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A Comparative Analysis Of Flexibility And Fat Percentage Components Of Himachal Pradesh University's Basketball And Handball Players

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Abstract
The objective of the study was to compare the selected flexibility and fat percentage variables of the male basketball and handball players of Himachal Pradesh. 26 male basketball and handball players who had represented Himachal Pradesh University in the inter-university Championships were taken as subjects. To accomplish the objectives of the study six flexibility components namely shoulder flexibility, elbow flexibility, wrist flexibility, trunk flexibility, knee flexibility, ankle flexibility and fat percentage component were measured using steel stick, measuring tape, goniometer and portable sits and reach bench and Slaughter et al.'s (1988) population specific body fat percentage mathematical equation. It was hypothesised that there would be a significant difference in the flexibility and fat percentage components of university basketball and handball players. The collected data was analysed applying 't' test and the level of significance was set at 0.05 level of confidence. The results showed that the university team basketball and handball players had significant difference on the wrist flexibility characteristic only whereas both the groups were found to be having nearly identical shoulder, elbow, hip, knee and ankle flexibility features. Moreover, significant difference was found between the two groups on the fat percentage component. Hence, the directional hypothesis was partially rejected and partially accepted.
Key Words: Flexibility, Fat Percentage, University Team, Basketball and Handball.

Introduction

Fitness had always been a concern of man from pre-historic times. Harry et al. (1965) concluded that "People were not agreed as to what constitute physical fitness though it is important to everyone". The expression "Physically fit" is very much common (vague). *Percival and Taylor (1982)* concluded that every individual has different level of fitness. Which may change from time to time, it may also change from place to place and sometimes it may changes with work or situation also. Physical fitness is defined as the ability to carry out daily tasks with vigour and alertness, without undue fatigue, and with ample energy to enjoy leisure pursuits and to meet unforeseen emergencies. Physical fitness can best be understood in terms of their components, each of which have a distinctive feature and contribute an essential element to the individual. The most important measurable components of physical fitness are muscular strength, cardiovascular endurance, speed, flexibility and agility. Sports play an important role in the development of physical, mental and emotional health. Strength is the ability of a muscle to generate force against resistance.

Different sports place different degrees of demands on the athlete's physiological set-up and it has been scientifically proved that different sports or different events in same sports require the demand of different bodily characteristics.. Flexibility is needed to perform everyday activities with relative ease. Flexibility tends to deteriorate with age often due to a sedentary life style. Without adequate flexibility, daily activities may become more difficult to perform over time, we create body movements and postural habits that lead to reduce mobility of joints and compromised body position. Improved flexibility may enhance the performance in aerobic training and muscular conditioning as well as in sports. There is scientific evidence that the incidence of injury decreased when people include flexibility training in their routines due to enhanced ability to move.

Anthropometry provides scientific method and observation to help in finding out talent in sports. In same games, where players have to play at different positions, there too it has been found that the requirement of anthropometric characteristics is different. Role of anthropometry at the time of identification, selection and development of talent, can never be overlooked and that is why it is felt that this sports science plays marvellous role in enhancing the sports performance. Fat in the body is categorized as either "Essential" or "Storage". Essential fat which is necessary for normal physiologic functioning, in men about 3% of body fat is considered essential and in women, essential fat is higher about 12%. The storage fat is the primary energy reserve of the body and protects internal organs from injury. The range of total body fat (essential fat plus storage fat) associated with optimum health is 8% to 24% in male and 21% 35% in females (Gallagher et al. 2000), although professional and elite athletes have body fats much lower than those of average person.
Considering, all above factors researcher undertook the above titled study to unearth the relevant facts w.r.t. basketball and handball players of Himachal Pradesh.

Methodology

For the present study, investigator adopted selective sampling procedure. A sample of 26 males comprising of 12 basketball and 14 handball players who represented the Himachal Pradesh University in the inter-university basketball and handball championships during the academic session 2013-14 selected for the study.
Prior to the collection of data, the researcher assembled all the subjects in the hassle free place within the premises of the institution where the handball and basketball championships were held. The investigator then, explained them about the various flexibility and skinfold measurements to be recorded from them and their purpose. Importantly, after proper explanation, researcher also gave the practical demonstration of various measurements before the subjects. Questions on the parts of the subject were allowed and their doubts and apprehensions were cleared. Among the selected six flexibility components four components namely; elbow flexibility, wrist flexibility, knee flexibility and ankle flexibility were measured using goniometer while shoulder flexibility was measured using steel stick and measuring tape whereas trunk flexibility was measured by administering portable sits and reach test. Moreover, body fat percentage was calculated using Slaughter et al.'s (1988) population specific body fat percentage formula {% Body fat = 0.783 (TS + SS) + 1.7} applying measured skinfold values. Where, TS = Triceps skinfold in mm and SS = Subscapular skinfold in mm. Statistical tools mean, standard deviation and t-test were used to analyse the data statistically. The level of significance was set at 0.05 level of confidence.

Results and Discussion

Table no.1 and 2 present the obtained mean values, standard deviations, mean difference, degrees of freedom, t-value and its level of significance w.r.t. selected flexibility and fat percentage components of Himachal Pradesh University's basketball and handball team players.

Table-1:Comparison of Flexibility Components of Himachal Pradesh University's Basketball and Handball Team Players

Sr. No.	Variables	Groups	N	Mean	SD	MD	df	't' Value
1.	Shoulder flexibility	B.B. U.T.	12	8.133	.9287	.017	24	.045
		H.B. U.T.	14	8.150	.9701			
2.	Elbow flexibility	B.B. U.T.	12	118.67	23.922	.88	24	.117
		H.B. U.T.	14	117.79	11.281			
3.	Wrist flexibility	B.B. U.T.	12	62.42	10.808	16.99	24	3.543*
		H.B. U.T.	14	45.43	13.625			
4.	Hip flexibility	B.B. U.T.	12	7.01	1.009	.26	24	.526
		H.B. U.T.	14	7.27	1.520			
5.	Knee flexibility	B.B. U.T.	12	110.25	18.091	10.61	24	1.253
		H.B. U.T.	14	99.64	24.933			
6.	Ankle flexibility	B.B. U.T.	12	46.08	7.154	2.21	24	.828
		H.B. U.T.	14	48.29	6.281			

*Significant at 0.01 level of confidence

As per table no.1 the mean values of shoulder flexibility of Himachal Pradesh University's basketball and handball team players are 8.133 and 8.150 and mean difference is .017. The standard deviation for the basketball and handball players came out to be .9287 and .9701. The obtained "t" value at 24 df is .045 which is lesser than the "t" table value at 0.05 level of significance. Hence, it is interpreted that the two groups have no significant difference.

Table no.1 shows the mean values of elbow flexibility of Himachal Pradesh University's basketball and handball team players to be 118.67 and 117.79 and mean difference as .88. The standard deviation for the basketball and handball players came out to be 23.922 and 11.281. The obtained "t" value at 24 df is .117 which is lesser than the "t" table value at 0.05 level of significance. Hence, it is interpreted that the two groups have no significant difference.

Table no.1 reveals that the mean values of wrist flexibility of Himachal Pradesh University's basketball and handball team players are 62.42 and 45.43 and mean difference is 16.99. The standard deviation for the basketball and handball players came out to be 10.808 and 13.625. The obtained "t" value at 24 df is 3.543 which is higher than the "t" table value at 0.01 level of significance. Hence, it is interpreted that the two groups have significant difference.

Table no.1 exhibits that the values of hip flexibility of Himachal Pradesh University's basketball and handball team players are 7.01 and 7.27 and mean difference is .26. The standard deviation for the basketball and handball players came out to be 1.009 and 1.520. The obtained "t" value at 24 df is .526 which is lesser than the "t" table value at 0.05 level of significance. Hence, it is interpreted that the two groups have no significant difference.

Table no.1 presents that the mean values of knee flexibility of Himachal Pradesh University's basketball and handball team players are 110.25 and 99.64 and mean difference is 10.61. The standard deviation for the basketball and handball players came out to be 18.091 and 24.933. The obtained "t" value at 24 df is 1.253 which is lesser than the "t" table value at 0.05 level of significance. Hence, it is interpreted that the two groups have no significant difference.

As per table no.1 the mean values of ankle flexibility of Himachal Pradesh University's basketball and handball team players are 46.08 and 48.29 and mean difference is 2.21. The standard deviation for the basketball and handball players came out to be 7.154 and 6.281. The obtained "t" value at 24 df is .828 which is lesser than the "t" table value at 0.05 level of significance. Hence, it is interpreted that the two groups have no significant difference.

These facts are further shown in the figure no.1 where the comparison of mean values of six flexibility variables namely: shoulder flexibility, elbow flexibility, wrist flexibility, hip flexibility, knee flexibility and ankle flexibility of Himachal Pradesh University's basketball and handball team players have been depicted graphically.

