respondents were 17 – 19 years old 49.8% (N=505). 50% were females (N= 507). Most are playing multiple sports 45.5% (N=462) and participated in the local competition, 76.9% (N=781).

Table 2. Emotional Regulation Profile

Scale	Frequency 1015	Percentage
Cognitive Reappraisal		
Disagree	10	1.0
Slightly disagree	40	3.9
Neutral	342	33.7
Slightly agree	310	30.5
Agree	215	21.2
Strongly agree	98	9.7
Expressive Suppression		
Disagree	14	1.4
Slightly disagree	70	6.9

Neutral	372	36.7
Slightly agree	334	32.9
Agree	161	15.9
Strongly agree	64	6.3

Table 2 shows the respondents profile emotional coping ability profile as measured through emotional coping ability questionnaire. Most of the respondents neither agree nor disagree that they attempt to reinterpret an emotion-eliciting situation in a way that alters its meaning and changes its emotional impact, 33.7% (N=342). In addition, 36.7%, (N=372) neither agree nor disagree that they attempt to hide, inhibit or reduce on going emotion-expressive behavior.

Table 3. Mean, Standard Deviation and Inter-correlation of the Variables

	M	SD	1	2
1. Sports Participation Model Evaluation Scale	30.8193	5.03949		
2. Emotion Regulation (Cognitive Appraisal)	29.3202	6.22483	-.094**	
3. emotion Regulation (Expressive Suppression)	18.5302	4.06015	.067*	.667**

Note: Correlation is significant at *p<0.05; **p<.05; N= 1015

As shown in table 3, the result shows that sports participation is negatively correlated with cognitive reappraisal with p-value= -.094. Moreover, sports participation is positively correlated with expressive suppression with p-value = .067.Results imply that the more students-athletes participate in sports, they most likely think less of their problem because their attention was focused on the sports. Thus, they can regulate their emotions by participating in sports. However, in terms of expressive suppression strategy, athletes are more likely suppress their emotions by themselves but express it through sports.

It has been said before that sports participation provides individuals more opportunities to develop and practice effective emotional regulation strategies. This is supported by Cresswell and Hodge (2001) that when athletes were confronted with uncontrollable environmental stressors, the athletes reported that they had coped the most effectively focused on elements of the situation that they could control.

Table 4. Results of Sports Participationas Predictor of Emotional Coping Ability

	Emotion Regulation (Cognitive Appraisal)			Emotion Regulation (Expressive Suppression)		
	B	Beta	Sig.	B	Beta	Sig.
Sports Participation Model Evaluation	-0.116274	-0.094133	0.002683	0.054150	0.06721	0.032269

Note: B =Unstandardized Coefficients; Beta =Standardized Coefficients; N = 1,015.

As shown in Table 4, sports participation is a predictor of emotional coping ability of the student-athletes. Specifically, it predicts positively the expressive suppression and is negatively predict the cognitive reappraisal of the student-athletes. This implies that when sports participation increases, the cognitive reappraisal of the student-athletes will decrease in a sense that when athletes are participating highly in sports it does change their emotion towards the problem. Thus, they think less of the problem while engaging in sports. However, when sports participation increases, the expressive suppression will also increase in a sense that athletes suppress their emotions from others (coaches, co-athletes, families, and friends), instead of expressing them. Thus, the more athletes participate in

sports, the more they express their emotions through sports. This is supported by the research done by Giacobbi (2000), that adopted coping strategies have a strong relationship to performance. Hanin (2000) states that *"Emotions influence performance process and the on-going performance process strongly impacts emotion content and intensity".* Furthermore, Crocker and Graham (1995) stated, with support of their study, that there is a relationship between coping and effect. This means that there is a relationship between the athletes chosen coping strategies and final performances.

Conclusion

This study aims to examine the inter-correlation between sports participation and emotional coping ability among athletes and whether sports participation predicts emotional coping ability. The findings shows that there is a negative correlation among sports participation and emotional coping ability of the athletes in terms of cognitive reappraisal. However, there is also a positive correlation among athletes' sports participation and emotional coping ability in terms of expressive suppression. Thus,sports participation provides individuals more opportunities to develop and practices effective emotional regulation strategies by focusing on the elements of the situation that they can control.

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The Relationship Between The Dimensions Of Locus Of Control And Perceived Stress Among Physical Education Students Of Mangalore University

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Abstract:

The purpose of the study was to find out the relationship between the Dimensions of locus of control (LOC) and perceived stress among Physical education students of Mangalore University. For the collection of the data questionnaire method was used, which is developed by Levenson for find out Locus of control and Sheldon Cohen for find out perceived stress. The study was delimited to 60 samples from Mangalore University. Correlation analysis was used to test the relationship between the dimensions of locus of control and perceived stress. t-test was used to find out the gender differences in each variable. Result was represented through suitable tables and figures. **Key words**: locus of control, Physical education, perceived stress,

Introduction

In personality psychology, locus of control (LOC) is the degree to which people believe that they have control over the outcome of events in their lives, as opposed to external forces beyond their control. The concept was developed by Julian B. Rotter in 1954, and has since become an aspect of personality studies. A person's "loci" (plural of "locus", Latin for "place" or "location") are conceptualized as internal (a belief that one's life can be controlled) or external (a belief that life is controlled by outside factors which they cannot influence, or that chance or fate controls their lives).

Individuals with a strong internal locus of control believe events in their life derive primarily from their own actions: for example, when receiving exam results, people with an internal locus of control tend to praise or blame themselves and their abilities. People with a strong external locus of control tend to praise or blame external factors such as the teacher or the exam. Locus of control generated much research in a variety of areas in psychology. The construct is applicable to such fields as educational psychology. Debate continues whether specific or more global measures of locus of control will prove to be more useful in practical application. Careful distinctions should also be made between locus of control (a concept linked with expectancies about the future) and attribution style (a concept linked with explanations for past outcomes), or between locus of control and concepts such as self-efficacy.

Rotter (1966) defined locus of control as an individual's perception about the underlying main causes of events in his/her personal decisions and efforts (internal) or as unrelated to his or his or her actions and is guided by fate, luck, or other external circumstances (external). People with internal locus of control believe that they can control what happens in their lives. On the other hand, people with external locus of control tend to believe that most of the events in their lives result from luck, being at right place at the right time, and the behaviors of powerful people

Those with an internal locus of control

- Are more likely to take responsibility for their actions.
- Tend to be less influenced by the opinions of other people.
- Often do better at tasks when they are allowed to work at their own pace.
- Usually have strong sense of self-efficacy.
- Tend to work hard to achieve the things they want.
- Feel confident in the face of challenges.

- Tend to be physically healthier.
- Report being happier and more independent.
- Often achieve greater success in the work place.

Those with an external locus of control

- Blame outside forces for their circumstances.
- Often credit luck or chance for any successes.
- Don't believe that they can change their situation through their own efforts.
- Frequently feel hopeless or powerless in the face of difficult situations.

Perceived stress is the feelings or thoughts that an individual has about how much stress they are under at a given point in time or over a given time period. Perceived stress incorporates feelings about the uncontrollability and unpredictability of one's life, how often one has to deal with irritating hassles, how much change is occurring in one's life and confidence in one's ability to deal with problems or difficulties. It is not measuring the types or frequencies of stressful events which have happened to a person, but rather how an individual feels about the general stressfulness of their life and their ability to handle such stress. Individuals may suffer similar negative life events but appraise the impact or severity of these two different extents as a result of factors such as personality, coping resources, and Support. In this way, perceived stress reflects the interaction between an individual and their environment

Stress is simply a fact of nature forces from the inside or outside world affecting the individual responds to stress in ways that affect the individual as well as their environment. Because of the overabundance of stress in our modern lives, we usually think of stress as a negative experience, but form a biological point of view, stress can be a neutral, negative, or positive experience.In general, stress is related to both external and internal factors. External factors include the physical environment, including your job, your relationships with others, your home, and all the situations, challenges, difficulties, and expectations you're confronted with on a daily basis. Internal factors determine your body's ability to respond to, and deal with, the external stress-inducing factors. Internal factors which influence your ability to handle stress include your nutritional status, overall health and fitness levels, emotional well-being, and the amount of sleep and rest one get.

Statement of the study

The purpose of the study was to find out the relationship between the Dimensions of locus of control and perceived stress among physical Education students.

Delimitations of the study

- The study was delimited to 60 subjects.
- Selected subjects are restricted to Mangalore University.
- 30 male and 30 female students are delimited to this study.
- Under the age limit of 23-34 years.
- The study was delimited to BPED and MPED only.

The limitation of study

For the collection of the data questionnaire method was used, which is developed by Levenson for find out Locus of control and Sheldon Cohen for find out perceived stress. The responses obtained from the subjects are treated as correct and genuine.

Methodology

The purpose of the study was to find out the relationship between the Dimensions of locus of control and perceived stress among BPEd and MPEd students of MangaloreUniverity. In this chapter, methods and procedures are described. This includes the selection of subjects, selection of variables (male and female) and orientation of subjects and statistical analysis of data. This study being with a discussion of available literature on the subject. Relevant abstracts and references were recorded. For the collection of the data questionnaire method was used, which is developed by Levenson for find out

Locus of control and Sheldon Cohen for find out perceived stress. Question are simple and few in number. Questions are free from ambiguity, easily intelligible and readily answerable. Questions can be answered by ticking merely by options.

The selected samples are graduates and post graduates students from Mangalore University. Students of graduates are at the stage of setting clear career field for them. They undergo much confusion in their academics. They are the one who will be stepping into the competitive world and they need to be very innovative. As an emerging adult they hold the responsibility of their selves and they are no more dependent on their parents. They need to be prepared well to face the competitive world. Hence this sample was chosen.

Random sampling was used and sample size for present study is 60 and will be administered to male and female of the under graduate (BPEd) and post graduates (MPEd) students. The investigator will be taken 30 male and 30 female students. Under that age limit of 23-34 years.

Statistical tools

- Correlation analysis was used to test the relationship between the dimensions of locus of control and perceived stress.
- t-test analysis was used to test the gender differences in each variable.

Data analysis and Interpretation

This chapter will give the information of overall study. This chapter deals with the analysis and interpretation of data that was collected from the respondents through questionnaire. The collected data was coded and tabulated using statistical measures. The data has been analysed and interpreted accordingly to the objective of the study.This chapter includes following tables and figures.

Table 1: Mean, standard deviation and correlation of internal locus control, external locus of control and perceived stress.

Sl.no	Variables	Mean	S.D	Correlation
1	Internal locus of control	36.67	9.75	-0.18
2	External locus of control	47.5	14.41	0.37
3	Perceived stress	18.77	7.79	

***correlation is significant at the 0.05 level (2-tailed) NS. Not significant**

Table 1 shows the relationship between the dimensions of locus of control and perceived stress. It is shown that internal locus of control has minimal negative correlation of -0.18 with perceived stress. It indicates that people with high internal locus of control will possess low stress.

Table 2: Mean, S.D, standard error mean and t-values of Internal Locus of control, External Locus of control and perceived stress among male and female students

Sl.no	Variables	Gender	N	Mean	S.D	S.E.M	t value
1	Internal LOC	Male	30	36.67	9.74	1.78	2.61
		Female	30	32.2	9.09	1.66	
2	External LOC	Male	30	47.5	14.41	2.63	1.32
		Female	30	40.6	15.01	2.74	
3	Perceived stress	Male	30	18.77	7.79	1.42	
		Female	30	18.8	5.43	0.99	

***t value is significant at 0.05 levels Ns- Not significant**

The table 2 shows value of t is 2.61 in Internal LOC and 1.32 in External LOC among male and female students. It clearly indicates there is significant difference in both Internal and External Locus of control among male and female Physical education students and also it shows people with high external locus of control will possess high stress.

Summary, conclusion and recommendation

Student life is very crucial period in life. It is foundation of future life. Any problem in student's life will have an impact on future personal, vocational and social life. Emerging adulthood or the college life is marked by important factors. Other than the known factors like intelligence, socio-economic status, motivation etc. The purpose of conducting this study was to examine the relationship between locus of control and stress and to check the gender difference in each variable. Locus of control was measured under two dimension i.e. internal locus of control and external locus of control. From the result it was conceptualized that there is minimal relationship between the dimensions of locus of control and stress. Internal locus of control is negatively related with stress i.e. people with high internal locus of control they will have less stress. On the other hand external locus of control is also negatively related with stress. I.e. people with low external locus of control will have high stress. Result revealed that independent variables i.e. internal locus of control had a minimum negative correlation and external locus of control had a minimum positive correlation with the dependent variable i.e. stress respectively. The correlation between the variables was minimal and it was significant. It was found that there is significant gender difference in internal locus of control. On the other hand there was no significant gender difference in external locus of control and stress.

Conclusion

On the basis of the evidences from the results, the current study concluded that locus of control is an important social personality variable in relation to cope with stressful daily life events. The evidence from 60 respondents of students rated at high or low internal locus of control proves that the feelings of being in control make the potentially stressful environmental events less so and also sustain the feelings of empowerment and courage.

Recommendation:

Comparative study can be done on Teachers and students on Locus of Control and stress. A similar study may be conducted on the player who participated in the higher levels of competitions.

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Fitness Customers Segmentation In Central And Northwest Ethiopia: Typology And Motives

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Abstract

Physical activity is one of the most important steps that peoples at all ages can take to improve their health and fitness. This days Fitness centers are the place where peoples regularly engage in physical activities. The purpose of this study was to identify the type of fitness customers and their reason to join the center. Descriptive survey design was employed to conduct the study. Convenience sampling technique was employed for sample selection. 204 fitness customers were participated in the study. Self prepared Questionnaire was used to collect the data. Mean, standard deviation, percentage and paired T- test were used for data analysis. The result of the study shows, 42.6% of the respondents were young adults (21-30age), 52% were single and 48% were office workers. Security and facility availability were the main reason to choose the fitness center. Customers who join fitness center to control their health problems were more in number (67.6%). Controlling the health problem was one of the main objectives that considered by the customers. Location advantage (29.9%), Trainer demonstration ability (27%) and fitness equipments availability (21.1%) were the criteria's the respondents considered more to choose their fitness center. 36.8% of the respondents considered their own knowledge as the source of information to join fitness center. In conclusion, adults with the age between 20-30years engage in fitness program more than the other group. Customer's self-awareness, physician and sport professional advices respectively were the source of motivation to join fitness center. ***Key words:*** Fitness, Customer, typology, motives.

Background

This day's the level of disease related with physical inactivity keeps increasing. Physical activities are often recommended as the prevention from health problems, and an improvement in physical condition, personal appearance and the quality of lives as a whole. From this point of view a fitness center facility provides an opportunity for nearly every person who lives in urban areas. As stated by Hoeger and Hoeger (2011), physically fit and healthy people leading positive lifestyle have a healthier and better life. Regular Physical exercise is a powerful strategy for enhancing health and well-being among all aging individuals (WHO, 2007). Scientific evidences shows regular physical activity associated with a wide range of positive health outcomes can positively influence the prevention and management of inactivity linked diseases: obesity, low back pain, cardiovascular disease, Arthritis, osteoporosis, Type 2 diabetes, colon cancer, mental health, breast cancer, and health related Quality of Life, musculoskeletal conditions.

Fitness centers are one of the sites where individuals engage in regular physical exercise. Exercising in fitness centers always lead by well trained personnel's which provides well designed and structured exercises. Managing and leading by the trained personnel's let the fitness centers preferred by the customers. Socialization, health improvement, fitness development are some of the attributes of fitness program participation. Availability of trained fitness trainers and equipments and facilities are some of the important variables that contribute for customer satisfaction. The purpose of this study was to identify the type of customers who were attending the fitness. To address the said purpose, the

following research questions were formulated to answer: Which part of the community engaged in the fitness center more? What are the motives of customers to join the fitness program?