Figure-1

Comparison of Mean Scores of Flexibility Components of Himachal Pradesh University's Basketball and Handball Team Players

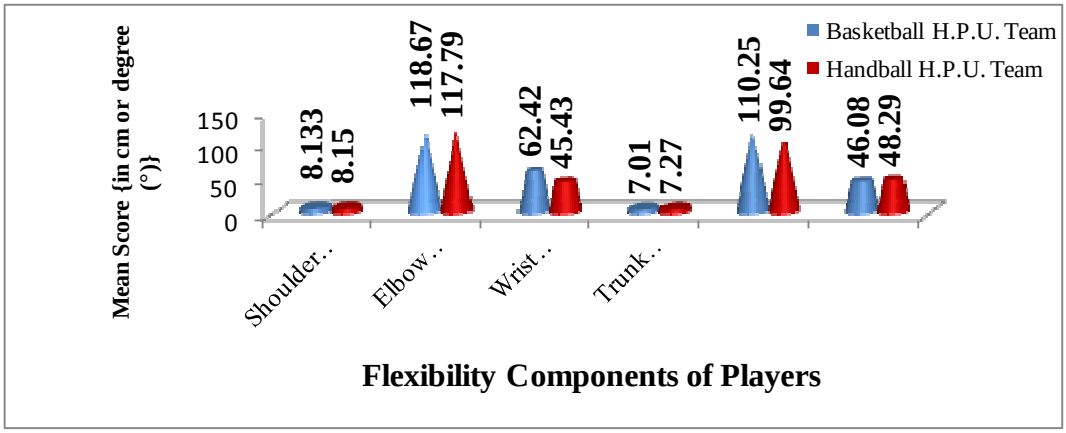


Table-2

Comparison of Fat Percentage Component of Himachal Pradesh University's Basketball and Handball Team Players

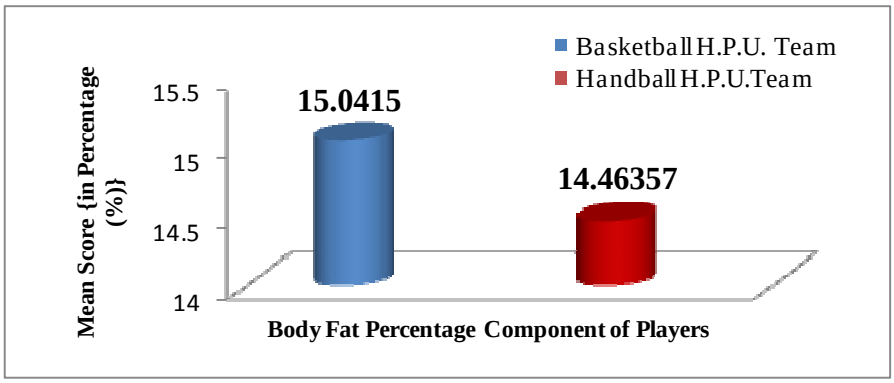
Sr. No.	Variable	Groups	N	Mean	SD	MD	df	't' Value
1.	Body fat percentage	B.B. U.T.	12	15.04150	6.253611	.57793	24	.276
		H.B.U.T.	14	14.46357	3.953530			

Not significant at 0.05 level of confidence

Table no. 2 presents the mean values of fat percentage of Himachal Pradesh University's basketball and handball team players to be 15.04150 and 14.46357 and mean difference as .57793. The standard deviation for the basketball and handball players came out to be 6.253611 and 3.953530. The obtained "t" value at 24 df is .276 which is lesser than the "t" table value at 0.05 level of significance. Hence, it is interpreted that the two groups have no significant difference.

These facts are further shown in the figure no. 2 where the comparison of mean values of fat percentage component of Himachal Pradesh University's basketball and handball team players have been depicted graphically.

Figure-2:Comparison of Mean Scores of Fat Percentage Component of Himachal Pradesh University's Basketball and Handball Team Players



Conclusion

There is a significant difference between the university team basketball and handball players on the basis of wrist flexibility characteristic only whereas both the groups are found to be having nearly identical shoulder, elbow, hip, knee and ankle flexibility features.

University team basketball and handball players differ significantly w.r.t fat percentage component.

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A Comparative Study Of Personality Dynamics Of Collegiate Cricket And Kho Kho Players.

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Abstract
The purpose of the study was to understand the personality dynamics of collegiate cricket and kho kho players The subjects selected for the study were 25 cricketers and 25 Kho players of Mangalore University inter colligate level representing kho kho and cricket . Age ranged from 18-25 years. The study will help under5stand the traits of the players and would help coaches mould their personality in context to the demand of the game. Eysenck's Personality Questionnaire (EPQ) was administered on the selected subjects as per the instructions recommended in the manual for assessment of personality.
Key Words :
Eysenck's personality questionnaire , kho kho players , cricket players ,extroversion, neurotic, ambivert , neurotic stable, emotionally stable , emotionally average , inclined to be neurotic , introvert .

Introduction
Research in personality in sport has received a great deal of attention. In recent the gear the study of personality of sportsmen an women, coaches and physical education teacher is most important for the success in sports competition. So personality and performance of the sportsman in various game an sports has definite relationship which effect the personality of a person has great importance in the performance of sports and women.

Personality and sport
Research into the relationship between personality and sport is principally educated towards answering two categories of questions.
Much of the work on 'Sport and Personality' relates to the comparison of athletes and non-athletes group of athletes who practice sport at different levels or participants in different types of sports. Eysenk (1997) identified the major components of personality as a small personality types. Each type is made up of a set of personality characteristics. For example, people who fit Eysenk's extroverted type are said to have such characteristics as sociability, liveliness and excitability. The three personality dimensions distinguished by Eysenk are: extraversion- introversion (E),neuroticism-stability (N) and physchotic-strength of the super-ego(P).These dimensions identified by means of factor-analytical techniques ,form what are termed second order factor that is to say that each of the named dimensions has its origin in a number of connected personality traits.
The present comparative study has been conducted to determine the personality trait between Mangalore Inter colligate Cricket and Kho players.
The area of study was confined to Mangalore inter colligate Cricket and Kho team players who have participated in inter colligate competitions..
Methodology- The procedure for collection of data necessary for the study has been presented in this chapter.
Subjects:---The subjects selected for the study were 25 cricketers and 25 Kho players of Mangalore University inter colligate level representing kho kho and cricket . Age ranged from 18-25 years.

Method of testing:
Eysenck's Personality Questionnaire (EPQ) was administered on the selected subjects as per the instructions recommended in the manual for assessment of personality.

Analysis and Interpretation of Data

Cricket: It is found that out of 25 cricket players, 5 player falls in the lie scale scored 5 and above. Therefore this one questionnaire was rejected.

TABLE-1
EXTROVERION

Extravert	Introvert	Ambivert	Total
1	0	19	20
5%	0%	95%	

Out of 20 players 5% of them are Extrovert. Extravert traits of the cricket players have good relationship with the game... 95% of players belong to Ambivert trait. Ambivert people may move along with the team who's nature does not have any impact on themselves.

TABLE 2
NEUROTICSM

neurotic	Emotionally stable	Emotionally average	Inclined to be neurotic	Inclined to be emotionally stable
7	1	8	3	1
35%	5%	40%	15%	5%

In the above table out of 20 cricket player 35% of them have Neurotic traits. These players are subject to very anxious or obsessive. They are restless and can be very easily aroused. They are also very moody persons. When one speaks of emotional arousal he may be referring one or a combination of the following "negative" condition fear, anger, anxiety, jealousy, embarrassment, disgust, boredom or rape. "Positive" states may include: Joy, elation, ecstasy, interest, happiness and love.

These players can improve their game to certain level but very difficult to reach the peak. These players get angry easily and cannot control their emotions.

40% of players have the average quality. These players are equally poised with neurotic and emotionally well-balanced quality. These players are hard working and restless. 5.23% of the player have emotionally stable trait which is much less in cricket .15% of players have the inclined to be neurotic trait and 5.23% of the players have inclined to be emotionally stable in cricket.

Kho-Kho

Kho is a team game played between 9 players. This game has a common team effort. Score as many points in the innings. Co-operation is the key to success. Along with endurance, agility the team members also must exhibit a good co-ordinated team work in game situations.

TABLE 3
EXTROVERSION

extroverts	Introverts	ambiverts	Total
0	1	18	19
0%	5.23%	94..73%	

The above table shows that out of 19 kho kho players 18 fall in ambivert category. Ambiverts are outgoing , mingling frequently with friends . In the above table 3 out of 19 players had the ambivert quality i.e 94.73% of ambiverts in kho kho team. Ambiverts are individualistic in their approach upto a certain extent and sometimes they freely mingle.

TABLE 4
NEUROTICISM

neurotic	Emotionally stable	Emotionally average	Inclined to be neurotic	Inclined to be emotionally stable	Total
6	0	3	4	6	19
31.57%	0%	15.78%	21.05%	31.57%	

The study also included to know the neurotic qualities of kho kho players, and how it is linked with the game. Neurotic traits are characterized by anxiety, restlessness and easily aroused. These kho kho players are easily agile in the field. Anxiety must be controlled in order to stop them from committing the fouls. Here the coaches and officials play an important role in improving the players.31.57% of the players show the Neurotic trait. This is one of the disadvantages of the team. These players when their team wins are over excited and cry at a lost game.Another15.78 % of the players belong to the average category. They are equally poised with neurotic and emotionally well balanced trait. They don't lose their emotions very easily. They are hard working and always strive for winning the match. 0% of the kho kho players are emotionally stable.
21.05%of the players in kho kho are inclined to be neurotic and 31.57% of the kho kho players are inclined to be emotionally stable.