Material And Methods

The study was aimed to identify the type of fitness customers based on their demographical characteristics and the drivers to attend the trainings in the center. Descriptive survey study design was used to conduct this study. The study conducted in three cities: Gondar, Bahirdar and Addis Ababa which are purposely selected from the rest areas. A total of 204 respondents were participated in the study. Convenience sampling technique was employed to select respondents from the selected fitness centers. Self prepared questionnaire was employed to collect data from respondents. The questionnaire has two parts. The first part deals the personal information. The second part holds 29 questions which deal about the factors that motivate the customers to join the fitness center. SPSS statistical package software (version 20.0 for window) was used to analyze the collected data. Mean, standard deviation and percentage, chi-square test were used to analyze the data.

Results - - Customers Demographic Characteristics

When the sex proportion considered 71.6% of the respondents were males and the rest were females.

Table 1. Customers Gender, Age, Marital status and Educational level

variable		Response	
		Frequency	**percent**
Age(in years)	<=20	21	10.3
	21-30	87	42.6
	31-40	51	25.0
	41-50	25	12.3
	>50	20	9.8
Educational status	<= 12 grade	67	32.8
	Dip-PhD level	135	66.2
	other	2	1.0
	Total	**204**	**100**

A greater proportion of the respondents were from the age category between 21-30(42.6%) and 31-40(25%) year old. 52% of the respondents were single and the rest 42.6% and 4.4% of them were married and divorced respectively. 66.2% of the respondents have diploma and above educational level. Respondents were asked for their current jobs status.

Table 2. Customers Job status

Variables	Response		
	Customer Type	**Frequency**	**Percent**
Job status	Office workers	98	48.0
	Student	25	12.3
	Retired	9	4.4
	Businessperson	51	25.0
	Others	21	10.3
	Total	**204**	**100.0**

As shown in table 2, 48 % of the respondents were employed in a governmental or private offices, 25 % of them were businesspersons. Students, Retired and others were part of the respondents. Regarding their monthly income, 31.4% the respondents have earned

Customer's reason and source of information to join Fitness center

There are various reasons that motivate the respondents to join the fitness center. In the present study the respondents were asked to indicate the criteria they considered to choose the fitness center to join.

Table 4. Customer's reasons to select fitness center for their training program.

Item	Response		
	Selection criteria	**Frequency**	**Percent**
Interests for Fitness center program	Facility /equipment availability	62	30.4
	Training program	19	9.3
	Security reason	78	38.2
	Absence of free ground	25	12.3
	Other	20	9.8
	Total	**204**	**100.0**

As shown in table 4, 38% (78) of the customers gave more emphasis for Security as the main criteria to choose the fitness center. Availability of facilities and equipments (30.4%) was the second criteria that the respondents consider to choose the fitness center. The respondents were asked their sources of information to join the fitness center. As depicted in table 5, 35.3 % (72) of the respondents answered that they join the center by their own self awareness (knowledge). Physician and sport professionals advice respectively were the second and third sources of information to the respondents to join the center. Only 13.2% of the customers joined the center due the information they had through media.

Table 5. Customer's information source to join fitness center

Item	Response		
	Alternatives	**Frequency**	**Percent**
Source of information to join the fitness center	Physician advice	38	18.6
	Sport professionals advice	34	16.7
	Through media	27	13.2
	Self awareness	72	35.3
	Friends information	24	11.8
	Other	9	4.4
	Total	204	100.0

Table 6. Customers fitness center selection criteria

Item	Response		
	Criteria	**Frequency**	**Percent**
Fitness center selection criteria	Location advantage	61	29.9
	Modern training equipment	43	21.1
	demonstration by fitness trainers	55	27.0
	Low prices	16	7.8
	Name &Fame	3	1.5
	other	26	12.7
	Total	204	100.0

When the customers fitness center selection criteria considered they grouped in to five. As shown in table 6, relatively greater proportion of the respondents gave more attention for center location advantage (29.9%). Trainer demonstration ability and modern training equipment availability were the second and third criteria that the customers considered to select their training center.

The respondents were asked the motives to join the training program at the fitness center. 67.6% (138) of the respondents were motivated to join the center to control their health problems. Representing healthy life (23%), improving functional fitness (4.4%), exercising with friends (1%) and enhancing sport performance (1%) were the reasons for customers to join the center.

Table 7. Customer's health problems

Item	Response		
	Alternatives	**Frequency**	**Percent**
The health problems that the respondents join the center to control	Obesity	66	47.8
	Diabetes	15	10.9
	Heart related	12	8.7
	Sport injury	7	5.1
	Back pain	8	5.8
	Other	30	21.7
	Total	**138**	**100.0**

From those whose objective was to control their health problems, 47.8 %(66) were suffered with obesity and 10.9% were with diabetes mellitus (table 7).

Customer's center visit frequency and exercise duration

According to the demographical characteristics, fitness customers were from different part of the community. They were different in their jobs, age, sex, and income status. These may have impact on their visit frequency, training duration and time selection.

Table 8. Customer's response on training session, duration and time of preference

Item	Response		
	Alternative	**Frequency**	**Percent**
Frequency of attending the training program in a week	1-2time	26	12.8
	3-4times	133	65.2
	5 and above	45	22.0
	Total	**204**	**100.0**
Time spend in a training session	< 1 hour	52	25.5
	1-2 hour	138	67.6
	>2 hour	14	6.9
	Total	**204**	**100.0**
Time of a day the respondents prefer to attend their training program	Morning 6:00-9:00a.m	65	31.9
	Evening 5:00-8:00p.m	107	52.5
	Weekend morning	12	5.9
	If other	20	9.8
	Total	**204**	**100.0**

As shown in table 8, 65.2% of the respondents attended their training programme 3-4 times in a week. The respondents were asked the duration they spend in a training session. On this issue more that 67% of them exercise 1-2 hour in a session. From the day time more that 52% of the respondents prefers the Evening time (5:00-8:30) to attend their training. Considerable respondents prefer the morning time (26%) for their training.

Customers training time preference was assessed to indicate the association with their job type. As shown in table 9, Greater proportion of the employed (57.1%) and students (65.4%) were attended their training in the evening programme. On the other hand relatively greater proportions of the business person (44%) were attending their training in the morning session. A chi-square test was computed to assess the association between customers job type with their time preference. In the present study there is no significant association between their job type and time preference (x^2 =19.127, DF=12, p= 0.086).

Table 9. Customers training Time preference by their job type.

Item	Time of a day		Customers Job type					Total
			Employed	Student	Retired	Business person	others	
Time of a day to attend training program	Morning 6:00-9:00	Count	28	5	3	22	7	**65**
		% within Job type	28.6%	19.2%	33.3%	**43.1%**	35.0%	31.9%
	Evening 5:00-8:00	Count	56	17	4	20	10	**107**
		% within Job type	**57.1%**	**65.4%**	44.4%	39.2%	50.0%	**52.5%**
	Weekend	Count	8	1	2	1	0	12
		% within Job type	8.2%	3.8%	22.2%	2.0%	0.0%	5.9%
	Other	Count	6	3	0	8	3	20
		% within Job type	6.1%	11.5%	0.0%	15.7%	15.0%	9.8%
	Total	Count	98	26	9	51	20	204
		% within Job type	100.0 %	100.0%	100.0%	100.0 %	100.0 %	100.0%

According to the results that shown in figure 1, 34.3% of the customers prefer to attend exercises that ordered by the trainer's. 8.8% of the customers perform their training as per their own interest. On the other hand 77% of the customers perform their training under the direction of the trainer. The rest followed their training by their own direction.

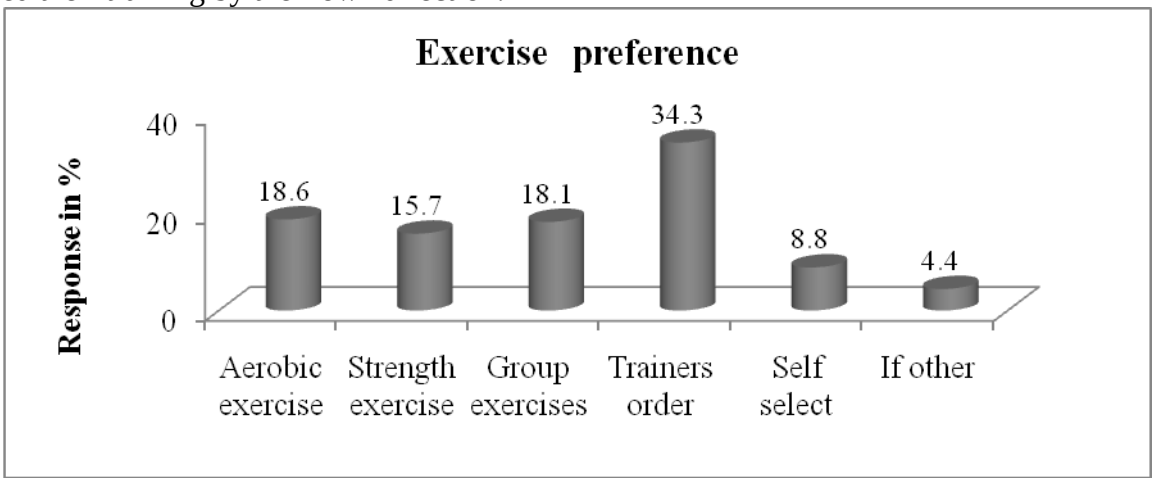

Figure 1. Customers exercise preference in fitness center

Discussion

This study was aimed to assess the types of customers based on sex, age, marital status, education level, job type, reason of joining fitness center, source of information, fitness center selection criteria, Motive, training frequency and time preference.

Fitness customer type by their demographical characteristics

The demographic characteristics of the study shows 71.6% of the respondents are males and 42.6% were from the age category between 21-31 and 25% were from the age 31-40 years age. 66.2% of the respondents have Diploma to PhD degree educational level. 48% of the participants were employed in a governmental or private offices, 25 % of them are businesspersons. Students and retired were the part of respondents. Similar study was conducted by Voracek et al., (2015) to assess the typology of fitness customers in Prague, Czech. According to their report 44.6% and 27.3% were from the age group 21-30 and 31-40 respectively. The reported result is consistent with the result found in this study.

Fitness Customer's type by their motives and information source

In the study various motives are identified that the customers majorly motivated (table 7). From the mentioned motivating factors the goal to control their health problems' (67.6%) was identified as one of the motives to join the center. Attending the training in the center to represent a healthy lifestyle was the second criteria that the respondents considered. Similar study was conducted in Greece by Afthinos et al. (2005) to identify the motives of customers to join the fitness center. Their report shows the most important consumer motive was to enhance their fitness state followed by relaxation-stress reduction. However, the health reason which ranks first in our study found in the fourth rank in their study. In our study the health problems that the customers need to control was assessed. From those whose objective was to control their health problems, 47.8% of them were suffered with obesity and 10.9% were suffered with diabetes. When the source of information considered, greater proportion of the customers (35.3%) were joined their training in fitness center based on their own awareness or knowledge (table5). Physician and sport professionals advice respectively were the second and third sources of information to the customers to join the center. Only 13.2% of the customers joined the center due to the information they had through media.

Fitness Customer's type by their exercise preference and training direction

In the study 34.3% of the customers preferred trainer ordered exercises in their training program (figure 1). Aerobic exercise and group exercises were the second and third preferred exercise that the customers attended in the center. 8.8% of the customers perform their training as per their own interest. Customers are attending their training either under the direction of the trainer or by their own direction. In our study we assessed the way how the customers conduct their training. Greater proportion of the customers (77%) was doing their training under the direction of the trainer. The rest (23%) followed their training by their own direction.

Conclusions

The purpose of this study was to identify the type of customers who were attending their training program in fitness center. A greater proportion of the respondents were from the age category between 21-30 year old. More than half of the respondents were single. Regarding their educational status more than half of the respondents have a diploma and above educational qualification. From the respondents who gave their response office workers and business persons respectively takes greater proportions based of their current jobs status. Students, Retired and others were part of the customer's respondents. Availability of facilities and security were the reason the customers consider more to prefer fitness center to join their training program. Customers own knowledge, physician and sport professionals advice respectively were the sources of information to the respondents to join the center. Customer's fitness center selection criteria were majorly depended on center location, trainer's demonstration ability and modern equipment availability. Greater proportion of the customers was joining the center to control their health problems. Obesity, diabetes, heart related and others were the health problems of the customers who join the center to control.

Greater proportions of the respondents were attending their training programme for 3-4 times in a week. 1-2 hour duration was the more preferred training duration. From the day time the respondents prefers the Evening time to attend their training. Evening programme was preferred more office workers and students. On the other hand relatively greater proportions of the business person were attending their training in the morning session. Trainers ordered exercise was one of the training contents that more customers engaged. Almost all customers were practicing their training under the direction of the trainer. Almost all the respondents had developed a greater positive feeling on their healthy life due to their training in the center. They satisfied to the service given in their center. Almost all agreed to continue their training program in the center where they were attending.

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Perceived Weekly Training Load and Repeated Sprinting Ability Performance of Soccer Players

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Abstract

The study was done with an ultimate of revealing how and to what extent perceived weekly training load (TL) correlate with repeated sprinting ability (RSA). To this end, a correlational research design using bivariate or zero-order correlation and partial correlation was employed. Competitive soccer players who were playing at the national league level (the third league level in Ethiopia) participated in the study. Internal load was measured using the RPE scale for about five weeks. Each sessions load was calculated by multiplying the scale (the numberwhich indicate the level of exertion) rated by the duration of the session. RSA of the players was measured using the 6*35-m with 30-seconds recovery between the sprints test protocol. Then RSA total time (the time taken to complete the 6 sprints), average time (the average time of the 6 sprints), best time (the smallest time among the 6 sprints) and the worst time (the longest time among the six sprints) were considered as RSA performance parameters. Both RSA total time and RSA average time had a significant moderate correlation with perceived TL ($r(440) = -.320$, $p<.001$ and $-.317$, $p<.001$ respectively). RSA best time and RSA worst time had a small significant correlation with TL ($r(440) = -.283$, $p<.001$ and $-.272$, $p<.001$ respectively). However, when the moderating variables were controlled, only RSA worst time showed a small significant correlation with TL $r(435) = .137$, $p=.004$. TL had a positive relationship with RSA performance parameters, though the relationship is highly dependent on moderating factors. The study indicated that RSA performance is practically trainable soccer specific fitness to an extent. **Key Words**:Perceived, repeated sprinting ability, Sprinting andTraining load