Comparative Analysis
The comparative analysis was conducted among 19 kho kho and 20 cricket players.
TABLE 5
Comparative personality traits between cricket and kho kho players:

Particulars	Cricket	Kho kho
Total no of players	20	19
Extrovert	01 (5%)	00 (0%)
Introvert	00 (0%)	01 (5.26%)
Ambivert	19 (95%)	18 (94.73%)
Neuroticism	7 (35%)	6 (31.57%)
Inclined to be Neurotic	3 (15%)	4 (21.05%)
Emotionally Stable	1 (5.23%)	00 (0%)
Inclined to be Emotionally Stable	1 (5.23%)	6 (31.57%)
Emotionally Average	8 (40%)	3 (14.37%)

Conclusion
Personality trait plays a very important role in achieving high performance in sports. The present investigation was conducted to determine the role of personality traits of cricket and kho kho players at the intercollegiate levels in Mangalore. Eysenckys personality inventory scale was determined on the selected subjects.25 subjects from cricket and 25 subjects from kho kho were taken for the study. In cricket 5 were rejected since they fell in the lie scale and in kho kho 6 were rejected.
From the test conducted on extroversion and Neuroticism it I revealed that crickets and kho players are more Ambiverts in Extroversion and Neurotic and Average in Neuroticism. But when referring only the quality of Ambiverts in both cricket and kho, it is seen that the percentage of Ambivert is more in crickey (19) when compared to kho kho Ambiverts is (18)

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A Comparative study on Anthropometrical variables of Women sports person and non-sports person of Mangalore University

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Abstract:
The Current interest in anthropometric measurements on these areas, growth measurements body types and body composition, prediction of growth pattern and prediction of success in motor activities. Many anthropometric measures, such as female stature, produce a symmetrical, bell-shaped curve like and these measures are said to have a normal distribution. Sportsmen concentrate on the development of speed, strength, agility flexibility, endurance etc. as a part of preparation in their respective sports General motor abilities assist a sportsman in learning specific skills from a solid base over which he can develop.

Introduction

The world of games and sports has crossed many milestones, as a result of different achievements in general and their application in the field of sports in particular. Scientific investigation into performance of sportsman has been playing an increasingly importance role to attain excellence of performance in different sports. Physiological and Anthropometric measurement and motor fitness variable play a vital role in almost all games and sports. Sportsmen concentrate on the development of speed, strength, agility flexibility, endurance etc. as a part of preparation in their respective sports General motor abilities assist a sportsman in learning specific skills from a solid base over which he can develop excellence in the particular game he is involved.

Anthropometry

One of the fundamentals of this approach is the study of human measurements or anthropometry. Anthropometry plays an important role in deciding the particular built of the body with various measurements of the body segments.

Methodology

In the present study, selected the population from 20 Female sports person and non-sports person of Mangalore University TOOLS USED:1. Linear measurements were taken with the help of Anthropometric.2. A flexible tape was used to measure the circumferences 3. The skin-fold calliper was used to measure the skin-folds.
4. The weight of the subject was measured with the help of weighting machine.
VARIABLES: Age. Weight .Height .Leg Length .Thigh length. Lower leg length .Foot l
BODY CIRCUMFERENCES ; Shoulder Chest Abdomen

Analysis Of The Data

The minimum and maximum scores obtained and also the range of scores were calculated and presented in Table: 4.1 to 4.5. The complete data of sports person and non-sports person were arranged in a way that mean and standard deviation may be calculated and also the mean difference MD (m1 – m2) and the calculation regarding ‘t’–test. Each independent variable of anthropometric variables was tabulated. The tabulation was prepared for anthropometric variables separately.

Table ;1.1:**Comparison Of Mean Values Between Sports Person And Non-Sports Person Regarding Height, Total Leg Length, Thigh Length, Lower Leg Length, Foot Length And Foot Width**

SL.NO	VARIABLES	GROUP	NO	MEAN SCORES	S.D'S	T-VALUE
1	Height	Sports person	40	158	5.45797	1.22563
		Non-sports person		159.9	6.02538	
2	Leg Length	Sports person	40	94.6	3.95234	1.577331
		Non-sports person		96.35	4.715874	
3	Thigh length	Sports person	40	49.5	2.58538	0.994672
		Non-sports person		50.9	4.5294	
4	Lower leg length	Sports person	40	45.1	2.291862	1.321971
		Non-sports person		46.35	4.46359	
5	Foot length	Sports person	40	23.45	1.605090	-1.94757
		Non-sports person		22.475	1.49978	
6	Foot width	Sports person	40	9.15	0.9190	1.875771
		Non-sports person		9.65	0.82875	

**Significant at 0.05 level of significance
NS = Not significant
The Table: 4.2 represent the significance of mean difference of sports person and non-sports person regarding their height, total leg length, thigh length, lower leg length, foot length and foot width.

The mean values of sports person and non-sports person regarding height were 158 and 159.9 respectively. The calculated' value is 1.22563 which is significant at 0.05 level of significance. So there is a significant difference in height of sports person and non-sports person. The height of sports person is higher in comparison to height of non-sports person.
The mean values of sports person and non-sports person regarding total leg length were 94.6 and 96.35 respectively. The calculated' value is 1.577331 So there is a significant difference in leg length of sports person and non-sports person. There is significant difference in total leg length of sports person and non-sports person.
The mean values of sports person and non-sports person regarding thigh length were 49.5 and 50.9 respectively. The calculated' value is 0.994672 which is not significant at any level of significance. So there is no significant difference in thigh length of sports person and non-sports person.

The mean values of sports person and non-sports person regarding lower leg length were 45.1 and 46.35 respectively. The calculated' value is 1.321971 which is significant at 0.05 level of significance. So there is a significant difference in lower leg length of sports person non-sports person. The lower leg length of sports person is much higher in comparison to non-sports person.
The mean values of sports person and non-sports person players regarding foot length were 23.45 and 22.475 respectively. The calculated 't' value is -1.94757 which is significant at 0.05 level of significance. So there is a significant difference in foot length of sports person and non-sports person. The foot length of sports person is much higher in comparison to non-sports person.
The mean values of sports person and non-sports person regarding foot width were 9.15 and 9.65 respectively. The calculated' value is 1.875771 which is significant at 0.05 level of significance.
So there is a slight significant difference in foot width of sports person and non-sports person. The foot width of sports person is much higher in comparison to non-sports person.

Findings

It was found that there is a significant difference in weight of sports person and non-sports person. The weight of sports person is much higher in comparison to weight of non-sports person.
It was found that there is a significant difference in height of sports person and non-sports person. The height of non-sports person is much higher compared to height of sports person.
It was found that there is significant difference in total leg length of sports person and non-sports person. The total leg length of non-sports person is much higher compared to leg length of sports person.

Reference:

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A Sociological Study Of Current Trends In Sports Management

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Abstract:
The present paper has tried to correlate the sports management approach towards Indian sports activities. Sports management has been defined as a system of managing resources, manpower and activities for smooth conducting of sports events. Dharam Singh has rightly observed that "Management is essential in physical education because physical education like any other essentially activity curriculum, needs a carefully drawn set of principles as guides to its development. These principles help to manage activities and resources based on systematic lines. Deepak Jain has observed that "Any department that is to functioning adequately must have sound, well established administrative policies, or guiding rules, as a basis on which to operate. Sports management is not exception to this. Sports management must be based on sound policies and procedure. It is true that "Policies, unlike objectives, usually indicate the method of approach or means of procedure rather than the point to be gained. It is interesting to note that sports management requires policy, procedure as well as clear objectives. The planning requires short term, mid term and long term goals. It has been observed that "It is not enough to struggle along solving problems as they arise. Conditions may make it possible to go through the motions of conducting a department by this resort to lame expedients, but sound administration demands a positive, planned procedure rather than a floundering makeshift.

Introduction:
Physical education and sports are related to Indian society since bye gone ages. References of sports Of physical education and health care appear in Vedas as well as in epics like Ramayana and Mahabharata. Epics contained interesting information about wrestling and other physical activities Further it has been observed that even in the period of Puranas, interesting information is available on the development of sports and physical education. It has been pointed that "Lord Krishna had given lessons to Somnath regarding the art of boxing and it was further developed in the text Malla Puran." Even in the medieval period, sports activities were correlated with festivals such as Sankranti, Holi and Deepwali. Thus it seems sports and physical education was related to Indian society from ancient to medieval as swell as modern period. In the British period YMCA Physical Education college was established and there was beginning of systematic physical education on the western lines. Further Deepak Jain has observed that "in India Nalanda and Taxila were important seats of learning where physical education in Yoga and Martial arts was imparted." On this background it would be interesting to study how Indian society has developed its own sports management perspective in the historical course of time. The sports management in India has a legacy of rich tradition having deeply rooted in the ancient past. There is need to link this glorious past and challenging future in the process of development of sports culture in India. The present paper is an exploration in sociological perspective. In the next few pages an attempt has been made to present current trends in Indian sports world in nutshell.