Introduction

Soccer is known for being one of the most demanding sports (Alghannam, 2013; Barnes, Archer, Hogg, Bush & Bradley, 2014). It is too demanding in terms of technical skill (Barnes et al., 2014). It is one of the most demanding skills which involve the coordination of eye-to-foot(Durate, Araujo, Vanda &Davids, 2012). The coordination commonly required in some multi-sprint team sports as handball and basketball is eye-to-hand coordination, which is relatively easy. Physically, contemporary soccer is well acknowledged that it is demanding or the players are highly taxed in aerobic and as well in anaerobic fitness (Bangsbo, 2014; Hoffman, Reed, Leiting, Chiang & stone, 2014). Though the aerobic fitness is necessary to an extent, it is not that good in discriminating level of play or standard and success (Haddad et al., 2015; Johnston, Watsford, Pine &Spurrs, 2014; Schimpchen, Skorski, Nopp, Meyer, 2015; Tonnesen, Hem, Leirstein, Haugen & Seiler, 2013). It is only necessary to be developed to a certain level. However, the anaerobic fitness is the most important physical quality. It is one quality which is capable of discriminating different level of players. It is also capable of discriminating successful teams from unsuccessful teams, meaning that most successful teams showed to possess superior anaerobic qualities. This way, sprinting speed, agility, change-of-direction-speed, explosive power, strength and repeated sprinting ability (RSA) are the commonly observed anaerobic qualities in competitive soccer. The so called quality RSA is the ability of the players to produce the best possible sprinters over consecutive runs. It is a relevant fitness parameter, because players are required to have several sprints during a course of a match (Rivilla et al., 2019). As such, most decisive moments during match rely on the players' ability to produce repeated sprints (Girard et al., 2011). For example, scoring and assisting players during attacking moment are inherently expected to sprint (Faude, Koch, & Meyer, 2012). A lot of attacking moments are common within a 90-minute match play. Thus, the ability to produce quality sprint is most important to handle the situation. A lot of factors are shown to be contributing to RSA performance. Linear sprinting speed, strength and explosive powerare some of the contributing factors for RSA performance (Lopez-Segovia, Pareja-

Blanco, Jimenez-Reyes & Gonzalez-Badillo, 2015; Dardouri et al., 2014. In addition to the anaerobic factors, aerobic fitness is shown to be one determining factor for RSA performance (da Silva, Gugliemo& Bishop, 2010). The ability to recover during the brief recoveries which are inherent (common) with most RSA test protocols is a significant limiting factor. The ability to refuel the muscle with the necessary substance which enables to produce good muscle contraction is one limiting factor with RSA. It is also dependent on the muscles ability to clear the metabolites which are limiting factors for the subsequent sprints. All these indicate how trainable RSA as a fitness element is. Thus, both aerobic and anaerobic kind of training can impact RSA performance to an extent (da Silva et al., 2010). Different training protocols (regimens) are studied and recommended to improve and maintain RSA performance of soccer players (Beato, Bianchi, Coratella, Merlini&Drust, 2017; Cipryan, Tschakert& Hofmann, 2017; Negra et al., 2018). Additional trainings in addition to the common soccer specific training are suggested for RSA to develop further and to be maintained (Beato et al., 2017). However, the basic question relies on how much TL is productive for RSA? This is because that overload and under-load are associated with performance decline and increased risk of injury (Cross, William, Trewartha, Kemp & Stokes, 2016; Malone et al., 2018; Moreira et al., 2013). Therefore, the ultimate purpose of this study was to examine how perceived weekly TL relates with RSA performance parameters of RSA total time, average time, best and worst time.

Method

The study protocol involves the measurement of perceived weekly training load (TL) and repeated sprinting ability weekly for about five weeks during the in-season. Competitive soccer players who were playing at the third level of Ethiopian soccer league (National League) participated in the study by filling the RPE scale in each training session. The total number of the players who completed the study protocol was 88 outfield players. The TL of each session was calculated multiplying the perceived scale (rated by the players on the scale)by the duration of the respected session. Then the weekly TL was calculated by adding all the sessions TL of the respected week. Each player perceived weekly TL then collected for five consecutive weeks. Thus, a total of a total of 440 TL measurement or data was collected for the study. The measurement of RSA was conducted weekly for five consecutive weeks using the test protocol of 35-m*6. During the test the recovery time between the sprints was 30 seconds. RSA performance was considered using total time, average time, best and worst time. Therefore, a total of 440 performances for each RSA parameter were collected throughout the entire data collection period. The analysis was done using bivariate or zero-order, without considering effect of other variables on the relationship. In addition partial correlation was used to examine the relationship of TL with RSA parameter with due consideration of the effect of other factors on the relationship. Then the coefficient of the zero-order and partial correlation was compared and interpreted.

Result

Perceived TL and RSA performance (test score)

The relationship of perceived weekly load of the players with their RSA time score was examined using Pearson correlation (Zero-order correlation). The TL was measured using s-RPE Borg`s scale 10. RSA was measured using 6*35m with 30-seconds recovery between the sprints.

Table 1 The bivariate correlation between TL and RSA parameters

Correlations

		TL	RSATotalTime	RSAAverage	RSABest	RSAWorst
TL	Pearson`s r	1	-.320**	-.317**	-.283**	-.272**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	440	440	440	440	440

**. Correlation is significant at the 0.01 level (2-tailed).

All RSA parameters, RSA total time, RSA average time, RSA best time and RSA worst time had a statistically significant zero-order correlation with TL ($p<.001$). Both RSA total time and average time had a significant moderate level of relationship with TL ($r(440) = -.320$ and $-.317$ respectively). Still RSA best time and RSA worst time had a significant level of small relationship with that of perceived weekly TL ($r(440) = -.283$ and $-.272$ respectively). The players who perceived higher TL performed well in all RSA parameters.

The relationship of perceived weekly TL with that of RSA performance parameters was examined using partial correlation. Here the effect of the moderating variables was controlled when each RSA parameter association with TL is examined.

Table 2

The partial correlation TL and RSA parameters

Partial Correlations

		TL	RSATotalTime	RSAAverage	RSABest	RSAWorst
TL	Pearson`s r	1	-.087	.028	.078	.137
	Sig. (2-tailed)		.068	.552	.102	.004
	df	435	435	435	435	435

From the partial correlation test it was found that RSA total time, average time and RSA best time do not have a significant correlation with perceived TL when the moderating variables are controlled. The correlation which was significant when the moderating variables were not controlled does not exist here when they are controlled. But the correlation between RSA worst time and TL $r(435)= .137$, $p=.004$. However, the correlation magnitude of the partial correlation was smaller than the zero-order correlation ($r(440) = .137$ versus $r(435) = -.272$). Still the direction of the relationship is different, meaning that negative in the zero-order and positive in the partial correlation. Thus, the effect of the moderating variables was greater.

Discussion

The study was conducted aiming to identify the relationship of perceived TL with that of RSA performance parameters. So as to find out the real practical relationship of TL with RSA performance measures, both the zero-order correlation and partial correlation was examined. As a matter of fact, the trainability of sheer speed or linear sprinting speed is limited. Genetic make-up and the dominant muscle fiber type, which is an endowed quality, is the greatest determining factor for sprinting ability or performance. Training and other modifiable factors can take only a small portion of it. RSA ability however, found to have a moderate level of inverse correlation with TL. This implies that higher perceived training load is associated with a decrease time to cover the 6*35-m RSA test. All the RSA parameters as total time, average time, best time and worst time significantly and inversely correlated with TL. When players report higher perceived weekly TL, the total time they took to cover the 6*35m test and the average time of the 6 sprints was lower. The same way, the best time among the six sprints was found significantly better (when they have higher TL they were able to have a better best sprint time). Event with that of worst RSA time, the time taken was smaller as a function of perceived TL. Generally, TL was shown to increase RSA performance of the players during the in-season. In parallel with this finding Malone et al. (2017) came up with the same result, which indicated the positive effect of higher TL during the in-season. This is because that TL is a significant stimulus to impact fitness improvement. As the fitness improves the ability to tolerate even higher TL also increases. This, in another way helps the players to be capable of withstanding the highest possible TL and can gain an advantage of realizing the highest possible adaptation. The effect of any training is on either aerobic capacity or anaerobic quality or on both simultaneously. Thus, the effect of higher TL in this regard can potentially be substantial on both the aerobic and anaerobic segment. Since RSA performance can benefit from both aerobic (da Silva et al., 2010 and anaerobic adaptation (Ingebrigtsen et al., 2014; Wierike et al., 2014), the effect of higher TL can be too significant and so does the relationship. However RSA is more related with anaerobic quality and that is the reason for

vertical jump and sprinting speed to be big factors for RSA (Ingebrigtsen et al., 2014; Kenney et al., 2015). Thus, the greater relationship of RSA with anaerobic qualities (less trainable relatively) make the relationship not to be large or very large.

However some findings come up with a negative relationship between TL and performance (Cross et al., 2016; Malone et al 2017). The reason for this is that these studies conducted on participants or players who were having a congested schedule and highly competitive athletes. But this study was done with soccer players who were only having 1 match per week or in two weeks. They were not having any kind of additional tournament, or some other matches with national teams or regional teams. They were not susceptible to any congested fixture. Instead they may be playing fewer games per season than they are expected to have based on their maturity level (age). Thus, the relationship of higher training with a better RSA performance is convincing and practically existing.

The relationship that TL had with RSA performance parameters is highly dependent on other moderating factors. The relationship that each parameter has with one another highly impacts the nature of the relationship that they had with TL. Recent findings on the matter confirmed that the effect of training or TL on RSA is of bidirectional. When training is extended and intensive the impact can be significant on the aerobic fitness and the ability to get rid-off performance limiting metabolites. This (aerobic fitness) is a significant factor for RSA as it can improve the ability of the muscle to recover between the sprints. Players with aerobic fitness showed a better recovery during the brief recovery times (da Silva et al., 2010). The other way that TL relates with RSA is that, the improvement of anaerobic qualities as strength, power and linear speed is transferable to RSA performance improvement (Azziz et al., 2007; Castagna et al., 2007; Lopez-Segovia et al., 2015; Dardouri et al., 2014). Therefore, the relationship of TL with the players RSA performance is persuasive.

Conclusion

RSA performance has a direct relationship with the level of TL players perceive. Higher TL is one important factor for the maintenance and improvement of RSA performance during the in-season. RSA is such a trainable attribute of competitive soccer players to an extent. The level of correlation found between RSA and TL is not that negligible, because trained soccer players are resistant to change in performance. The small to moderate level of relationship between TL and RSA is an indicator of how important to ensure the highest possible individual based TL to further improve and maintain RSA performance. RSA is not as training resistant as linear sprinting speed.

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Analysis Of Agility Between Rural And Urban Junior College Boys In Different Age Categories

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Abstract:
The purpose of the present study was to analysis of agility between rural and urban junior college boys in different age categories. To achieve this purpose of the study three hundred junior college boys of rural and urban areas from Kadapa District, Andhra Pradesh, India were randomly selected as subjects. Among them one hundred and fifty junior boys (seventy five rural boys with age between 15 to 16 years and seventy five rural boys with age between 16 to 17 years) and one hundred and fifty junior boys (seventy five urban boys with age between 15 to 16 years and seventy five urban boys with age between 16 to 17 years). The agility was selected as criterion variable. The following group's namely rural junior boys with age category between 15 to 16 years and 16 to 17 years, urban junior boys with age category between 15 to 16 years and 16 to 17 years were selected as independent variables. The data were collected from rural and urban junior boys with different age categories on agility were assessed by using standardized test items namely shuttle run, and were statistically analyzed by using 2 x 2 factorial ANOVA. Whenever, the obtained 'F' ratio value for interaction effect was found to be significant, the simple effect test was applied as follow up test.
Key words: Agility, 2x2 factorial ANOVA, Urban Junior college boys, Rural Junior college boys, Age category.

Introduction

Human settlements are categorized as rural or urban areas on the basis of the density of population and human formed structures in a particular area. Urban areas consist of towns and cities while rural areas contain villages and hamlets. Rural areas may develop randomly on the foundation of natural vegetation and fauna available in a region, whereas urban settlements are proper, suitable and planned settlements developed according to a process called urbanization. Several times, rural areas are given special attention by governments and development agencies to turn them into urban areas. Urban areas are defined by their advanced public services, better facilities for education, sports, transport, business, health, social interface and overall improved standards of living. Socio-cultural information is usually based on urban residents. Whereas rural areas depends more on natural assets and events, the urban inhabitants gets the benefits of man's advancements in the fields of science and technology and for their everyday functioning, they do not need to depend upon nature.
Residing in places distinguished by size of population can be linked with variations in eating attitudes, availability of sports facilities, accessibility of health services and opportunities for physical fitness activities (Tsimeas et al., 2005).

According to Bucher (1985) Physical fitness is "the ability of an individual to live a full and balanced life. It involves physical, mental, emotional, social and spiritual factors and the capacity for their wholesome expression". Physical fitness refers to practical performance of exercise that calls for the number of experiences, they are the feeling of happiness in the process of correct performance of movement, feeling of "confidence, self satisfaction, surprise and unhappy in the process of confusion and disappointment etc.It is a positive quality, extending on a scale from death to "abundant life".
All living individuals have some degree of physical fitness which varies 10 considerably in different people and in the same person at different times. It is not as broad in its meaning as 'total fitness'. It include, adequate degree of health, posture, physique, proper functioning of vital organs, nutrition, and

good health habits along with an adequate amount of endurance, strength, stamina and flexibility (Clark and David ,1978) .

Materials And Tools

To achieve this purpose of the study three hundred junior college boys of rural and urban areas from kadapa district, andhra pradesh, india were randomly selected as subjects. Among them one hundred and fifty junior boys (seventy five rural boys with age between 15 to 16 years and seventy five rural boys with age between 16 to 17 years) and one hundred and fifty junior boys (seventy five urban boys with age between 15 to 16 years and seventy five urban boys with agebetween 16 to 17 years)

TABLE I- The Mean And Standard Deviation On Agility Of Rural And Urban Junior Boys With Different Age Categories

Gender / Area of Games		Age between 15 to 16 Years	Age between 16 to 17 Years
Rural Junior Boys	Mean	9.11	9.28
	SD	0.06	0.09
Urban Junior Boys	Mean	9.11	9.29
	SD	0.06	0.09

Results on agility

Table I shows that the mean values on agility of rural boys with age between 15 to 16 years and rural boys with age between 16 to 17 years, urban boys with age between 15 to 16 years and urban boys with age between 16 to 17 years were 9.11, 9.28, 9.11and 9.29 respectively.The two way factorial ANOVA on agility of rural and urban junior boys with different age categories have been presented in Table I

TABLE I- a - Two Way Factorial Anova On Agility Of Rural And Urban Junior Boys With Different Age Categories

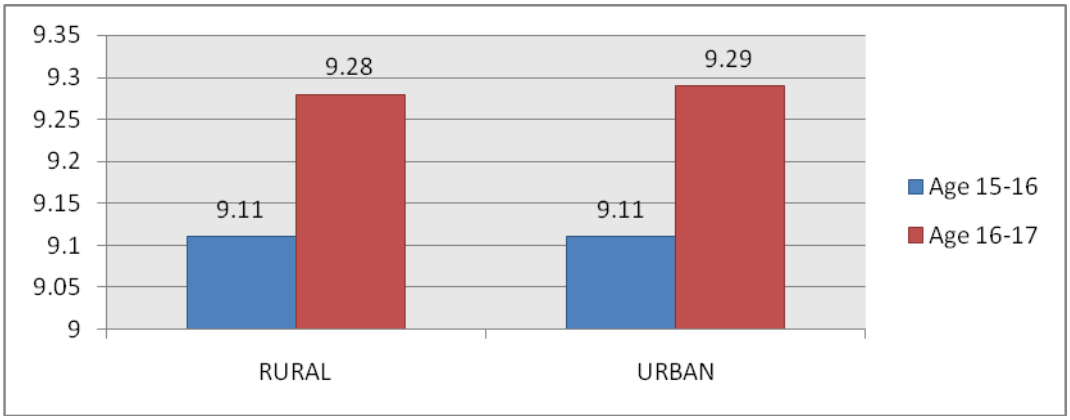
Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" Ratio
A factor (Areas)	0.0	1	0.00	0.10
B factor (Age)	2.2	1	2.19	383.72*
AB factor (interaction) (Gender x Area of Games)	0.0	1	0.00	0.20
Within or Error	1.69	296	0.01	

(The table value required for significance at .05 level of confidence with df 1 and 296 was 3.871).