Sports Of Management:
India has to develop its own sports culture based on its tradition and social settings. About sociology
Of sports it has been observed that "Sociology is like the other social sciences in its application of the
Scientific method to the study of human behavior. In order to understand collective social behavior of Indian people towards sports we have to adopt sociological perspective. It has been observed that "Socialization means the process by which individuals learn the culture and expectations of society so that they may function in it. It would be interesting how the process of sports socialization has been accelerated in India.
Further it is interesting that today there is large response to western games in India, such as Cricket and Hockey. But Indian games have been neglected on large scale. How this approach has been developed in

post independence period can be examined here. The sports objectives show that physical education must help to correct the system. It has been observed that "Physical education can help for the rectification of defects and deformities, if there are any. This study can help to overcome draw backs in Indian sports culture and will aim to rectify it. Changing attitudes and new interest have brought to light new facts base don sociology of sports. On this background it would be interesting to study barriers and remedies in developing sports culture in India.

Current Trends In Sports Culture:

Sports culture is a way of life or outlook of the society in a nation, which evolves in due course of time.

About culture it has been stated that "Culture is the system of values and meanings shared by a group or society There are following barriers in the development of sports culture in India.

(1) *Lack of constant policy:* Sports policy in India is often changing due to changes in this policy there is no continuity in action. The sports policies are often in darkness and they are uncertain.

(2) *Lack of discipline:* In India sports events are not successful due to lack of proper discipline. It has been observed that "such scientific discipline can provide distinctive perspective on sports Indian efforts have failed to bring discipline in sports authorities.

(3) *Lack of planning:* Management of big sports events require proper planning, but Indian efforts failed in organizing Commonwealth Games in 2011. About planning Deepak Jain has observed that "It may be necessary from time to time to modify or even replace established policies, but there will be little need of this if the supporting facts for each policy are at hand before it is adopted. India should develop advanced policies for planning its sports resources.

Suggestion Of Sports Culture In India:

(A) India requires a sound sports policy to improve middle tally on international level. If India has to become super power in 20-20, India should not neglect sports achievements. Jain Deepak has observed that all the components in sports authority should know the policies which can serve as guide.

(B) India requires stern discipline in its sports administration. Every effort should be made to streamline sports agencies and sports authorities must be sensitize about their responsibilities. Our system should just to people and just to educational institutions and just to youth sportsmen and it should refrain from making differences in sportsmen and must focus on excellence.

(C) India should prepare program of action and road map for future development in 20-20 to cross gold medal tally beyond 100. This can be possible if proper steps are undertaken in planned manner.

Current Study:

In India sports is marching towards developing Billion aspirations. One Dhoni, one Tendulkar cannot bring change in sports culture. We require many Limba rams, and many Usha to change profile of our athletes. At present there are three major trends prevailing in Indian sports culture. (i) We have become more stereotyped and we lack identity in different games. We have to create new faces for changing our attitude. There should not be any confusion in our sports policies. (ii) Our efforts are only related to limited span of activities and we do not have a continuous sports resource planning. (iii) Technology packages for bringing change in our traditional system. It is true that "The system should provide positive and creative environment By doing so we can involve both male and female equally in our sports culture. Woman in sports is neglected in India and requires special treatment. Female involvement in sports can bring a new change in the sports culture.

Conclusion:

Thus, in this paper the relationship between Indian society and sports culture has been examined in Sociological perspective. Sports Management in India can be improved if proper planning is made in a Systematic manner. A totally new outlook is required for bringing a new outlook in the field of sports. It would be interesting to study all these aspects in a new angle. Sports culture should be our mission and we can soften our efforts if we are able to achieve excellence both in Indian as well as foreign games. The study of current trends has brought forth new issues and new problems. Our entire efforts should be to develop proper manpower, proper policies and proper infrastructures to bring change in our present stereotyped system. Our sports environment can bring excellence if we follow findings based on this paper sincerely. Thus a new white paper new policy document is required to bring a total change in our sports culture, which can bring a new dawn of awakening in the future.

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Analysis Of Leg Power Among Handball And Volleyball Women Players

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Abstract:
Physical performance and personality qualities with the help of these factors the handballand volleyball players can excel in their performance, as well as these can be used as tools for the selections of players. The purpose of the study was to compare the Leg power of Kuvempu University intercollegiate Volleyball and Handball Women players. The study was conducted on the samples of 80 inter-collegiate women players of Kuvempu University,among which 40 were Volleyball players and 40 were Handball players. To test the leg power of the players' vertical and standing broad jump tests were conducted. To achieve the purpose of the study the data collected was treated with the statistical technique 't' test. The results showed that there is no significant difference between Handball and volleyball women players of Kuvempu University.
Keywords: Handball, Volleyball, Power, Vertical Jump, Standing broad jump
Introduction:Today sports are becoming professional; players are earning a lot through games and sports. Spo rts in recent times are mainly of acompetitive nature through their procreative values cannot be underestimated or denied. Despite the competitive attitude between the competitors, sports bring the different nations closer and establish brotherhood and friendship between the people of different countries. Sports now-a-days has changed with a lot of characteristics e.g. more scientific and mass oriented..A vertical jump or vertical leap is the act of raising one's center of gravity higher in the vertical plane solely with the use of one's own muscles it is a measure of how high an individual or athlete can elevate off the ground (jump) from a standstill. Standing broad jump is a two footed jump for distance where the athlete takes off from a standing position. Explosive power is the combination of strength and speed that means power .Leg Explosive Strength is called leg power; it is the maximum possible strength exerted by leg
muscle within a short time interval leg power is considered as a vital physical fitness component
for games and sports. Leg Power can be measured by field test like Standing Broad Jump, vertical jump etc. Physical performance and personality qualities with the help of these factors the handballand volleyball players can excel in their performance, as well as these can be used as tools for the selections of players

Methodology:
For this study80 women players were selected from Kuvempu University inter-collegiate tournament,among which 40 were Volleyball players and 40 were Handball women players. Players were tested with Vertical Jump and Standing Broad Jump tests to measure their leg power. In each test item three trials were given and best one considered as performance of each subject.
Statistical technique: To find out the difference between the subjects selected for this study collected data was analyzed by using 't' test statistical technique. The level of significance was set 0.05 level.
Findings of the study:. The data collected were statistically analyzed by using "t" test and results are presented in the following tables.

Table – 1:**Mean Value, Sd And 'T' Value of The Vertical Jump of Handball and Volleyball Women Players**

Sl. No.	Players	Sample size	Mean	Standard Deviation	't' value
1	Handball	40	0.29	0.74	1.46
2	Volleyball	40	0.32	0.85	

Significant at 0.05 level

The above table shows the Mean value, SD and't' value of Handball and Volleyball women players. In vertical jump the calculated' value 1.46 is lesser than the critical 't' value 1.68. So it is not significant at 0.05 level of significance. However, whenthe mean values are compared Volleyball women players have shown more mean value than Handball women players.

Table – 2:Showing the Mean value, SD and 't' value of broad jumpof Handball and Volleyball women players

Sl. No.	**Players**	**Sample size**	**Mean**	**Standard Deviation**	**'t' value**
1	Handball	40	1.52	0.25	1.57
2	Volleyball	40	1.61	0.26	

Significancelevel 0.05

The above table indicates the Mean value, SD and 't' value of Handball and Volleyball women players. In standing broad jump thecalculated 't' value 1.57 is lesser than the critical 't' value 1.68. So it is not significant at 0.05 level of significance. When mean values are compared Volleyball women players have shown more mean value than Handball women players.

Discussions on findings :

The present findings of the study showed that leg explosive power did not differs significantly between handball and volleyball women players. But mean values of Kuvempu University volleyball women players are more because Volleyball, as a power sport, demands high number of jumps for players to perform spikes and blocks, Nowadays players who are able to achieve greater height during performing spike and block.

Conclusions:

It is concluded that leg power plays a vital role in both game, however volleyball players showed greater leg power than handball players may be because of repeated jumping and blocking during the game.

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Physical Education: A Healthy Way to Develop Personality

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Abstract:
Physical Education and sports is one of the most important for the development of personality. "Sound mind in sound body" both are co-related if you are physical fit. Your mental health fit. Physical education develops all aspect of personality like health,mental, social etc. Forever, nowadays Government is careless for the Physical Education even in Primary and school level, Physical Education is neglected subject.
Keywords: Physical Education, Personality, Development

1. Introduction

Physical Education including games and sports plays a tremendous role in the development of our youth. It enables an individual to live a healthy life in an ever-changing world.Physical Education makes the children psychologically, physically and physiologically active. It helps in the development of character building, reduction of rowdiness, and serves on the basis of group unity and solidarity. It introduces team work, self discipline, sportsmanship, leadership and socialization among the youth. Regular physical activity provides numerous health and cognitive functioning. The surgeon general recommends daily participation in physical activity for taking maximum health benefits because inactivity has been found to be significantly related to coronary artery disease, obesity, hypertension and diabetes mellitus. It also helps the people to improve their physical fitness. Five basic components of fitness are important for good health: cardio-respiratory endurance, muscular strength, muscular endurance, flexibility in joints and body composition. It is clear from the literature that the development of an acceptable level of physical fitness helps to attain healthy personality and physiopsychological characteristics. Hence, a better healthful living is universally accepted as a goal of a physical education programme. Generally young boys and girls of colleges are expected to be academically brilliant, emotionally stable, physically strong and spiritually sound. We can achieve this requirement through the physical education. Physical Education has a vital role to play as an integral part of General Education. It aims at enabling an individual to line an enriched and abundant life in an ever changing world.Education Commission (1964-66) emphasized that physical education activities and sports contribute not only to physical fitness and health but also to physical efficiency, mental alertness and development of certain qualities like perseverance, team spirit and many other values of life processes and high achievements.