Table I-a shows that the obtained 'F' ratio value on agility was 0.10 for factor-A (Areas – Rural and Urban) irrespective of their age categories which was lesser than the table value of 3.871 with df 1 and 296 required for significance at .05 level of confidence. The results of the study indicated that there was no significant difference between rural and urban area junior boys irrespective of their age categories on agility. The obtained 'F' ratio value on agility was 383.72 for factor-B (Age – Age between 15 to 16 years and Age between 16 to 17 years) irrespective of their gender which was greater than the table value of 3.871 with df 1 and 296 required for significance at .05 level of confidence. The results of the study indicated that there was a significant difference between 15 to 16 years and 16 to 17 years junior boys irrespective of their areas (rural and urban) on agility. The obtained 'F' ratio value on agility was 0.20 for interaction [AB factor - (Areas × Age)] which was lesser than the table value of 3.871 with df 1 and 296 required for significance at .05 level of confidence. The results of the study showed that there was no significant difference between rural and urban junior boys with

different age categories on agility.The mean values of between rural and urban junior boys with different age categories on agility are graphically represented in Figure I.

FIGURE-I - The Mean Values Of Rural And Urban Junior Boys With Different Age Categories On Agility



Conclusion

1. There was no significant difference between rural and urban area junior boys irrespective of their age categories on agility.
2. There was a significant difference between 15 to 16 years and 16 to 17 years junior boys irrespective of their areas (rural and urban) on agility.
3. There was no significant difference between rural and urban junior boys with different age categories on agility.
4. The rural and urban junior college boys at 15-16 years had similar performance on agility.
5. The urban junior college boys had better agility than the rural junior college boys at 16-17 years age category.

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Sports and Physical Activities for Healthy Wellbeing in Modern Life Style - A Study

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Introduction

Health is a state of physical, mental emotional and social wellbeing. Good health enables people to enjoy life and to have the opportunity to achieve the goals they have set for themselves. The real purpose of health is to develop and maintain vigor and vitality, to acquire interests and habits in ways of living that are whole some and to meet the demands put upon the individuals efficiently, with energy and satisfaction. The concept of health has been very appropriately summed up by J.F. William. Health is that quality of life that enables an individual to live most and serve best. Health can be achieved maintained and improved by supplying the basic physical, mental, emotional and social needs in proper proportion. In fact health is the key to education, success, good citizenship and a happy life. Now days health and its maintance is being considered as a major social investment and it is being felt that health involves individual, state and international responsibility.

Quality physical education programs promote the physical growth and development of children and youth while contributing to their general health and well being. A balanced physical education program provides each student with an opportunity to develop into a physically-educated person; one who learns skills necessary to perform a variety of physical activities, is physically fit, participates regularly in physical activity, knows the benefits from involvement in physical activity and it's contributions to a healthy lifestyle. 'Sports' is generally understood to include physical activities that go beyond competitive sports. "Incorporated into the definition of 'sport' are all forms of physical activity that contribute to physical fitness, mental well-being and social interaction. These include: play; recreation; organized, casual or competitive sport; and indigenous sports or games."

Review of Literature

Modern lifestyle, a threat to young people's life - Jan 1, 1999 - The New Scientist recently commented on the modern life style and its effect on people's health. ... The tendency is that one group of young people are especially active in sports and all other kinds of physical activities. On the Studies show that increased physical activity reduces the risk of depression. The Benefits of Good Health, Fitness, and Mental Well-Being - While concentrating on exercise and diet can help people suffering from these diseases, you shouldn't wait until you develop an illness to begin a health and fitness routine. Recent studies have identified as many as 75% of adults as overweight or obese. Only about 26% of American adults participate in vigorous physical and/or leisure activities three or more times a week. The relationship between organized recreational activity and mental health Gillian Street and Ray James: Mentally Healthy WA Centre for Behavioural Research in Cancer Control, Curtin University. A review of current literature indicates that people who participate in sports clubs and organised recreational activity enjoy better mental health, are more alert, and more resilient against the stresses of modern living. Participation in recreational groups and socially supported physical activity is shown to reduce stress, anxiety and depression, and reduce symptoms of Alzheimer's disease. Doing regular physical activity can make you feel good about yourself and it can have a number of benefits for your health. For example, it reduces the risk of developing heart disease, stroke, high blood pressure, some cancers, type 2 diabetes and 'thinning' of the bones (osteoporosis). Regular physical activity also helps to control weight and may help to ease stress. Physical Activity For Health. Exercise advice

information |Patient https://patient.info/health/physical-activity-for-health. Impact of Lifestyle on Health- Therefore, according to the existing studies, it can be said that: lifestyle has a significant influence on physical and mental health of human being. There are different forms of such influences. Consanguinity in some ethnicity is a dominant form of life style that it leads to the genetic disorders. Dariush D. FARHUD - School of Public Health, Tehran University of Medical Sciences, Tehran, Iran Iranan Journal of Public Health. 2015 Nov; 44(11): 1442–1444. Lifestyle for health and well-being. The aim is to improve human health and well-being throughout the lifespan by considering the social, behavioural and biological determinants and consequences of human lifestyles with specific emphases on physical activity, nutrition and chronic disease. Dr Nicolette Bishop , Dr Ines Varela-Silva, and Dr Stacy Clemes lboro.ac.uk/departments/ssehs/research/lifestyle-health-wellbeing/

Objective of the study

The study is to determine the physical activity and sports for health & wellbeing in modern healthy life style, the Health is the most important thing in our lives it can determine the way you live your life. Physical activity is any movement that results in expenditure of energy; it can be branched out in many different categories that include exercise, fitness, active living, active recreation and sport. Physical health is largely determined by our lifestyle and behavior.

Health, sport and wellbeing

During recent decades, there has been a progressive decline in the level of physical activity in people's daily lives in developed countries. For a majority of people, little physical effort is involved any more in their work, domestic chores, transportation and leisure. Whilst specific health risks differ between countries and regions, the fact remains that physical inactivity is a major risk factor for most common non-communicable diseases and physical activity can counteract many of the ill effects of inactivity. One of the most widely-used definitions of health is that of the WHO, which defines health as: “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. This definition goes well beyond a condition of physical health but includes mental health and general well-being.

Physical activity and health

Sport and physical activity has long been used as a tool to improve mental, physical and social well-being. Physical inactivity is a major risk factor associated with a large number of lifestyle diseases such as cardiovascular disease, cancer, diabetes and obesity. Sport projects that specifically focus on health outcomes generally emphasize.

- The promotion of healthy lifestyle choices among children and young people as well as adults to combat inactivity;
- The use of sport as a tool to raise awareness on communicable diseases in developing countries, for example, through district or national health campaigns supported by athletes and sports competitions;
- The use of sport as a didactical tool to communicate vital health-related information to ‘at risk’ groups;
- The use of sport to mobilise hard-to-reach groups as part of large-scale health campaigns, including for example, communities with low population density;
- Sport is considered to contribute to achieving mental health objectives, including addressing depression and stress-related disorders.

Physical activity & Sports are risk factors for major diseases

An understanding of the most prevalent diseases and associated risk factors is crucial to conceptualize the role of sport in health prevention and promotion. In developing countries, sport is widely used as a tool to educate individuals and communities on the risk factors associated with HIV/AIDS. Whilst

HIV/AIDS and other communicable diseases continue to affect millions of people around the world, there is a significant increase in the global burden of non-communicable diseases related to lifestyle changes in physical inactivity, unhealthy diets and tobacco use.

Cardiovascular diseases

Cardiovascular diseases include coronary heart disease and stroke and are the leading causes of death globally. Causes of cardiovascular disease are unhealthy diets, physical inactivity and tobacco use. Physical activity reduces the risk of cardiovascular disease by improving glucose metabolism, reducing body fat and lowering blood pressure.

Diabetes

Diabetes is a disease which occurs when the body does not produce or properly use insulin and this may result in Type I or Type II diabetes. Diabetes may be prevented, or at least delayed, by weight loss, a healthy lifestyle, in particular, regular physical activity. Diet, drug therapy and physical activity are also major components of the treatment of diabetes.

Obesity

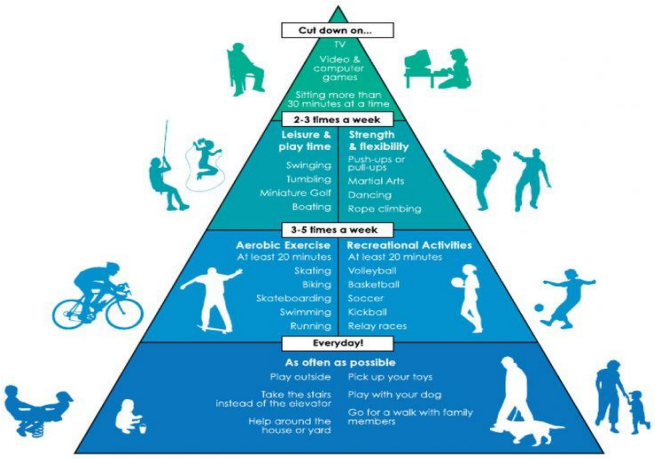
Obesity is an abnormal accumulation of fat that may impair health and unlike other diseases, social and environmental factors play a significant role in defining obesity. The incidence of obesity is a growing concern internationally with an estimated 400 million obese people in 2005. The global rise in the incidence of obesity is related to a shift in diet and decreased physical activity levels.

Cancer

Cancer is not a single disease with a single type of treatment and in fact, there are over 200 types of cancer involving abnormal growth of cells in different parts of the body. It has been estimated that 40% of all cancers may be prevented by a healthy diet, physical activity and no tobacco use.

Mental health

One in four patients visiting a health service has at least one mental, neurological or behavioural disorder (such as depression, anxiety or mood disorders) that may not be diagnosed or treated. There is evidence to suggest that physical activity can reduce the symptoms of depression and can also be help to ameliorate mental well-being through improved mood and self-perception.



Physical fitness and wellness

Physical fitness covers organic fitness as an individual. The main components of physical fitness are speed, strength, endurance, flexibility, Agility, cardiovascular fitness and co-coordinative ability. The most important aim of sports exercise is to improve and maintain the physical fitness and wellness of

the human being, exercise is an essential element in the achievement and maintance of physical fitness and wellness of human being. The scientific opinion today is that exercise is essential for the individual should be done for a specific duration regularly at least 4 to 6 days a week for maintaining physical fitness and wellness of human being.

Physical activity and psychosocial health

The WHO has estimated that "one in four patients visiting a health service has at least one mental, neurological or behavioural disorder, but most of these disorders are neither diagnosed nor treated". A number of studies have shown that exercise may play a therapeutic role in addressing a number of psychological disorders. Studies also show that exercise has a positive influence on depression. Physical self-worth and physical self-perception, including body image, has been linked to improved self-esteem. The evidence relating to health benefits of physical activity predominantly focuses on intra-personal factors such as physiological, cognitive and affective benefits, however, that does not exclude the social and inter-personal benefits of sport and physical activity which can also produce positive health effects in individuals and communities.

Physical activity and Sport as part of a healthy lifestyle

A number of factors influence the way in which sport and physical activity impacts on health in different populations. Sport and physical activity in itself may not directly lead to benefits but, in combination with other factors, can promote healthy lifestyles. There is evidence to suggest that changes in the environment can have a significant impact on opportunities for participation and in addition, the conditions under which the activity is taking place can heavily impact on health outcomes. Elements that may be determinants on health include nutrition, intensity and type of physical activity, appropriate footwear and clothing, climate, injury, stress levels and sleep patterns.

Sport and physical activity can make a substantial contribution to the well-being of people in developing countries. Exercise, physical activity and sport have long been used in the treatment and rehabilitation of communicable and non-communicable diseases. Physical activity for individuals is a strong means for the prevention of diseases and for nations is a cost-effective method to improve public health across populations.

Healthy development in children and young people through Physical activity and sports

Physical education and sport have an educational impact. Changes can be seen in (i) motor skills development and performance and (ii) educational potential. This shows the positive relationship between being involved in physical activities and psychosocial development.

Sport and physical education is fundamental to the early development of children and youth and the skills learned during play, physical education and sport contribute to the holistic development of young people. Through participation in sport and physical education, young people learn about the importance of key values such as:

- Honesty
- Teamwork
- Fair play
- Respect for themselves and others
- Adherence to rules

It also provides a forum for young people to learn how to deal with competition and how to cope with both winning and losing. These learning aspects highlight the impact of physical education and sport on a child's social and moral development in addition to physical skills and abilities. In terms of physical and health aspects of child and youth development, there is an overwhelming amount of evidence that focuses on the (mostly positive) effects of sport and exercise on physical health, growth and development.

Policy developments

International policies have influenced the delivery of physical education and sport across the world. While these policies may not always turn into action, they have helped national-level policy to develop in many parts of the world.

In 1959, the Declaration on the Rights of the Child was one of the first international instruments linking physical activity and education for children stating that "the child shall have full opportunity for play and recreation, which should be directed to the same purposes as education." UNESCO, the United Nations Educational, Scientific and Cultural Organisation, the UN's lead agency for physical education and sport, introduced the first landmark policy related to physical education in 1978. Titled, the International Charter of Physical Education and Sport introduced by UNESCO in 1978, it declares that "every human being has a fundamental right of access to physical education and sport, which are essential for the full development of his personality." A serious decline in the presence of physical education during the 1990's led to the development of two World Summits on Physical Education. These initiatives highlight the level of international policy interest, awareness of governments around the world and subsequent calls for action to promote and develop physical education world-wide.

Finding and Discussion of the study

Regular physical activity helps the child develop in a range of ways. Not only does it help their physical health, it also helps improve brain function and child's emotional wellbeing. Regular physical activity helps develop the child's movement skills. It also, helps bones become stronger and builds a healthy heart and stronger muscles. Physical activity also helps the child keep a healthy body weight. Moderate intensity exercise can even help to relieve some chronic (long-term) pain conditions by maintaining physical function and decreasing fatigue. Aside from providing general physical benefits, regular activity can also help ease symptoms of premenstrual syndrome in girls. This is because moderate exercise helps the body produce hormones called endorphins. These are natural painkillers

that can ease abdominal and back pain as well as improve mood. While it may not seem obvious, physical activity plays an important role in developing the brain and supporting essential mental functions. Research shows that regular moderate intensity exercise can increase the size of the hippocampus, an area of the brain involved with learning and memory. Exercise also helps release growth factors, chemicals in the brain that affect the growth and survival of new brain cells as well as blood vessels in the area. Exercise leads to improved motor skills (such as hand-eye co-ordination), better thinking and problem-solving, stronger attention skills and improved learning. Not surprisingly, these all combine to benefit school performance. In fact, even the simple act of playing outside with friends, setting non-academic goals and seeing progress can help the brain refocus when it comes time for school work.

Conclusion

Sport and physical education is stressed as being an essential part of life, which has a huge impact on both people's fitness levels and health. It plays a big part in helping to prevent chronic diseases such as heart disease, hypertension and diabetes in adulthood, which is why it's important for young people to understand the benefits. "People who are physically active reduce their risk of developing stroke and type 2 diabetes by up to 50% and the risk of premature death by about 20-30%". Not only does exercise have an effect on physical health but also improves physiological wellbeing as it can relieve stress and anxiety, help with personal development and also improve self esteem and confidence.

There is an overwhelming amount of scientific evidence on the positive effects of sport and physical activity as part of a healthy lifestyle. The positive, direct effects of engaging in regular physical activity are particularly apparent in the prevention of several chronic diseases, including: cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis. The Report from the United Nations Inter-Agency Task Force on Sport for Development and Peace states that young people can benefit from physical activity as it contributes to developing healthy bones, efficient heart and lung function as well as improved motor skills and cognitive function. Physical activity can help to prevent hip fractures among women and reduce the effects of osteoporosis. Remaining physically active can enhance functional capacity among older people, and can help to maintain quality of life and independence.

Physical education and sport also build health activity habits that encourage life-long participation in physical activity. This extends the impact of physical education beyond the schoolyard and highlights the potential impact of physical education on public health. To achieve broader goals in education and development, sports programmes must focus on the development of the individual and not only on the development of technical sports skills. While the physical benefits of participation in sport are well known and supported by large volumes of empirical evidence, sport and physical activity can also have positive benefits on education.

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Effects of Physical Exercise on Lower Body Strength, Balance and Reducing Risk of Falls of Older People

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Abstract
The main aim of this study was to investigate the effects of physical exercises on lower body strength, balance and reducing risk of falls of community-dwelling older people in order to suggest an effective intervention for fall prevention for this population. Participants were divided into intervention and control groups. Intervention group followed exercise program in twelve weeks whereas control group still remain daily activities and did not participate in any new exercice program. The lower body strength and balance of research groups were evaluated by Chair stand test, 8-foot up and go test, Stand on one leg with eyes open and eyes closed tests. After twelve-week intervention, participants in intervention group obtained better results in all tests calculated by t-test ($p<.05$), making a significant improvement in lower body strength and balance which may reduce the risk of falls. It can be suggested that the exercise program was effective in improving lower body strength, balance and reducing risk of falls of older people. **Keywords:** Physical exercices, Strength, Balance, Risk of falls.

Introduction
With the increase in the elderly population, the fractures associated with falls in the elderly are becoming a major social problem. Falling is the sixth leading cause of death among the elderly (Tinetti, Richman, & Powell, 1990). Musculoskeletal diseases and visual defects were common medical problems responsible for falls. Falls are a dangerous matter for the elderly. However, most of them are preventable. Numerous factors, both intrinsic and extrinsic factors, can cause falls in the elderly and lead to injury. Older persons, often with multiple medical problems, move through their daily routine exposed to many environmental risk factors such as grass, curbs, steps, slippery surfaces and more. Among the intrinsic risk factors that the elderly face are changes in vision and hearing, use of medications, and a declining strength in bones and muscles. As the number of risk factors present increases, so does the risk for falls. Falls are a major cause of dependence in older age and can result in long term disability, loss of mobility, reduced quality of life and even death (Campbell et al., 1990). Falling in older age greatly increases the risk of being admitted to a residential aged care facility and falls account for approximately 18% of emergency hospital admissions by older people (Bell, Talbot-Stern, & Hennessy, 2000). Muscle mass and function are important for stability and correct balance. Falls and injuries are among the top geriatric issues because falls are often devasting and costly (Gillespie et al., 2012) and the rate of falls and severity of the resulting complication increases with age.

Purpose of this study was to investigate the effects of physical exercises on lower body strength, balance and reducing risk of falls of community-dwelling older people in order to suggest an effective intervention for fall prevention for this population.

Materials and methods - Design
This is a pre and post study. Two hundred and fifty subjects were asked to take part in the first survey for the concernings of falls. Fifty one subjects were recruited to be on the intervention. Subjects were randomly divided into two groups: Intervention and Control groups. Subjects aged seventy and older. They gave their written informed consent to participation in the study after the experimental procedures had been explained. Intervention group included 26 subjects, were conducted to practice

selected exercises in three month. Control group included 25 subjects, were informed not to do any exercise program, however, still maintain daily activities as usual. Inclusion criteria included participants age 70 and older. All subjects are able to do exercises under instructor' instruction. Subjects were excluded if they had neurological impairments, severe cardiovascular diseases, persistent joint pain, or musculoskeletal impairment; required assistance from another person or a device during ambulation, or severe vision problems.

Intervention protocol

Subjects in intervention group were instructed to do exercises in 12 weeks (including training at center and at home). Subjects were also instructed to do exercises two times a week at the citizen centers for the first two weeks. After that the individuals performed the exercises at home by themselves three times a week for ten weeks. All one-hour sessions consisted of 10 minutes of warm-up and stretching, 40 minutes of main exercise, and 10 minutes of cool down.

Measurement of lower body strength and balance

Chair stand test for assessing low body strength: Participant sit in the middle of the chair with back straight, feet flat on the floor, arms crossed at the wrists and held against the chest. On the signal "go", pariticipant rises to a full stand and returns to fully seated position in 30 seconds as described in (Rikli & Jones, 2001). *8-foot up and go* for assessing agility and balance: Participant sit in the middle of the chair with back straight, feet flat on the floor, and on the thighs. The torso slightly leaning forward. On the signal "go" the participant gets up from the chair, walks as quicky as possible around either side of the cone and sits back down in the chair. The distance is 8 feet (2.44cm) as described in (Rikli & Jones, 2001). *Romeberg test* for assessing static and dynamic balance includes stand on one foot with open eyes and stand on one foot with open closed, as described in (Khasnis & Gokula, 2003).

Statistical analysis

All analyses were conducted using SPSS version 19.0. An independent simple t-test was performed to analyze the differences between groups. Analysis of variance (ANOVA) was used to analyze the differences in test phases. A $p < .05$ was considered to be statistical significant.

Results - Characteristics of study samples

The intervention group has one more subject than that of control group. None of subjects dropped or resigned from this study. The average age of the two groups are equal. There are no significant differences for genders, chair stand, 8-foot up and go, stand on one leg with eyes open and stand on one leg with eyes closed beween two research groups. P-value > .05 proved the comparisions.

Table 1. Characteristics of reseach samples

Characteristics	***Intervention Group (n = 26)***	***Control Group (n = 25)***	***P***
Gender (Male/Female)	*6/10*	*6/19*	
Average age	*74.76 ± 2.84*	*74.99 ± 2.58*	*>.05*
Chair stand (time/30s)	*16.33 ± 2.76*	*16.35 ± 2.59*	*>.05*
8 foot up and go (s)	*6.95 ± .84*	*7.12 ± .63*	*>.05*
Stand on one leg with eyes open (s)	*15.02 ± 9.30*	*14.02 ± 11*	*>.05*
Stand on one leg with eyes closed (s)	*4.15 ± 3.00*	*4.30 ± 2.00*	*>.05*

- Selecting exercises for improving lower body strength and balance

Exercises were taken from NIA (National Institute of Aging, 2018). Before these exercises have been applied for intervention, we interviewed experts and lectures in physical fields in order to select which exercises could be most suited for this study. In addition, participants were asked to fill the interview form for selecting which exercises they most want to do. Also, some previous findings have applied

these some kinds of exercises for preventing falls (Carter, Kannus, & Khan, 2001; Clinical Excellence Commision, 2012; Land & Dinan, 2010). The results of selected exercise showed in table 2.

Table 2. Selected exercises for improving lower body strength and balance*

Exercises	Area of assessment
Chair Dip	Lower - body strength
Back leg raise	Lower - body strength
Side leg raise	Lower - body strength
Knee curl	Lower - body strength
Leg strengthtening	Lower - body strength
Chair stand	Lower - body strength
Step in place	Lower - body strength
Heel – to – toe walk	Agility and Balance
Balance walk	Agility and Balance
Stand on one foot with eyes open	Agility and Balance
Stand on one foot with eyes closed	Agility and Balance
Toe stand	Agility and Balance

** Taken from National Institute of Aging*

All selected exercises of assessing lower body strength, and balance are briefly describled and taken from NIA (National Institute of Aging, 2018).

Assessing the effectiveness of selected exercises for reducing the risk of fall of older people

After three months of intervention, the results of tests for lower body strength, balance are shown in table 3. These results indicated that after three months of exercises training, subjects in intervention group showed better results in lower body strength, balance than control group (between groups) and the subjects in intervention group showed significant differences within pre and post (within group). That was examined by tests: chair stand, 8-foot up go and standing on one leg with eyes open and eyes close tests with $p < .05$, respectively.

Table 3. Comparision of the results of tests between the two research groups

Test	*Phases*	*Intervention Group (n = 26)*	*Control Group (n = 25)*	*P value*
Chair-stand (time/30s)	*Pre*	*16.33 ± 2.76*	*16.35 ± 2.59*	*>.05*
	Post	*19.22 ± 3.65*	*16.51 ± 4.02*	*<.05*
	P	*<.05*	*>.05*	
8-foot up and go (s)	*Pre*	*6.95 ± .84*	*7.12 ± .63*	*>.05*
	Post	*6.11 ± .75*	*7.61 ± 1.31*	*<.05*
	P	*<.05*	*>.05*	
Standing on one leg with eyes open mean of 3 trials (s)	*Pre*	*15.02 ± 9.30*	*14.02 ± 11.55*	*>.05*
	Post	*19.50 ± 10.01*	*14.18 ± 10.21*	*<.05*
	P	*<.05*	*>.05*	
Standing on one leg with eyes closed mean of 3 trials (s)	*Pre*	*4.15 ± 3.00*	*4.30 ± 2.00*	*>.05*
	Post	*7.94 ± 4.04*	*4.45 ± 2.00*	*<.05*
	P	*<.05*	*>.05*	

Discussion and conclusion

In this study, the strength of lower body and balance of older people were assessed by training selected exercises. After three months of exercises training, lower body strength and balance of older people were significantly improved. Previous findings proved that strength and lower limbs strength, and time for reaction of muscles and balance might be improved with suitable exercises(Keller & Engelhardt, 2014). Furthermore, previous study has indicated that physical exercises may reduce falls for the elderly in community (Clemson et al., 2012). This result in also in accordance with the results of Cho, who conducted recreational exercises on the strength, flexibility, and balance of older-older elderly individuals (Cho, An, & Yoo, 2014) and Cho with study on exercise of dynamic stability under unstable conditions increase muscle strength and balance ability in the elderly (Cho & An, 2014), study of Hafström on exercise offer an efficient cost-effective way to improve balance control and confidence in the elderly and it is possible to enhance balance control and stability in relatively healthy community-dwelling elderly by regularly performing a few balance exercises (Hafström, Malmström, Terdèn, Fransson, & Magnusson, 2016).

This study revealed that regular exercises is beneficial for improving lower body strength and balance and that may help to reduce the risk of falls for community dweling older people. The participants from intervention group had better results in chair stand test, 8-foot up and go test, standing on one leg with eyes open and eyes closed tests. However, with small sample size, it may not be represented for large population, especially, for frail elderly or people who required assistance from another person or a device during ambulation, or severe vision problems and other concernings. The subjects of intervention group were instructed to do exercise only for the first two weeks then they did at home by themselves, this made it difficult to conduct the experiment perfectly and, in somehow, reliability decreased.

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Effect Of Contrast Training With Core Exercise Program On Serving Ability Among Volleyball Men Players

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Abstract:

The present study was undertaken to analyze the effect of Contrast training (CTG), core exercise programme (CEPG) and contrast training with core exercise programme group (CCTCEPG) on serving ability among volley ball players. The investigator has selected N=48 men inter collegiate level volleyball players at random from in around Guntur district of Andhra Pradesh .Their age ranged from 18-26 years. The subjects chosen for the study were divided into four equal groups n=12 and designated as experimental group 'A' experimental group 'B' experimental group 'C' and control group 'D'. CTG were given to group 'A' CEPG were given to group 'B' CTCEPG were given to group 'C' and the control group 'D' were restricted to participate in any activities. The trainings were given for a period of twelve weeks. The data were collected before and after the training. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels. The results of the study showed that CTG, CEPG and CCTCEPG of serving ability significantly improved than control group. CCTCEPG show better performance than CTG and CEPG.**Keywords:** – Contrast training - Core – Serving ability.

Introduction:

Contrast training refers performing two exercises in succession with vastly different loads. Contrast training mean two different load one heavy and another light explosive type exercises which takes the advantage of the post-activation potentiation (PAP) phenomenon example back squat rest box jump rest back squat rest box jump. Core exercise refers to exercises has effect on trunk and more specifically to the lumbo pelvic region of the body. The core muscles of the body are rectus abdominus, external obliques, internal obliques, transverse abdominis, quadrates lumborum, multifidus and erector spinate (Aditya 2017).

Volleyball skills and drills is divided into ten categories serving, receiving, setting, attacking, blocking, digging, playing offense, playing defense, transitioning and practicing. Easy serves mean services that allow opponents to pass the ball directly to the target, allowing the setter to set all possible options. Serving from different areas can help prevent an opposing passer from getting too comfortable. The float serve slides left or right, up or down because it hit without spin. The jump serve has spin on it which prevents air currents from acting upon its flight, hit very hard to come with great deal of speed, speed and accuracy are essential elements of successful jump serving (Kinda 2006).

Statement of the Problem: The purpose of the study was to investigate the "Effect of contrast training, core exercise program. Contrast training with core exercise program on serving ability among volleyball men players.

Hypothesis: It was hypothesis that there will be a significant improvement in serving ability after the twelve weeks of training in contrast training group, core exercise programme group, contrast training with core exercise programme group (CTCEPG) as compared with control group.

Methodology: The purpose of this study was to find out the effect of contrast training group (CTG), core exercise programme group (CEPG) and contrast training with core exercise programme group (CTCEPG) on serving ability among volleyball players. To achieve the purpose of study N=48 men inter collegiate volleyball players selected at random from in around Guntur district of Andhra Pradesh. Their age ranged from 18-26 years. The subjects chosen for study was divided into four groups and designated as experimental group 'A' experimental group 'B' experimental group 'C' and control group 'D'. CTG were given to group 'A' CEPG were given to group 'B' CCTCEPG were given to group 'C' and control group D. Each groups consisted of twelve volleyball players. Control group 'D' was restricted to participate in any of the training programme other than their regular activities. Training was given three days in a week for twelve weeks. The subject were tested on serving ability at the beginning (Pre-test) and at the end of the experimental period (Post-test). To measure the serving ability Rusell –Lange service test were used respectively because of their simplicity and availability of necessary facilities, instrument and equipment's. The analysis of data on serving ability data have been examine by ANCOVA in order to determine the differences if any among the group at pre and posttest.

Table – I:**Analysis of Covariance for serving ability on Pre Test and Post Test Data of Experimental and Control Groups (In Numbers)**

Tests	CTG	CEPG	CCTCEPG	CG	Source of variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pre Test Mean	26.66	27.25	28.00	27.08		11.16	3	3.72	0.33
					B	495.83	44	11.26	
SD	3.65	3.49	2.70	3.47	**W**				
Post Test Mean	32.00	32.41	38.75	26.33		927.41	3	309.13	15.53*
	3.56				**B**	875.83	44	19.09	
SD		2.64	6.75	3.77	**W**				
Adjusted Post Test Mean	32.40	32.41	38.22	26.45		823.74	3	274.58	
					B		43		18.67*
					W	632.40		14.70	

Significant level fixed at 0.05.

The table value for 0.05 level of significant with 3 & 44 and 3 & 43 degree of freedom are 2.82 and 2.82 respectively.

The above table-I shows that there is a significant difference in serving ability among the three groups such as constrast training group (CTG), core exercise programme group (CEPG), constrast training with core exercise programme group (CTCEPG). Since the calculated 'F' value required being significant at 0.05 level for 3, 44 d/f and 3, 43 are 2.82 and 2.82, but the calculated values of serving ability post and adjusted posttest 'F' values are 15.53 and 18.67 respectively. Which are higher than the tabulated value. Since the obtained 'F' ratio is found significant.