2. Physical Education Improve Physical Fitness

The One of the major benefits of physical activity is that it helps people improve their physical fitness. Fitness is a state of well-being that allows people to perform daily activities with vigor, participate in a variety of physical activities, and reduce their risks for health problems. Five basic components of fitness are important for good health: cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition (percentage of body fat). A second set of attributes, referred to as sport-or skill-related physical fitness, includes power, speed, agility, balance, and reaction time. Kapri, Gaur, Tyagi and Vashistha (2006) pointed out that when we are taking part in various games and sports, it increases the level of fitness of the individuals. In every game we have to run a little or more distance while playing and total body parts are exercised which also improves the strength, endurance, speed, flexibility and neuromuscular co-ordination of our body which ultimately help us to increase the fitness, only due to the participation in games and sports. To maintain fitness level, an individual has to take part in any sports regularly. If he/she is not taking part in any games and sports regularly, his/her fitness level will influence negative.

One of the most emphatic recommendations in report from numerous federal and health promotion agencies is to increase the levels of physical activity among children and youth. Physical inactivity results in substantial,

negative health consequences. Obesity, high blood glucose, high blood pressure and high blood lipids all occur more often among sedentary adults. These problems increase the risk for chronic disease such as cardiovascular disease, various cancers, type II diabetes, and hypertension. Indeed, a direct relationship exists between leading a physically active life and developing long-term good health. Each year, physical activity contributes to nearly 260,000 deaths in the United States. Unhealthy behaviors take many years to present themselves clinically, but there is a compelling reason to believe that helping students learn to be active early in their lives will provide an important foundation for lifetime physical activity.

3. Physical Education Improve Personality Traits

Commenting on the importance of physical Education Robinson and Shaver (1969) had shown that sports participation in general is positively correlated with the development of psychological, physical and physiological well-being and the people who are active in a variety of ways in such activities tend to report a higher degree of emotional well being, life satisfaction, perceived happiness and physical fitness. Kenyon (1968) also observed that physical activities including games denote various functions and are articulated as social experience, an exercise of improving physical health and fitness, as a means of providing thrills through relatively tension release and in the context of self-expression, as tension release and in the context of self denial and building self discipline. Betts (1974) cited the importance of sports and benefits of competitions in development of character building, reduction of rowdiness and the healthy development of physical, physiological and mental health's. Avente (1976) suggested that participation in sports provides an additional criterion for social prestige and adjustment. Coakley (1978) summing up the importance of sports, said that it is popularly believed that sports build character and provide cutlet for aggressive energy, sports teams serve on the basis of group unity and solidarity. The analysis of the functions of sports depict that participation in sports brings various physical, physiological,psychological and sociological changes among the participants. Describing the benefits of physical activity, the U.S. Department of Health and Human Services (2000) suggested and stated as: Participation in physical activity and sports can promote social well-being, as well as physical and mental health, among young people, Sports and physical activity programs can introduce young people to skills such as teamwork, self-discipline, sportsmanship, leadership, and
socialization. Lack of recreational activity, on the other hand, may contribute to making young people more vulnerable to gangs, drugs, or violence. Findings of some studies show that turning to sports is one of the best ways of good psychosocial development. For instance, Weismann, Sindik, Roberts and Caspi , and Giacobbi et al, found out in their studies that sports and physical activity not only accelerates adolescents' socialization process but also influences their psychosocial health and social adaptability. In a research, Wiss, emphasizing the social value of sport, held that adolescence is a period of feeling lonely, abstaining from social communication and introversion and added that if these feelings and beliefs form in adolescents it may lead to low psychosocial development and role confusion. These researchers maintain that reinforcingpsychosocial development increases the level of adaptability,participation and cooperation among adolescents and leads to development of friendship and constructive cooperation. Cox and Smith [, and Solis et al found out in a research that increasing the time spent on group and sport activities has a positive relation with psychosocial development, selfsufficiency,and self esteem of the adolescents. Therefore,physical activity as a driving force activates the potential force inherent in individuals throughout their psychosocial development stages and as a natural necessity and social and educational phenomena has a great mission in physical and mental development of individuals.

4. Conclusion

Physical education plays a vital role in the personality development of our youth. It makes them physically healthy, active and mentally alert, and also reduces their risk for health problems. It enables them to live in a healthy and competitive environment. It develops in them team-work,self-discipline, sportsmanship, leadership and socialize.

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Effects of Media On Health Status In Youth

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Abstract:
Youth spend an average of 4 to 6 hours/day using media, and the vast majority of them have access to a bedroom television, computer, the Internet, a video-game console, and a cell phone. In this study state that affects of media on the health and playing well-being of children and adolescents sports persons, and media can provide information about safe health practices and can foster social connectedness. However, recent evidence raises concerns about media's effects on aggression, sexual behaviour, substance use, disordered eating, health and change behaviours and academic education and sports skills sports . We provide recommendations for parents, practitioners, the media, and policy makers, among others, for ways to increase the benefits and reduce the harm that media can have for the developing child and for healthy life.
Key Words: Media, Health risks Youths

Introduction:
More than 50 years of media research attests to the significant influence of media on sports person health. Both “old” media (television, movies, magazines) and “new” media (the Internet and social networking sites, video/computer games, cell phones) can have an impact on virtually every health concern that practitioners and parents have about young people, including aggressive behaviour, risky sexual behaviour, substance use, and disordered eating.
Children spend more time with media than they do in any other activity except for sleeping an average of 4 to 5 hours/day. Children's bedrooms are replete with media technology. Two thirds had a television set, one half had a VCR or DVD player or video-game console, and nearly one third had Internet access or a computer. Media impact is increased significantly with the presence of a bedroom television: viewing increases 2 to 3 hours/day, risk of overweight increases and the likelihood of smoking doubles. When a television is in the bedroom, parents are less able to monitor viewing habits children participate in fewer activities such as reading and hobbies, and sleep is shortened.
Today's youth have unprecedented access to new media and use them in expected and unexpected ways. Recent research by the Pew Internet and American Life Project revealed that 93% of youth aged 8 to 18 are online.
Teens can download violent videos, send sexual text messages or explicit self-photographs to their friends, buy cigarettes and beer on the Internet, and post enticing profiles on MySpace.com. Digital media have become an important source of information, and sometimes misinformation, about health problems. The Internet is often used as a mechanism for bullying and harassing.

Table 1. Time Spent with Various Media in a Typical Day Among. youths	
Media Type	Hours: Minutes
Television	4:29
On a television set	3:28
On the Internet	0:24
On an iPod/MP3 player	0:16
On a cell phone	0:15
On a computer (DVD/video)	0:06
Music	2:19
IPod/MP3 player	0:41
Radio	0:32
Computer	0:32
On a cell phone	0:17
Compact disc	0:17
Print	0:38
Movies (in-theatre)	0:25
Computer	1:29
Social networking	0:22
Games (on- and offline)	0:17
Video sites	0:15
Instant messaging	0:11
Email	0:05
Other websites	0:11
Other	0:08
Video games (not online or on computers)	1:13
Console	0:36
Handheld device	0:21
On a cell phone	0:17
Texting	1:35
Talking on a cell phone	0:33
Source: *Media in the lives of youths*. ; January 2013. Note: The study did not include texting and talking on a cell phone in the estimate of total time with media. Some numbers have been calculated from data tables, and some forms of media studied have been omitted from the table. TABLE DESCRIPTION: This table presents time spent, in hours and minutes, with various media in a typical day among youth.	

Violence and Aggression: By the age of 18, the average adolescent will have seen an estimated 200 000 acts of violence on television alone. Much of the violence on television and in movies is presented in a sanitized and glamorized fashion, and in children's programming it often is presented as humorous. More than 10% of 10- to 14-year-olds saw 40 of the most violent movies in 2003. Both music videos and rap music have become increasingly violent.
Sex: The impact of exposure to sexual content in media on adolescent sexual beliefs and early sexual initiation has found modest but significant associations, particularly in the realm of pornography. In a national sample of 1500 10- to 17-year-olds, nearly half of the Internet users had been exposed to on-line pornography. In middle-school youth, exposure to sexually explicit content predicted perpetration of sexual harassment more permissive sexual norms, having oral sex, and engaging in sexual intercourse while in high school.
Substance Use: Children and teenagers can also see considerable alcohol and drug content in on-line videos. Recent studies of social networking sites have found that substance abuse is referenced in 40% of the profiles. Portrayals of tobacco are also prevalent in the movies. Movies made today contain smoking, and smoking is rarely associated with negative health outcomes.
Obesity and Eating Disorders: media use is contributing to the current epidemic of obesity worldwide. However, the mechanism for why heavy television-viewing, in particular, is predictive of children's weight status is unclear. Food marketing may be 1 culprit. Children and teenagers see 4400–7600 ads per year for junk food and fast food on television alone. Randomized, controlled experiments have provided evidence that exposure to junk food advertising has an impact on children's food beliefs and preferences.
The possibility of a connection between television-viewing and ADD or other learning disabilities is currently an issue of great controversy. An initial study in 2004 revealed an association between daily hours of television-viewing at the ages of 1 to 2 years and subsequent attention problems at the age of 7. Media impact on academic performance, especially if there is a television set in the child's or teenager's bedroom.
In School
Schools have not kept pace with modern media, especially in violence prevention, drug prevention, and sex education programs. With the amount of sexual suggestiveness currently displayed on television and in movies, schools no longer have any excuse for not providing comprehensive school-based sex education programs for children and adolescents, including full discussions.