Table - II

The Scheffes Test for the Mean Differences Between Paired Mean of Groups on Serving ability

Mean Value				Mean Difference	C.I
CTG	CEPG	CCTCEPG	CG		
32.40	32.41	-	-	0.01	4.46
32.40	-	38.22	-	5.28*	
32.40	-	-	26.45	5.95*	
-	32.41	38.22	-	5.81*	
-	32.41	-	26.45	5.96*	
-	-	38.22	26.45	11.77*	

****Significant at 0.05 level of confidence***

The above table II shows that the adjusted post-test mean differences values between contrast training group (CTG) and control group (CG), core exercise programmegroup (CEPG) and control group (CG) and contrast training with core exercise programme group (CTCEPG) and control group (CG) were 5.95, 5.96 and 11.77 respectively on serving ability, which were greater than the required confidence interval value 4.46 at 0.05 level of confidence. It was concluded from the above table that the three experimental groups were found to be significant when compared with control group.

The graphical illustration of the pre-test, post-test and adjusted post-test mean values of the experimental groups and control group on serving ability were presented in figure 1.

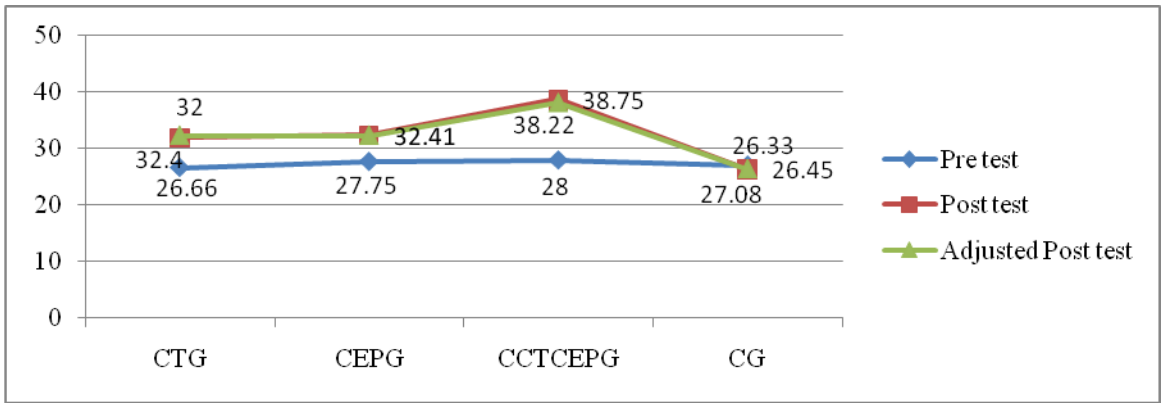

Figure 1: Graphical Illustration Showing the Pre-Test Post-Test and Adjusted Post-Test Mean Values on serving ability

Discussion on Hypothesis:

The hypothesis says that there may be significant difference between experimental group and control group on serving ability. The result of the study shows that there were significant differences exist between experimental group and control group. Hence the research hypothesis is accepted.

Discussion and Findings:

Serving ability

The result of the study reveals that after the twelve weeks of contrast training group (CTG), core exercise programme group (CEPG), contrast training with core exercise programme group (CTCEPG) result in significantly improved serving ability of volleyball players. The finding of the study are aligned with the following studies *Tomislav et al., (2016),* Sudhir et al., (2016), Bala Krishna (2016), Selvakumar & Palanisamy (2017) as an effective method to improve serving ability

Conclusions:

Serving ability was significantly improved by the contrast training group (CTG), core exercise programme group (CEPG) and contrast training with core exercise programme group (CTCEPG) when compared with control group. Further it show that combined training group CCTCEPG better performance than isolated groups CTG and CEPG.

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Influence Of Self Concept And Social Support On Track Events

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Introduction

Self concept is most influencing factor on individual behavior. It has close relationship with personal aspects of individuals, which determine the academic, sports, and other spheres of the individual, self concept is conceived as a system of attitude towards one self. As a result of experience of person forms attitudes that organizes into a self consistent system to defend against treats and attacks. Thus, it consists of all the precipitous of feeling, attitudes, aspirations, needs, values of one self, concerning one self. Thus self concept is the image of one self that is distinct from another. The concept of social support has been occupying a prominent place in the life's of the individuals. It speaks about enhancing qualities and the feelings of being cared for, loved and accepted. The pressures of such aid and support to play a vital role in the life of individuals.

Objectives :

To study the influence of self concept on sports performance of persons.

To investigate the influence of social support on sports performances.

Hypothesis :

There would be significant influence of self concept on sports performance. There would be significant psycho social factors between the two sample sub-groups of age and sex.

There is a significant influence of social of sports performance of sports performance.

The sample :

The study is conducted on the sample of 300 sports persons drawn randomly from Gulbarga division. The selected persons have participated at least at intercollegiate level. Attempts are made to categorized the sample in to different equal subgroups for the comparison. The factors like locus of control and aggression and taken into account to assess their role on the sport performance of persons belonging to the two groups of sex and age. The sample distribution is give as under :

Age	Men	Women	Total
15 – 20	75	75	150
21 and above	75	75	150
Total	**150**	**150**	**300**

Tools : Self concept and Social support

Results and Discussion

Table – 1Mean SD and t-values of sports performance in two categories (N=300)

Self concept		100 mtrs	200 mtrs	400 mtrs
Low	M	15.90	33.19	63.68
	SD	10.00	2.72	4.56
	N	148	148	148
High	M	13.63	30.74	39.18
	SD	1.01	2.27	3.89
	N	152	152	152
t-value		2.79**	8.45**	8.20**

** Significant at 0.01 level Table 1 demonstrates the Mean, SD and t-value of sports performance of 100, 200 and 400 meters events in two categories of self concept. It can be observed that the sports persons of high self concept have significantly lower mean (13.63) than those of low self concept (13.90) in 100 mtrs. event. The lower mean indicates the better performance and vise versa.

Table – 2Mean SD and t-values of sports performance in social support (N=300)

Social support		100 mtrs	200 mtrs	400 mtrs
Low	M	15.80	33.135	63612
	SD	9.75	2.750	4.597
	N	156	156	156
High	M	13.61	30.670	59.021
	SD	1.006	2.202	3.775
	N	144	144	144
t-value		2.79*	8.599*	9.504*

* Significant at 0.01 level

Table 2 gives Means, SD and t-values of sports performance in two categories of social support. It is observed that the 100 meters the high social support group has a mean 13.61 while the low social support group has score a mean 15.80. It is clear that the high social support group has taken significantly lesser time than that of low social support group which indicates that high social support sports persons have significantly higher performance than their low social support counterparts.

Conclusion :

The male players have significantly higher self concept than those of females.

There are significant sex differences in social support; males have out scored females on social support.

There is a significant difference between two samples of group on social support, seniors enjoyed significantly higher social support than the juniors.

There is a significant difference between two sub groups of self concept in sports performance high self concept respondents have performed significantly higher on all the three motor tests of 100 meters, 200 meters and 400 meters than those of low self concept.

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Impact Of Specific Drills On Skill Performance Among Footballers

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Abstract

This study was designed to investigate the impact of specific drills on skill performance among footballers. To achieve the purpose of the study 30 college level male football players were selected from Bharathiar University department and Sri RamalingaSowdambaigaicollege of Arts and Science, Coimbatore. The subjects was randomly assigned to two equal groups (n=15). Group- I underwent specific drill training and group - II was acted as control group (CG). The specific drill training was given to the experimental group for 3 days per week (Monday, Wednesday and Friday) for the period of eight weeks. The control group was not given any sort of training except their routine work. A pilot study was conducted to assess the initial capacity of the subjects in order to fix the load. The skill performance shooting accuracy were measured before and after training period. The data collected from the subjects was statistically analyzed with't' test to find out significant improvement if any at 0.05 level of confidence. The result of theshooting accuracy speculated significant improvement due to influence of specific drills with the limitations of (diet, climate, life style) status and previous training. *Key words:-Specific drills training, Shooting Accuracy.*

Introduction

Shooting is the most important factor in attacking play. Poor technique or players who are unwilling to shoot often lead to goal scoring opportunities being missed. Even in top level soccer, many shots pass high and wide or players can be seen to hesitate in front of goal. Thus, shooting practice should not only work on acquiring the correct techniques but on developing the right mental attitude. Shooting practice should always resemble a real match environment. Thus, full size goals should be used as well as shooting in all types of conditions. Some coaches may want to use video analysis of players whether in match or training to study their technique. Video based statistical studies in the past have also shown that a team who has ten shots on target very rarely loses, thus showing the need for accurate shooting. A comparative analysis of 100 goal scoring shots and 100 off target shots in top European Football showed distinct differences in mental and technical skills. Poor shooting often involved one or more weaknesses in each of these domains. When giving advice to players, coaches should be concise and simple in their explanations and give positive feedback (Jack Herrick 2007).

Methodology

To achieve the purpose of the study 30 women footballers were selected from Bharathiar University Department and Sri RamalingaSowdambaigai college of Arts and Science, Coimbatore. Their age ranged from 18 to 25 years and they were divided into two equal groups consists of 15 each. Group- I underwent specific drill training and Group - II acted as control group (CG). The training was given to the experimental group for 3 days per week (Monday, Wednesday and Friday) for the period of eight weeks. The control group was not given any sort of training except their routine work.

S.No	Variable	Test	Unit of Measures
1	Shooting accuracy	Mr. Christian , Shooting test	In Scores

Training Programme

The training programme was lasted for 45 minutes for session in a day, 3 days in a week for a period of 8 weeks. These 45 minutes included 10 minutes warm up, 25 minutes specific drill training and 10 minutes warm down. Every two weeks of training 5% of intensity of load was increased from 55% to 80% of work load. The volume of specific drill training is prescribed based on the number of sets and repetitions. The specific drill training is the length of the time each action is held for and the number action in total 3 day per weeks (Monday, Wednesday and Friday). The selected subjects underwent regular physical exercise on other 3 days (Tuesday, Thursday, and Saturday).The collected data on above said variables due to the impact of specific drill training was statistically analyzed with‘t’ test to find out the significant improvement between pre and posttest. In all cases the criterion for statistical significance was set at 0.05 level of confidence.

TABLE-I:COMPUTATIONOF‘t’-RATIO BETWEEN PRE AND POST TEST MEANS ON SHOOTING ACCURACYOF FOOTBALLERS AMONGEXPERIMENTAL GROUP

Groups	Test	Mean	Std. Deviation	Std.Error Mean	‘t’ ratio
Experimental Group	Pre	46.80	7.73	1.99	
	Post	50.93	7.20	1.86	13.48*

Significant level at (0.05)*

Table 1 reveals the reveals of ‘t’ ratio between pre-test and post test on shooting accuracy of footballers the mean values of pre and post test of experimental group were 46.80 and 50.93 respectively. Since the obtained ’t’ ratio 13.48*was greater than the required table value 2.145, it was found to be statistically significant at 0.05 level of confidence for degrees of freedom 1 and 14. The result clearly indicated the shooting accuracy of experimental group had been improved due to the influence of specific drills on shooting accuracy

TABLE-II:COMPUTATIONOF‘t’-RATIO BETWEEN PRE AND POST TEST MEANS ONSHOOTING ACCURACYOF FOOTBALLERS AMONG CONTROL GROUP

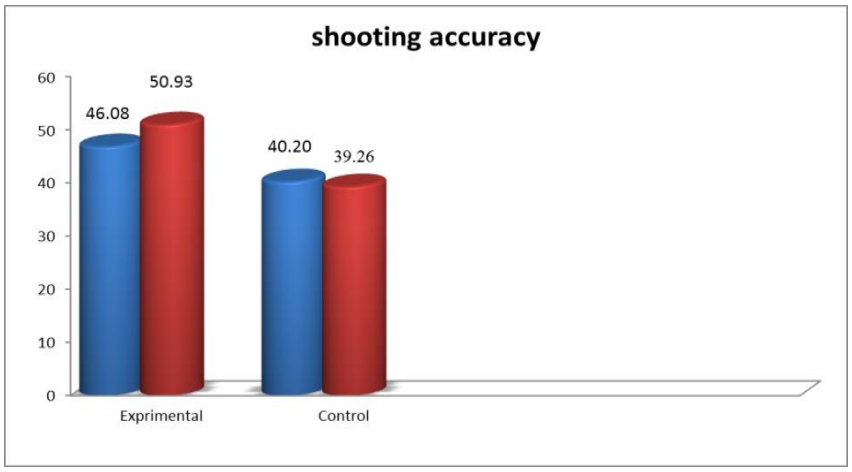
Group	Test	Mean	Std. Deviation	Std. Error Mean	‘t’ ratio
Control Group	Pre	40.20	2.11	0.54	
	Post	39.26	1.93	0.49	1.33*

Significant level at (0.05)*

Table II reveals the reveals of ‘t’ ratio between pre-test and post test on shooting accuracy of footballers the mean values of pre and post test of control group were 40.20 and 39.26 respectively. Since the obtained‘t’ ratio 1.33 was less than the required table value 2.145, it was found to be statistically insignificant at level of confidence degrees of freedom 1 and 14. The result clearly indicated the shooting accuracy has shownstatistically insignificant.

FIGURE-I:BAR DIAGRAM SHOWS THE MEAN VALUES OF PRE TEST AND

POST TEST ON SHOOTING ACCURACY OF EXPERIMENTAL AND CONTROL GROUP



Discussion And Findings

The present study experimented the impact of 8 weeks specific drills training significantly improved shooting accuracy among footballers. The results of this study indicated that specific drills training is more efficient to bring out desirable changes over shooting accuracy among footballers.J T Finnoff(2003)et.al.,suggest that our method of assessing kicking accuracy is a valid and reliable tool for analysing performance.Greg Wood (2010)et.al.,suggested that participants were more distracted by a moving goalkeeper than a stationary one and struggled to disengage from a moving goalkeeper under situations of high threat.Martina Navarro**(2013)et.al.,**

The findings were consistent with the response activation model that holds that aiming at a target can be biased toward salient visual non-targets.John van der Kamp (2006) et.al.,concluded that anticipating the goalkeeper's movements may degrade penalty kick performance, mainly due to insufficient time to modify the kicking action.

Conclusions Based on the result of the study it was concluded that the 8 weeks of specific drills training have been significantly improved shooting accuracy among footballers. From the findings it is postulated that specific drills training is suitable mode to bring out desirable changes over shooting accuracy among footballers.

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Evaluated the Risk of Anterior Cruciate Ligament Injuries by the Landing Error Scoring System for Sai Gon University Students,Viet Nam

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Abstract

The purposes of this study were to find out the risk of anterior cruciate ligament (ACL) for healthy students at Sai Gon University, the difference between genders, the differences among seven sports through the landing error scoring system (LESS) tool. 204 healthy students without any ACL or lower limb injuries, who divided in 7 sports (ie. football club, basketball, volleyball, table tennis, badminton, high jump and soccer) wererandomize chosen and accepted to perform the LESS. Independent t-test and one-way ANOVA were used to identify the differences. The results indicated that the LESS score of Sai Gon University students got "medium" level. Besides, males had a lower LESS score than female and all the comparison among seven sport groups had similar LESS scores except the difference between badminton and soccer in line with the differences between football club group with four groups (ie. basketball, volleyball, soccer and table tennis). In short, Sai Gon University students had the high-risk potential of ACL injury, while females had higher risk in ACL injuries than males and the heterogeneity in differences among seven sport courses might be derived from the level of training, poor landing techniques, muscle strength and the characteristics of participants. ***Keywords:*** *Anterior cruciate ligament, high-risk potential, the landing error scoring system, Sai Gon University students.*

Introduction

The anterior cruciate ligament (ACL) injuryis common problem in the knee joint due to the sport activities in individual sports which may come from thereason when a person suddenly stops running imidiately and turns to another direction or falls down with poor landing technique. Therefore, it took long time and high cost for treatment before back for training (Nawasreh & Logerstedt, 2018).Majewski et al. (2006) took a surveyfor more than 19.000 sport injuries in ten years showed that nearly 40% related with knee in line with more than 20%injuries about ACL. According to unofficial study, more than 25% people got ACL injury would not reach the maximum strength despite successful surgery and good recovery periods. Moreover, 65% of those who got ACL injury did not play football for 7 years(Brophy et al., 2012). Clearly, the need to evaluate the risk of ACL injury in order to predict or reduce the later severe lesions from this problem is an essentialrequirement during sport training in general.According to Padua et al. (2009) showed that the Landing Error Scoring System (LESS) was a clinical assessment tool that identified individuals at risk of non-contact ACL injury from the dynamic kinematic analysis of two sides jumps as frontal and sagittal plane. This was an easy-to-use, flexible and highly feasible tool, could be assessed on the training court (Read et al., 2017), based on a high level of reliability and reliability to assess the risk of lower limbs injuries (Hannah, 2016; Padua et al., 2011).

Participants

The volunteer and selected participants were 204healthy students without any lower limb injuries in last 3 months who attended 7 sport classes or football club modelat Sai Gon University. Subjects infootball club model had two training sessions per week (from 15h30 to 17h00 on Monday and Wednesday each week for males, in line with females on Tuesday and Thursday). Another classes, subjects had only one training session per week in 90 minutes each. They were informed of the test procedures before providing written consent form to participate. The appropriate Review Boards (Sai Gon University Board and Faculty Board) approved this study.

Procedures

Two weeks before, each participant answered a brief baseline questionaire about their personal information and sport related injury history and/or any painful in lower limb position. Any problems of participant showed in a brief will be excluded in this study. On the day of test, participants had 3 times of jump-landing task. They began the task by standing on high box (50x40x30cm), then took a jump off the box to a distance of 50% of their height away (jump forward) and down to a landing area on the ground. Then, they imidiately rebounded for a maximum vertical jump (after performing the pulse-brake movement with the entire foot).Two video cameras with 720p (1280x720 pixels) resolution at 120 frames per seconds (120 fps) were set up (as in Figure 1) to capture subject movements in 2 planes: frontal and sagittal (Padua et al., 2015). All videos were analyzed by Kinovea software (version 0.8.15) and were measured by 17 criteria of LESS score sheet (more detail in Table 1). A higher score individuals got, the poorer technique in jump-landing task they took.

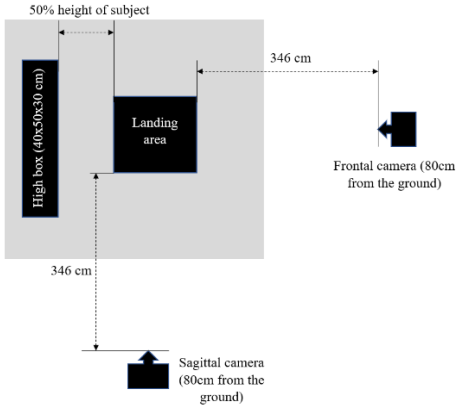

Figure 1. Implementation position during in a jump-landing task.

Table 1. Individual landing error scoring system items (Padua et al., 2015)

Landing Error Scoring System Item	Operational Definition of Error	Scoring
Knee flexion: initial contact	The knee is flexed less than 30° at initial contact.	0 = Absent 1 = Present
Hip flexion: initial contact	The thigh is in line with the trunk at initial contact.	0 = Absent 1 = Present
Trunk flexion: initial contact	The trunk is vertical or extended on the hips at initial contact.	0 = Absent 1 = Present
Ankle plantar flexion: initial contact	The foot lands heel to toe or with a flat foot at initial contact.	0 = Absent 1 = Present
Medial knee position: initial contact	The center of the patella is medial to the midfoot at initial contact.	0 = Absent 1 = Present
Lateral trunk flexion: initial contact	The midline of the trunk is flexed to the left or the right side of the body at initial contact.	0 = Absent 1 = Present
Stance width: wide	The feet are positioned greater than shoulder width apart (acromion processes) at initial contact.	0 = Absent 1 = Present
Stance width: narrow	The feet are positioned less than shoulder width apart (acromion processes) at initial contact.	0 = Absent 1 = Present
Foot position: external rotation	The foot is externally rotated more than 30° between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Foot position: internal rotation	The foot is internally rotated more than 30° between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Symmetric initial foot contact: initial contact	One foot lands before the other foot or 1 foot lands heel to toe and the other foot lands toe to heel.	0 = Absent 1 = Present
Knee-flexion displacement	The knee flexes less than 45° between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Hip-flexion displacement	The thigh does not flex more on the trunk between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Trunk-flexion displacement	The trunk does not flex more between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Medial-knee displacement	At the point of maximum medial knee position, the center of the patella is medial to the midfoot.	0 = Absent 1 = Present
Joint displacement	Soft: the participant demonstrates a large amount of trunk, hip, and knee displacement.	0 = Soft
	Average: the participant has some, but not a large amount of, trunk, hip, and knee displacement.	1 = Average
	Stiff: the participant goes through very little, if any, trunk, hip, and knee displacement.	2 = Stiff
Overall impression	Excellent: the participant displays a soft landing with no frontal-plane or transverse-plane motion.	0 = Excellent
	Average: all other landings.	1 = Average
	Poor: the participant displays large frontal-plane or transverse-plane motion, or the participant displays a stiff landing with some frontal-plane or transverse-plane motion.	2 = Poor

Results

The average age, height, and weight of 204 healthy students were 19.87±1.05 years (mean ± SD), 163.88±13.08 cm, and 56.07±10.09 kg respectively. In males, the average age, height, and weight of 102 respondents were 19.81±1.08 years, 168.71±16.44 cm, and 62.33±9.28 kg respectively. In female, the average age, height, and weight of 102 respondents were 19.93±1.01 years, 159.06±5.19 cm, and 49.81±6.31 kg respectively (more details in Table 2). Table 3 showed that the average LESS scores of students (n=204) was 5.66±1.82 (points). Besides, Table 4 indicated that there was a significant difference in LESS scores between males (4.83±1.54 points) and females (6.48±1.7 points, t=-7.237, p=.000<.05). Moreover, Table 5 showed that at least one pair among sport courses have significant differences in LESS scores with F(6,197)=1.983, p=.07.

Table 2. Subject's characteristics

	All subjects (n=204)	Males (n=102)	Females (n=102)
Age (years)	19.87±1.05	19.81±1.08	19.93±1.01
Height (cm)	163.88±13.08	168.71±16.44	159.06±5.19
Weight (kg)	56.07±10.09	62.33±9.28	49.81±6.31

Table 3. Mean values of Sai Gon University students LESS scores

LESS scores (n=204)	
$\overline{x}$ ± SD	5.66±1.82

Discussions

Finding out the risk of ACL for healthy students at Sai Gon University, the result in this study indicated that they got “moderate” level as the classification into 4 quartiles which representing “excellent” when LESS score≤4, “good” from 4 to 5, “moderate” from 5 to 6, and “poor” when LESS score>6 point (Padua et al. 2009). Males students had “good” level while females’ students reached “poor” level. Therefore, it can be said that the risk of non-contact ACL in males is low but there is a high potential risk in this type of injury in females. Besides, there is a different distribution into 4 quartiles between genders (more details in Figure 2).

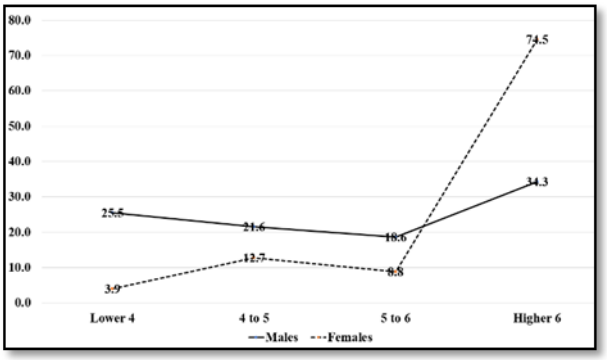

Figure 2. Classification of LESS scores in genders (described in percentage)

Males had a percentage LESS score divided rather equally into 4 quartiles although the poor level reach the highest one (~34%). The female percentage LESS score focus mostly in “poor” level (~75%) while the “excelent” level only got 4%. These may be answered by the characteristics of the participants in this study which reflect in the level of training and gender psychological differences. Although the authors analyzed the technique of LESS procedures before testing day, visually described and motivated them to perform the good jump-landing posture but there were many students (especially females) due to their habit movements and psychological fear, so they still have not performed well movements such as take-off, damping action, landing teachnique such as the knee did not flex more than 45^0, the thigh did not flex more on the trunk and so on when landing. They were amateur in sport, took much time in daily life for studying and working. Although it is difficult to make a direct comparison, the difference in concentration of LESS score between genders in students at Sai Gon University can be explained by the difference in level of training (participants were athletes in Padua et al., 2015), currently practicing a sport for at least 3 sessions per week (Sara, 2012; Sangjan et al., 2017), in the military academy (Padua et al. 2011), younger ages from 8-14 years old (Smith et al., 2012) as opposed to amateur participant with many categories (i.e. 1 hour for training per week as in soccer, basketball courses, 3 times per week as in badminton course, everyday training as in football club) in this study.

According to Padua et al. (2015) noted that the LESS is a field assessment tool for identifying the errors from a jump-landing task which could predict individuals at high-risk in ACL injury. In our study, individuals who got high LESS score had the problems not only in ACL but also in tissue pain, ankle problems, thigh pain, and so on. We screened 204 participants and identified only 2 subsequent ACL injuries in 6 cases from the feedback of students who got the problem at the knee position. Besides, our study took not only 6 cases in knee injuries, more than 40 students also had a "poor” level of LESS score answered that they got the lower limb problems when being training. Therfore, we supposed that LESS was a good field assessment tool to predict for lower limb problems, include ACL injury. Our finding was supported from many former studies (Smith et al., 2012; Hannah, 2016; Sangjan et al., 2017) because the components of low LESS score in participants was dependent on the decreased flexion in the hip and knee, the increased anterior tibal shear force and increased valgus and

internal rotation moments (Smith et al., 2012). We adopted the LESS tool to predict individuals at increased risk of lower limb injuries but it needed to consistently be assessed in jump-landing task and graded the LESS items.

Table 4. The difference LESS scores in genders

Index	Genders	$\bar{x}$ ±SD	t-value	df	p
LESS scores	Males	4.83±1.54	-7.237	202	.000
	Fenales	6.48±1.7			

Result of this study confirm our hypothesis that females got LESS scores higher than males (Table 4). It yielded a meaning that females had higher potential risk to get ACL injury than males. Several explanations are possible for this finding such as the genders difference in anatomical structure, the level of training, muscle strength which could affect the take-off and/or landing techniques in line with the psychology factor. Gokeler et al. (2014) showed that the fatigue could bring a higher LESS score. Muscular fatigue could reduce mobility, caused smaller knee flexion angle, increased valgus at initial contact, increased lateral trunk flexion, valgus displacement and decreased hip flexion angle, so on. Thus, the higher level of training (take more time before fatigue) could resolve the poor biomechanic movements which decreased the potential risk of lower limb injuries in general and ACL in particular. Besides, Myer et al. (2006) concluded that females could have a lack of proportion between muscular strength, flexibility and coordination within their lower extremilities. Therefore, it increased the loading in ACL during a jump-landing task, so that it increased the risk of non-contact ACL injury. Alentorn-Geli et al. (2009) noted that the weak of females' hamstring strength, which could decrease anterior shear forces and activated on ACL motion, would increase the higher potential risk in ACL and/or lower limb injuries. Moreover, we believe the reason of the higher LESS score in females could come from the weak psychology in amateur students. In this study, the psychology factor in different genders was underestimated which needs the further study in deep psychology aspect to identify the difference.

Table 5. The differences LESS scores among seven sport courses

Source	Sum of Squares	df	Mean Square	F	p
Between Groups	38.28	6	6.38	1.983	.07
Within Groups	633.7	197	3.217		

Another finding in this study was the differences among seven sport groups about the LESS score (more detail in Figure 3). The highest LESS score was recorded in soccer course while the lowest one in football club model. Theiss et al. (2014) indicated that elite athletes with higher physical abilities did not show the ability to perform jump-landing task better. However, participants in their study were among college-aged Intramural, Competitive Club, and National Collegiate Athletic Association (NCAA) Division I level athletes. In our study, the answer for the differences of students' LESS scores among sport courses at Sai Gon University may come from the level of training and the characteristics of participants. Football club took at least 3 times per week for training, most of participants in badminton course came from the badminton club who took at least 3 times per week for training, too. While students in soccer, volleyball, basketball and table tennis courses took only 1 time per week for studying as physical eduaction classes. Thus, they had a difference level of training at the beginning. Another issue should be mentioned in this study was that all participants had any injuries

about ACL and/or any lower limb problems must be excluded. Therefore, the explanation was that a person took more times to play sport may take a better jump-landing task. Thus, that one may take a lower potential risk in ACL injuries although it needs more further study with larger sample sizeto prove this answer.

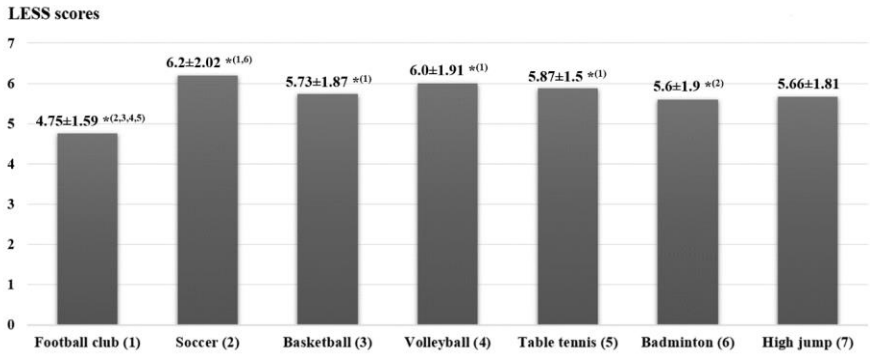

Figure 3. The difference LESS scores among sport courses

*Note: *(2,3,4,5): significant different with soccer, basketball, volleyball and table tennis.*

**(1,6): significant different with football club, badminton.*

**(1): significant different with football club.*

**(2): significant different with soccer.*

Conclusions

Sai Gon University students had the high-risk potential of ACL injury, while females had higher risk in ACL injuries than males and the heterogeneity in differences among seven sport courses might be derived from the difference of number training sessions, level of training, poor landing techniques, muscle strength and the characteristics of participant in this study.

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Comparative Study Of Agility And Explosive Power Among Long Jumpers And Sprinters Of Bhubaneshwar in Odisha

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Abstract:
.The Objective of this study was to find out the Agility And Explosive Strength Among Long Jumpers And Sprinters Of Bhubaneshwar District In Odisha.The sample for the Study consists of 30 Male sprinters and 30 Male Long Jumpers. The Standing Broad Jump Test were conducted to find out the explosive Power among sprinters and Long Jumpers and Agility Shutttle Run Conducted to find out the agility among sprinters and Long Jumpers.The Long Jumpers are having better Explosive Power compare to Sprinters and Sprinters are having better agility compare to the Long Jumpers. Speed and Agility is very important for Sprinters and Long Jumpers.Key Words: Agility, Explosive Power, Sprinters, Long Jumpers 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 take off point. Sprinting is running over a short distance in a limited period of time. There are three sprinting events which are currently held at the Summer Olympics and outdoor World Championships: the 100 metres, 200 metres, and 400 metres.

The long jump has been part of modern Olympic competition since the inception of the Games in 1896. In 1914, Dr. Harry Eaton S has recommended the "running broad jump" as a standardized track and field event for women.