Suggestions

To Parents
Limit total screen time for children older than 2 years to no more than 1 to 2 hours/day,
Avoid screen time for children younger than 2 years,
keep children's bedrooms free of screen media; and
Co-view media with their children.

Conclusion:
During the past 50 years, thousands of research studies have revealed that the media can be a powerful teacher of children and adolescents and have a profound impact on their health. To date, too little has been done by parents, health care practitioners, schools, the entertainment industry, or the government to protect children and adolescents from harmful media effects and to maximize the powerfully prosaically aspects of modern media. More research is needed, but sufficient data exist to warrant both concern and increased action.

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A Study On Motor Ability Of 10-12 Aged Schoolchildren

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Abstract:
The study was conducted on 600 six hundred school children of 10 to 12 years of age in the state of west Bengal in India. They were studying in the class of 5 to 7 at government aided Bengali medium school. In selecting a subject for the study a systematic random sampling procedure was followed. Appropriate tests for motor ability where conducted on the subjects as 50- yard dash, 4*10- yard shuttle run, standing broad jump, softball throw for distance, stork stand and reaction timer. The mean±SD of motor ability variables with age group was stated in the study. However most of the cases of motor ability variables were significant at 0.05 level. The data indicated that the motor ability variables were better with the advancement of age.
Keywords: Motor ability, Motor ability variables (i.e speed, agility, power, coordination, balance &simple reaction time), age of children.

Introduction:
Upadhyay (1985) conducted a study on 105 subjects aged between 6 to 12 years of various boys group and the group indicated that the higher age groups were found comparatively superior than those of lower age groups which was significant in power and speed. Yadav (1982) conducted a study on 270 male students with all age groups having an equal representation of 45 students ranging in ages between six to eleven years. The subjects were tested in power, co-ordination, speed and agility and the test were significant at 0.05 level. The performance of boys ranging in age between six and eleven years, in motor ability components increased with the age advancement. Hatey (1972) conducted a study to investigate the effect of age on elementary school boys of grades one to six by administering motor tests to measure sprint speed, power, agility, reaction time and static balance, He observed a significant difference between grades levels of all variables. Ulrich and Ulrich (1985) as well as Cratty (1986) have found that balancing ability improved with age and they concluded that there was often a dramatic improvement in balancing ability from the age 5-7 year. Milne (1971) conducted a longitudinal study of 110 children belonging to 5 through 11 years and data expressed in cross sectional form, of performance changes in motor items. The test items were speed, agility, power etc. Motor performance scores generally indicated an improvement with successive years for both sexes in all items.
Materials and Method: The study included 600 six hundred children age category of ten, eleven and twelve years . The number of subjects for each group was 50 boys and 50 girls for any age group. The Subjects were selected from fourteen schools of 10-12 years ages in the state of West Bengal in India. In selecting a subject for the study, systematic random sampling procedure was followed. The willing students of the schools having roll no. 1, 6, 11, 16, 21, … were considered as a subject, if they did fulfill the age criteria of the study. The date of birth of the subjects were collected from their school admission registered and it was considered in completed years (i.e.9 yrs. and 11^{th} month as 10yrs. and so on.) .The tests of motor ability variables(Johnson,1970) were conducted on subjects within April,2013.

Test Used	Variables Measured

1.50-yd Dash	Speed
2.4*10-yd.Shuttle Run	Agility
3.Standing broad jump	Power
4.Soft Ball Throw for Distance	Co-ordination
5.Stork Stand	Balance
6.Electronic Timer	Simple Reaction Time(Singer,1968)

Results and Discussion:

The comparative statistics of motor ability variables in the form of mean and standard deviation (SD) were stated in the table-1.

Table –1: Comparison of Motor Ability Variables with respect to age group.

Age group & Variables	**10-Year Group (Mean±SD)**	**11-Year Group (Mean±SD)**	**12-Year Group (Mean±SD)**
Speed (s)	11.52±1.97	11.16±1.77	10.84±1.95
Agility (s)	12.03±1.20	11.82±1.01	11.68±.98
Power (inch)	46.22±8.14	49.13±7.02	51.98±9.01
Co – ordination(feet)	42.68±16.25	45.00±18.28	54.92±17.70
Balance (s)	4.70±2.63	5.45±3.88	5.90±3.20
SRT (s) **, (N=600)**	0.47±.09	0.44±.07	0.41±.07

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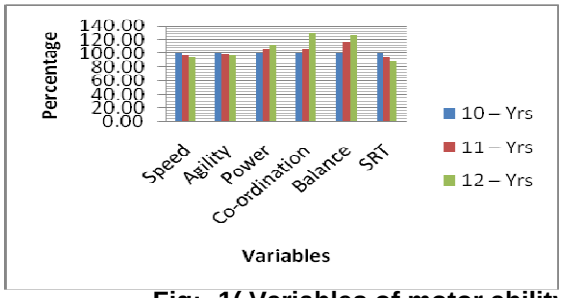

Fig: -1(Variables of motor ability)

1. Speed: Inter-group comparison (Post-Hoc LSD) of Speed (s) according to age group were shows that the obtained t-values (i.e 2.022,3.146) were greater than the tabulated value to be significant at 0.05 level ($t_{0.05}$ 598=1.96) in speed and the remaining cases there were no difference existed between 11-year and 12-year groups.

Fig:-1, shows that the speed of the children was better in respect of their age. Speed observed to increase in different age groups in growing ups, namely – 6-12 years (Matteo et al., 2010), 7-11 years (Hashemi et al., 2011), 8-12 years (Malina et al., 2003; Tsimeas et al., 2005; Carlo et al., 2010 and Habibi et al., 2011). In Indian population similar trend was observed among the children of same age (Ghai, 2007; Singh et al., 1987). In abroad the same trend of improvement of speed ability with advancement of age was observed among the subjects at childhood age (Benefice et al., 1999; Toriola & Igobokwe, 1986). Therefore, the present study finding on speed in relation to age was similar with the other researchers.

2. Agility: Inter-group comparison (Post-Hoc LSD) of Agility (s) according to age group shows that the obtained t-values (i.e 2.188,3.646) were greater than the tabulated value to be significant in agility at 0.05 level ($t_{0.05}$ 598=1.96) and the 11 years vs.12 years there was no difference in agility between two groups.

Fig:-1, shows in the study that the agility of the subjects found to be better with advancement of age. Improved performance in agility with age was observed among the children of different age groups, i.e., in 7-11 years (Dana et al., 2011), 9-16 years (Koner et al. 1987), and 10-16 years (Negi & Ghai, 2007). In Indian population agility improvement with advancement of age was also observed by Singh et al. (1987), Negi and Ghai (2007) and Chatterjee (2008).

3.Power : Inter-group comparison (Post-Hoc LSD) of Power (inch) according to age group shows that all the three mean comparisons the obtained t-values(i.e 3.938,7.794,&3.857) of were greater than the tabulated value to be significant in power at 0.05 level ($t_{0.05}$ 598=1.96). Fig: -1, revealed that the power of the subject found to be improved according to age. Improvement of power was observed in different age groups like – 6-12 years (Oscar et al., 2010), 7-8 years (Salehi et al., 2011) and 7-11 tears (Dana et al., 2011). In 8-12 years age group improvement in power was observed by Malina (2003), Hashemi et al., (2011); Milanese et al., (2010) and Hiva et al., (2011). Sharp improvement of power in girls happen up to 13/14 years and gradual improvement takes place up to 18 years (Espenchade, 1968; Berry, 1974).In Indian population among the children of same age power was observed to increase by Joon et al. (1987) and Negi and Ghai (2007).The finding of the present study was also similar to the study on other population, for example, in Nigeria (Toriola and Igbokwe, 1986), Mexico (Malina, 2003) and Spain (Malleo et al., 2010).

4. Co-ordination: Inter-group comparison (Post-Hoc LSD) of Co-ordination (feet) according to age group reveals that the obtained t-value(8.281,6.712) were greater than the tabulated value to be significant in co-ordination at 0.05 level ($t_{0.05}$ 598=1.96) and the between 10-year and11year groups there was no difference in co-ordination .Fig:-1, shows that the co-ordination of the subjects found to be improved according to age. The researcher like Carlo et al. (2010); Dana et al. (2011) and Hiva et al. (2011) observed that co-ordination improved with age in the children of 8-12 years of age .Improved co-ordination ability was observed in the children of different ages as 6-12 years of age by Verlato et al. (2010) and Habibi et al. (2011) and 7-8 years of age by Salehi et al. (2011).Other than Indian population similar trend of increased co-ordination was observed in Poland (Pilicz and Sadowska, 1973) and (Eiben, 2005).