Sprinting is running over a short distance in a limited period of time. It is used in many sports that incorporate running, typically as a way of quickly reaching a target or goal, or avoiding or catching an opponent. Human physiology dictates that a runner's near-top speed cannot be maintained for more than 30–35 seconds due to the depletion

of phosphocreatine stores in muscles, and perhaps secondarily to excessive metabolic acidosis as a result of anaerobic glycolysis.

Objectives of the Study:

The Objective of this study was to find out the Agility And Explosive Strength Among Long Jumpers And Sprinters Of Bhubaneshwar in Odisha.

Previous Studies:

Chaouachi, A., Ben Othman, A., Hammami, R., Drinkawater, E. J., & Behm, D. G. (2013), investigated the effective of plyometric training and combination of plyometric and balance training with children. Subjects were equally assigned to three groups plyometric (n-14) combination of balance and plyometric training (n-14), and a control group (n-12). Before and following an 8-weeks training period, tests assessed lower body strength (1 repetition maximum leg press), power (horizontal and vertical jumps, distance to triple hop, reactive strength, leg stiffness), running speed (10m and 30m sprint), static and dynamic balance (Standing Stork Test and Star Excursion Balance Test), and agility (shuttle run).

Methodology

The sample for the Study consists of 30 Male sprinters and 30 Male Long Jumpers. The Standing Broad Jump Test were conducted to find out the explosive Power among sprinters and Long Jumpers and Agility Shuttle Run Test Conducted to find out the agility among sprinters and Long Jumpers and Agility.

Standing Long Jump Test (Broad Jump)

The Standing long jump, also called the Broad Jump, is a common and easy to administer test of explosive leg power.

purpose: to measure the explosive power of the legs

equipment required: tape measure to measure distance jumped, non-slip floor for takeoff, and soft landing area preferred. Commercial Long Jump Landing Mats are also available. The take off line should be clearly marked.

procedure: The athlete stands behind a line marked on the ground with feet slightly apart. A two foot take-off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backwards. Three attempts are allowed.

scoring: The measurement is taken from take-off line to the nearest point of contact on the landing (back of the heels). Record the longest distance jumped, the best of three attempts..

Agility Shuttle Run Test

This test describes the procedure as used in the President's Challenge Fitness Awards. The variations listed below give other ways to also perform this test.

purpose: this is a test of speed and agility, which is important in many sports.

equipment required: wooden blocks, marker cones, measurement tape, stopwatch, non-slip surface.

procedure: This test requires the person to run back and forth between two parallel lines as fast as possible. Set up two lines of cones 30 feet apart or use line markings, and place two blocks of wood or a similar object behind one of the lines. Starting at the line opposite the blocks, on the signal "Ready? Go!" the participant runs to the other line, picks up a block and returns to place it behind the starting line, then returns to pick up the second block, then runs with it back across the line.

scoring: Two or more trails may be performed, and the quickest time is recorded. Results are recorded to the nearest tenth of a second.

Results and Discussion:

The Mean of sprinters is 2.64 and Mean of Long jumpers is 3.50 in Standing Broad Jump Test hence the Long Jumpers are having better Explosive Power compare to Sprinters. The Mean of Long Jumpers is 12.29 and Mean of Sprinters is 13.65 in Shuttle Run Agility Test hence the Long Jumpers Players are having better agility compare to the sprinter

Table No.1Showing the Mean of Shuttle Run of Long Jumpers and Sprinters

Shuttle Run	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Sprinters	30	13.65	.319	.058			
Long Jumpers	30	12.29	.167	.030	22.52	58	.000

In Table No.1 the Mean Scores of the Sprinters is 13.65, Standard Deviation is .319 and Standard Error .058 and Mean score of the Long Jumpers is 12.29, Standard Deviation is .167 and Standard Error is 0.30. The t values is 22.52.The Mean of Long Jumpers is 12.29 and Mean of Sprinters is 13.65 hence the Long Jumpers Players are having better agility compare to the sprinters.

Table No.2 showing the Mean of Standing Broad Jump Test of Long Jumpers and Sprinters

Standing Broad Jump	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Sprinters	30	2.64	.222	.040			
Long Jumpers	30	3.50	.257	.047	-16.80	58	.000

In Table No.2 the Mean Scores of the Sprinters is 2.64, Standard Deviation is .222 and Standard Error .040 and Mean score of the Long Jumpers is 3.50, Standard Deviation is .257 and Standard Error is 0.47 The t values is -16.80.The Mean of sprinters is 2.64 and Mean of Long jumpers is 3.50 hence the Long Jumpers are having better Explosive Strength compare to Sprinters.

Conclusions:

It is concluded that Sprinters are having the better agility compare than Long Jumpers.It is concluded that Long Jumpers are having the better explosive strength compare to Sprinters.

Recommendations:

1. It is recommended the agility training must be given to the sprinters and Long Jumpers.
2. It is recommended the explosive strength training must be given to the Sprinters and Long Jumpers
4. It is recommended the explosive strength training must be given to the Athletes
8.This Studies is helpful to Coaches, Trainers to plan the coaching Programme to improve the motor abilities among other sports and Games.

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The Effectiveness Of Whole Body Cryotherapy (Wbc) On Occupational Stress Among The Physical Education Coaches

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Abstract

The present study aims to determine the effectiveness of whole body cryotherapy on occupational stress among cricket, kabaddi and basketball coaches in Bangalore, Karnataka, India.**Procedure:** In this research, 30 subjects were selected by the available sampling method and randomly allocated to two groups of experimental group and controls. The experimental group received 8 sessions of whole body cryotherapy and the control group did not receive any intervention. The Osipow occupational stress questionnaire (OOSI) was used in order to collect the data. The data was analyzed using mixed repeated measure test.**Findings:** whole body cryotherapy significantly decreased the occupational stress score ($p < 0.01$).**Result:** The results demonstrated that there is a significant difference between the post-test and follow-up occupational stress scores in two groups of experimental and controls.**Key words:** whole body cryotherapy (WBC), physical education coaches, occupational stress

IntroductionOccupation is one of the main sources of stress in life. Occupational stress is the interaction between occupational factors and personality factors, so that the demands of the workplace and the related pressures are more than those that can be met by the person employed (Ross and Althumir, 2009; Miltonovich et al 2012). Although occupation is an important source of subsistence and acquiring social status, it can contribute to dissatisfaction and physical and psychological erosions (Ralimau et al., 1987).

The United Nations recognized occupational stress as the disease of the twentieth century, and shortly afterward, the World Health Organization declared it the most epidemic in the world (Khosravi, 2003). In a study, it has been determined that 75 to 90 percent of the illness of those referring to doctors is due to stress with the occupational stress being more serious than other stressors, such as familial and financial problems (Spector, 2008).The beneficial effects of cold as a therapeutic agent have been known for a long time (Collins, 2008). WBC involves repeatedly exposing participants to very cold air (-110 °C) while dressed in minimal clothing for a short period of time (Westerlund et al., 2009).

WBC is used to relieve stress conditions owing to the activation of neuroendocrine and metabolic axes regulating thermal homeostasis. However, only a few of reports published so far had considered this aspect. In one research observed that cortisol and dehydroepiandrosterone (DHEA) decreased after 7days from end of WBC. Cortisol, DHEA, and estradiol decreased, yet testosterone increased (Grasso et al., 2014).
It seems that WBC can be effective in the psychological factors. The best results were observed after WBC at 1, 24, and 48 h post-exercise. WBC enhanced psychological recovery within days after the exercise including decreased perception of muscular tiredness and pain, already after the first session of WBC (Hausswirth et al., 2011).
Martinez, in coaching, believes that coaching is different from that of other occupations, and what is expected of the coach is to bring decent and good humans to the community. This profession is a promising and difficult profession and requires different skills (Martinez, 2001). Nowadays, coaching as one of the most difficult jobs in the world requires high skills and knowledge for the development of skilled athletes (RamezaniNejad et al, 2010). A coaches' stress in the training of athletes can have unpleasant consequences, undermine the mentor's mentality and reduce his ability to transfer enthusiasm to the profession. The coach's stress can reduce the quality of his work in two basic ways: first, if the coach finds his career stressful for a long time, his job satisfaction may decrease and this will disappoint him, and secondarily, severe stress and Failure to believe in their professional capabilities may reduce the quality of engagement with athletes (Takahashi, 2017). Given the difficulty of coaching, it is not unnecessary to claim that physical education coaches are at risk from various health threats. Accordingly, the results of this study seek to improve applied knowledge in this context. Also, due to the necessity of the responsiveness of physical education coaches to the health and wellbeing of athletes, one can expect appropriate performance only if they are provided with favorable working conditions.Therefore, the low occupational stress in this area will be of great importance. So, given that the coaches are under stress due to their job necessity which affects the quality of their live and interpersonal interactions hence, the present study is conducted to determine the effectiveness of whole body cryotherapy treatment on occupational stress among physical education coaches

Methodology: The present study is done using control group with the pre-test, post-test and follow up (3 months) plan. The sample population includes the cricket, kabaddi and basketball coaches in Bangalore, Karnataka,India. The thirty available subjects were selected for the test and subsequently allocated to the control and experimental groups randomly (15 experimental, 15 controls). The inclusion criteria was the age range of 30-50 years old and the work experience of above 5 years. The participation in the test was voluntarily, with the subject's consent and the participants could leave the test whenever they wanted.

For the research implementation, 30 subjects (15 in each group) were opted. The experimental group received 8 sessions of whole body cryotherapy and the control group did not receive any intervention. The research tools applied on both groups used to collect the data:

The personal information questionnaire: This questionnaire is made by the researcher and assesses the personal information and the previously mentioned inclusion criteria.

Osipow occupational stress inventory (OOSI): In 1987, Osipow et al. produced a questionnaire that contained 60 questions and was graded from 1 to 5 based on the 5-degree Likert scale. The areas include the role workload, the role incompetence, the role range, responsibility and physical environment the correlation coefficient of the questionnaire is 0.9 which shows the correlation of the questions.The data were analyzed using SPSS-21 software and by the mixed repeated measure test. The between group independent variable includes receiving or not receiving whole body cryotherapy, the within group independent variable includes three time periods of pre-test, post-test and follow up and the dependent variable includes OOSI score of coaches. The significance level is 0.01.

Findings:

Out of 30 subjects, 13 were male and 17 were female. The mean and standard deviation (SD) of age of subjects in two groups of experimental and controls were found to be 37$\pm$3.23 and 35 $\pm$5.73 respectively.

Table 1: The measurement levels of occupational stress in three levels of pre-test, post-test and follow-up

Variable	Group	Mean	SD	Number of subjects
Pre-test occupational stress	Experimental	199.07	7.57	15
	Control	197.20	3.12	15
	Total	198.13	5.57	30
Post-test occupational stress	Experimental	139.93	2.65	15
	Control	193.87	3.15	15
	Total	166.90	27.57	30
Follow-up occupational stress	Experimental	155.93	4.59	15
	Control	193.33	6.04	15
	Total	174.63	19.73	30

The table 2 illustrates the within subject effect for assessment of occupational stress in three measurement levels of pre-test, post-test and follow up.

Table 2: The test of within-subject effect in three measurement level

Source of changes	Sum of squares	df	Mean square	F-value	Sig.	Effect size
Interaction of WBC with group	12322.15	2	6161.07	537.89	0.001	0.87
Error	641.42	56	11.45			

From the table 2 and with the emphasize on the obtained F-value from the effect of cryotherapy on occupational stress in three levels of measurement which is significant at α =0.01, it can be raised that there is a significant difference between occupational stress in three measurement levels with reference to the means in the table 1. Also according to the effect size = 0.87 from the last column of the above table, it can be stated that the effect size of whole body cryotherapy on occupational stress is high. The effect size in three levels of measurement with emphasize on case and control groups is illustrated in the diagram 1.

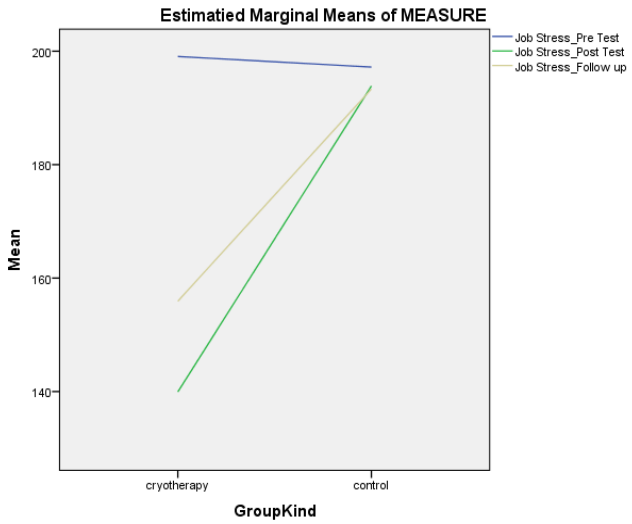

Figure 1: The effect size in three levels of measurement with emphasize on experimental and control groups

Table 3:Bonferroni Post Hoc Test in three measurement levels

Difference level / Significance Level	Pre-test	Post-test	Follow-up
Pre-test		31.23	23.50
Post-test	0.001		-7.73
Follow-up	0.001	0.001	

According to the table 3, with emphasize on the obtained values from the occupational stress mean differences in three levels of measurement (pre-test, post-test, follow up) it can be stated that there is a significant difference at the level of α = 0.01 between three levels and also between the post test and follow-up.

Table 4: The tests of within-subjects effect for the assessment of occupational stress in three levels with emphasize on the effect of group intervention based on the cognitive-behavioral therapy in two groups of case and control

Source of changes	**Sum of square**	**df**	**Mean of squares**	**F-value**	**Sig.**
Group (case and control)	20010.71	1	20010.71	417.24	0.001
Error	1342.84	28	47.95		

According to the table 4 and with the emphasize on the obtained F-value from the effect of whole body cryotherapy on the occupational stress and two groups of experimental and control which is significant at the level of α= 0.01 it can be raised that there is a significant difference in the occupational stress between the experimental and control groups which can be observed with reference to the means in the table 1.

Discussion and conclusion

The purpose of this study was to investigate the effectiveness of whole body cryotherapy on occupational stress among physical education coaches. The results from this study demonstrated that there is a significant difference between the post test and follow-up scores of occupational stress in two groups of experimental and controls.In other words, whole body cryotherapy results in a decrease in the occupational stress among physical education coaches.

Since psychological improvement can have a negative relationship with occupational stress, the reduction in occupational stress that occurred in this study can be achieved through psychological improvement.In the final conclusion, it can be said that the above studies indirectly show that the use of cryotherapy can be effective in reducing stress.Therefore, the present study directly addressed the effect of whole body cryotherapy on stress, and it was observed that whole body cryotherapy can reduce occupational stress.Therefore, it is recommended that, considering the effect of whole body cryotherapy on the occupational stress of physical education coaches, the authorities of sports organizations are more concerned about the role and importance of psychological capital and conducting the courses in accordance with intervention models in work environment for physical education coaches.Today, too much emphasis is placed on the value of good coaches. The performance of athletes comes to the maximum level when a well-trained coach takes the responsibility. Therefore, care should be taken regarding the health and reducing the occupational stress of the coaches. Thus, according to the findings of this study, it is recommended that sports psychologists use a whole body cryotherapy to assist physical education coaches.In the end, in the scope of research limitations, self-reported research tools can be pointed out as this approach is always under the influence of social utility and generalization of the findings must be done carefully.Therefore, it is recommended that future researchers use another tools to measure occupational stress to enhance the results.Also, according to the inclusion criteria of the research, other researchers are recommended to carry out this study on coaches with a higher age than the present research and with other occupations.

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