5. Balance: Inter-group comparison (Post-Hoc LSD) of Balance (s) according to age group shows that the obtained t-values(2.322,3.715) were greater than the tabulated value to be significant in balance at 0.05 level ($t_{0.05}$ 598=1.96) and for the11-12 years group, there was no significant difference between mean comparisons.
The study revealed with the findings in Fig:-1 that the balance ability of the subjects found to be improved according to age. The researchers like Fjortoft (2000), Lam et al. (2003) were found significant differences in balance with the higher age groups in the case of pre-school children.

6. SRT: It is observed from the findings of the study that reaction/response ability had not significantly changed according to the age of the subjects. The investigators like Der and Deary (2006), Hultsch et al. (2002), Gorus et al. (2008) had observed improvement in performance in SRT with advancement of age which were similar with the Fig:-1.

Conclusion: Among the six motor ability variables, namely- speed, agility, power, co-ordination, balance and SRT, the subjects did differ according to their age in all the variables except in SRT. In power the higher was the age of subjects the greater was the power. In speed, agility and balance difference observed between 10-year and 11-year groups: and 10-year and 12-year groups but not between 11-year and 12-year groups. In co-ordination, difference observed according to age between 11-year and 12-year groups; and 10-year and 12-year groups but not with 11-year group. **.**

Recommendations: A longitudinal study with proper supervision is needed to obtain more accurate result for this kind of study. This study may be conducted on other age groups and for the cases of different population.

Acknowledgement: The authors are indebted to professors in the department of physical Education of Kalyani University for his educational achievement.

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Importance Of Physical Education And Sports In Present Globalization Age And To Improve Infrastructure Status Of Physical Education In India

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Abstract
Modern life as characterized by sedentarianism, automation, and computerization has created a new class of human beings who just for sit for hours each day. The 21st century is an age of space and technological gigantism, charged by speed, noise and other tension producing factors. The stress created by the demands of our social and economical systems and our devotion to intellectualism is tremendous. Urban life style has caused many tensions and it will grow worst for mankind. Environmental pollution, cultural degradation, social disintegration, religious turmoil's etc have lead to ecological social imbalances and various psychological and physiological strains and disorders are few to mention in the list ever growing. Physical education is the agency which is fulfilling this social obligation very effectively by providing comprehensive and diverse physical education programmes. Sports infrastructure plays a crucial role in achieving excellence in global arena of sports. It not only helps in producing sportspersons of international repute, also encourages the youth population of a country to participate in sporting activities to create a culture of sports. India's representation in the Olympics and other major sports event has become poor and inconsistent. So infrastructure of physical education and sports is very important in promotion and development of sports in our country.

Keywords-
Sedentarianism, automation, culturaldegradation, religiousturmoils, social disintegration, infrastructure.

Introduction:
physical education and sports is one of the important yardsticks and also integral part of education for any country at any point of time. Thus each country should try to set out a frame work of action plan for promotion and development of physical education and sports. Paradoxically, sports is witnessing a spectacular boom in the media spot light all over the world including India while it is being seriously neglected within the educational system. The importance of physical education and activity was recognized by Plato when he said ''lack of activity destroys the good conditions of every human being, while movement and methodical physical exercise save it and preserve it. 'Abraham Lincoln quoted in one of his address ''Sportsman is the best ambassador of the nation. 'Hence the physical education teacher/director can also be the best ambassador of our institution. The investment made by most of the states in physical education and sports has been negligible, although a few states have shown the way to according a high priority of sport's. In consequence, we have not succeeded in providing universal access to sports or creating a national sports culture, thus also impairing excellence in sports. In India the standard of sports infrastructure is not at a satisfactory level for a number of reasons. The lack of infrastructural facilities is one of the major impediments in the process of development of sports in India.

Present Status Of Physical Education And Sports In New Era
.. From the very beginning of civilization, to excel in any field has been a tendency of human beings. But it is a surprising fact that enough emphasis is not laid down upon the very important aspect,

I.e. health and physical education. The status of physical education and sports convened the physical world summit in Berlin this initiative was promoted by reports revealing the increasing critical situation of physical education and sports in many countries world wide comparative study collect data and literature for nearly 120 countries come out with following findings.
1.There is no evaluation system in physical education and sports in most of the institution.
2. Reduced time devoted to physical education in educational programmed.
3. Reduced budgets plus inadequate financial material and staff recourses.
4. The subjects suffer from low status.
5. There is no proper sports grounds and facilities in most of the schools, colleges and higher level of educational institution.
6 .In many countries teachers are not properly trained.
7. Most of the country's physical education guidelines are not properly applied.
8. The non integration of sport's with the formal education system.

The Role Of Physical Education And Sports In The Present Globalization Age

Modern world is full of health hazards and on the other side, everything has been mechanized. Manual labour is being discarded. At this juncture, there is a great need for physical education; otherwise there may be a question mark on the existence of mundane. It is a well known fact that nowadays every individual remains under anxiety, stress and tension which ultimately lead to depression. In the state of depression an individual cannot think about leading a normal life. Depression further de generated all the systems of our body. In fact, we are leading a sedentary lifestyle. Due to this, we are falling prey to high cholesterol in the blood, high blood pressure and obesity etc. Overweight and obesity have called a fair amount of attention in the last few years in various region of country. Childhood obesity creates problems, such as hyperinsulinemia, risk of developing diabetes type2, hypertension, apnoea while sleeping, a sociality etc. If we want to remain healthy and if we want to be better citizens, we will have to adopt physical education.

Modern concept of physical education has given rise to a global perspective and has become one of the most viable factors in cross culture integration. Sports have its own language and can provide a medium for international understanding and goodwill among nations. It has assumed great importance not only for self actualization at the national level but for social maturation and survival at the global level. In India where there is so much of diversity with to religion, caste, creed, language etc. physical education plays a very important role in bringing about unity and in promoting national integration.

Physical education provides a platform to act across the barriers of national boundaries. International events afford an opportunity of personal interaction between the sports persons of different countries and bring them together and closer to share their experience thus promoting peace, goodwill, friendship and universal brotherhood.

Importance Of Physical Education...
1.Sports as well as physical education programmes promote a healthy and active life style which is indispensable need of the hour.2.physical education considers the child as a united whole mental, social, moral and physical qualities and provides for the optimal development of all these through the physical activities.3.Sports reduces the risk of heart ailments, such as coronary heart disease and ischemic heart disease,etc.4.Skill and motor skill development.5.It reduces obesity, hypertension and blood pressure.6.It regulates the body weight and improves the body composition.7.Physical education programme improves judgment, self-discipline, self-esteem, sense of responsibility, self confidence and peer relationships 8.It promotes mental health and helps in reducing depression, stress, tension, and anxiety. It influences moral development, leadership, cooperate with others.8.Play ground is a good laboratory for developing self confidence, intelligence, loyalty, honesty, dedication, and resourcefulness.9.It postpones the weakening effects of the ageing process or it can be said that it delays the ageing process(old age).10.It reduces the level of bad cholesterol (LDL) and increases the level of good cholesterol(HDL) 11.Physical education brings leadership qualities among players.11.It brings universal brotherhood and integration among players and their respective nations.

Modern Concept Of Physical Education-
We are living in a highly developed age and much of the development has taken place in the recent past. We saw developments in all the fields and physical education is no exception to it. The person who is mentally and

physically fit is considered an ideal person. Today, view of educational system and institutions have also changed. Global perspective has been raised because of the modern concept of physical education. One of most important factors in cross culture integration today is concept of physical education. Sports have a unique language and it can provide a means for international understandings and goodwill among nations. With the help of various sports, friendly relationships can be established between the people of different nations.

Education through the physical activities is the basis of new physical education pattern. Now, various physical activities are believed to contribute in physical, mental and intellectual strength of an individual. Today, this field has become very wide and

Developed, where much importance is being given to physical activities and the results it provides. During recent years, movement education has become the strongest alternative interpretation of physical education.Human movement emphasized the ability to move as a means of expressing, exploring, developing, and interpreting one's own self and one's relationship to the world. In 21st century, physical education has emerged as a multi-dimensional discipline.

Physical Education And Sports In Indian Society

1. The basis of sports education starts at the school level in the form of physical education, which develops the health of the students and encourages them to be a part of sports. But physical education is often neglected in India; many schools do not seem to realize the value of physical education in the curriculum.
2. Many other school maintains physical education in the syllabus only nominally. For them physical education is a 'rest period' between academic hours and they consider that anyone can teach physical education, without the required training.
3.The way of progress of sports in India include lack of modern facilities like play ground, equipment, strategies, techniques, qualified coaches, talented trainers, physical education teacher, and sports related physiotherapists and psychiatrists. Lack of scientific approach towards the development of physical education is also to be blamed. When it comes to sports as a subject of study, research is woefully wanting.
4. There are over 450 universities in India. No university provides even exclusive course in sports. For most Indians, sports mean just cricket. This is a result of peculiar social situations as well as the attitude to sports on the part of both society and governments, thereby narrowing people's outlook on sports and physical education. India's performance in sports management is poor.
5. Lack of proper curriculum is one of the main reasons that lags the development of sports in India.
6. Lack of sports culture in the country.
7. The non integration of sports with the formal education system.
8. The inadequate participation of women in sports.
9. The lack of co-ordination between all stakeholders.

Physical education and sports not only create healthy individuals but also a healthy society. Therefore, sports culture can contribute to the nation-building process. Today, most small and big nations are making their entry to sports, based on this philosophy. However, India, despite a population of over 125 cores, has not yet made significant presence in the world of sports, including world championships and the Olympics. This is true of both individual events and group events. We have not done well in hockey at the global level, though hockey is considered as the national game of India. In the case of other games also, our condition is rather pathetic.

Sports Infrastructure For New State:

Sports infrastructure plays a crucial role in achieving excellence in the global arena of sports. It not only helps in producing sportsperson of international repute, but also encourages the youth population of a country to participate in sporting activities to create a culture of sports. In India the standard of sports infrastructure is not at a satisfactory level for a number of reasons. The lack of infrastructural facilities is one of the major impediments in the process of development of sports in India.

Hence there is need to plan the sports infrastructure for different level and they can be equally spread all over the country. The following points needs to be considered for the development of sports infrastructure in the state.

Major areas to be considered under the sports policy:

A. Development and implementation of Sports policy.

B. Provision of sufficient budgetary allocation for sports development in the state.

C. Development of Sports Infrastructure, maintenance and optimal utilization of the facilities. **D.**Development of all physical education and sports programs as player center programs
E. Providing equal opportunities to all people in the state to participate in sports and channelize the sports as a vehicle to achieve the minimum physical fitness.
F. Broad basing the physical education programs in education sector i.e. schools and colleges.
G. Preparation of long term plans and execute them to Identify the talented sports persons a train them to excel in sports.
H. Initiating the central agencies like Sports Authority of India, Ministry of sports Government of India to launch their sports schemes in the state.
I. Development of plans to provide incentives to the players, coaches and physical education teachers for excelling in sports..
J. Development of schemes that can root the outstanding performers to settle in their life in a comfortable job.
k. Development of innovative schemes to promote sports system.
L. To develop sports programs for the physically challenged persons.
M. To develop adventure sports programs.
N. Strengthening of sports Authority of West Bengal.
O. To provide transparent systems to promote and control the activities of the Sports associations in the state.
P. Development of Human Resource for teaching Physical Education classes and to conduct coaching for potential sports persons.
Q. To initiate, undertake, sponsor, stimulate and encourage research and development of sports allied science subjects in universities and sports science centers.
R. Conduct of National Games and International Tournaments.
S. Cash awards, Scholarships and Stipend.

Some Suggestions And Methods For Betterment And Good Performance In SportsWe Need To Create Sports Culture First.

1. The government should make physical education and sports as compulsory subject in the curriculum from school up to university level. All the educational institution must have a physical education teacher and a coach.
2. Every school, college, university should have a proper sports grounds and facilities.
3. Revision and Reconstruction of physical education syllabus in context with need of society.
4. Periodical refresher course for physical education personnel by an unified agency.
5. The central and state government should allot more funds. For each district head quarter sports academies should be set up for all sports events and continuous training should be given.
6. If a student is showing good performance in sports, government should take care of him by joining him in sports academy with all facilities provided.
7. Selection for talent identification from grass root level and proper training in sport academy and impartial selection of players without any political inferences.
8. Encourage sports scholarship in the state.
9. Establish exclusive school, college, universities for sports and sports education in government sector.
10. Ensure public-private participation in sports academies.
11. Get corporate involved in physical education.
12. Physical education should be considered for evaluation like other subjects and weightage should be given.
13. Increase funds for sports and related activities in the budget.
14. At each mandal, district head quarter levels sports stadium should be built.
15. Set clear sports policy and plan of action focusing on the next Olympics and other world championships.
16. An honest and sincere appraisal system for total evaluation and feedback.

Conclusion-

Physical education has a special significance, unique role and has made unlimited contribution in the modern age as it caters to the biological, sociological and psychological necessities of the man. Swami Vivekananda

has stressed that “What India need today is not the Bhagwat Geeta but the football ground.” Emphasizing the need and importance of physical education Rousseau said, “It is the sound constitution of the body that makes the operation of mind easy and certain.”Physical education also transmits social and cultural values, and ideologies of the society to the younger generation enabling their absorption into the society by providing continuity in action and thought.

Young people are the real wealth of the nation. No programmed is successful without the participation of youth. Therefore, to enable an individual to lead happy, enjoyable and healthy life as a member of society, he should regularly engage in games and sports and different exercise programme to ensure development of physical fitness and learn Skills in sports and games, which have a carry over value. On other hand, sports infrastructure plays a crucial role in achieving excellence in the global arena of sports. It not only helps in producing sports persons of international repute, but also encourages the youth population of a country to participate in sporting activities to create a culture of sports. In recent years, a phenomenal growth has been observed in Indian sports with the staging of mega-events.

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Effect Of Resistance Training And Endurance Training In Parallel On Heart Rate At Rest And Explosive Power

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Abstract
The aim of this study was to determine the Effect of Resistance training and Endurance training in series and parallel on Heart rate at rest and Explosive Power. To achieve this purpose, thirty (N=30) Degree College women students were randomly selected as subjects from K.V.R.College, Nandigama, Krishna Dist, Andhra Pradesh, India. They were divide into two equal groups of fifteen (n=15) each. Group-I underwent resistance training and endurance training in series and parallel and Group-II control group. For both the groups, Heart rate at rest and Explosive Power were measured by using of Bio monitor and measure the explosive power in terms of horizontal jump. The training group underwent 12-week resistance training and endurance training in series and parallel (six week for series training and six week for parallel training) and no specific training was given to the control group. Prior to and after training, researcher has concluded that Heart rate at rest and Explosive Power are significantly improved among healthy untrained women.

Keywords:
Resistance Training, Endurance Training, Series, Parallel, Heart rate at rest and Explosive power

Introduction

Frank W. Dick (1980) the athletes express force through the body's lever system by converting chemical to kinetic energy and by neuromuscular coordination. In all physical activities the athletes express this force against external force (resistance). Resistance may take the shape of weights, throwing implements, water, air, the athletes own body weight, momentum and so on.

The efficiency of an individual in performing physical activities depends basically on his/her cardio respiratory efficiency. Through training the efficiency of the circulatory and respiratory systems are improved H . Clarke. (1976).

According to Steven .J. Fleck & Williams . J (1997) training is specific. The body attempts to adapt to the imposed demands. The understanding of the exercise training compatibility has focused on endurance training. H. Clarke (1976) the efficiency of an individual in performing physical activities depends basically on his/her cardio respiratory efficiency. Through training the efficiency of the circulatory and respiratory systems are improved.

Haradayal Singh (1991) points out the positive effect of endurance activity on various physiological systems that is cardio respiratory, digestion and metabolism. He also states that these activities have a preventive and curative effect on a number of health problems. Resisting heart rate, resting respiratory rate and cardiovascular endurance are certain parameters or external signs of human health and physical fitness.

A great deal of information exists regarding the effects and prescription of endurance exercise. The ability to prescribe aerobic exercise is necessary to address the cardiovascular endurance requirements of a conditioning program. Such aerobic endurance programs can be either continuous or intermittent. According to **Willmore.J.H. et.al., (1996)** the heart rate can decrease markedly by as a result of training. In sedentary individuals the resting heart rate would be 80 beats per minute, resting heart rate decreased by approximately 1 beat per minute each week for the first ten weeks of training. So after 10 weeks of moderate endurance training resting heart rate could drop from 80 to 70 beats per minute.

METHODOLOGY

To achieve these purpose 30 (N=30) women of 15 each students from K.V.R.College, Nandigama, Krishna District, Andhra Pradesh , India were randomly selected as subjects and their age ranged from 19 to 21 years. They did not participate in any systematic fitness training previously. The subjects were successfully completed the minimum strength requirement test recommended by **Voight and Draovitch (1991),** Which consisted of five push-ups, five squat thrust, standing long jump and skipping rope for thirty seconds. The subjects were randomly divided into two groups and each group contained fifteen (n=15) subjects. Group I underwent Resistance training and Endurance training in series and parallel (six week for series training and six week for parallel training weeks), group II acted as control. The subjects were free to withdraw their consent in case they feel any difficulty during experiment and testing period. However, there were no dropouts in the study and all the volunteered subjects cooperated well throughout the period of experimentation. A written informed consent has been taken from the subjects.

Training Programme

To achieve the purpose of this study, the experimental group underwent resistance training and endurance training program for 4/12 week in addition to their regular physical education activities. Group I underwent resistance training and endurance training in series and parallel for 12 weeks (six week for series training and six week for parallel training weeks) on both Heart rate at rest and Explosive power (horizontal). Every training session workout lasted for about 45-60 minutes including warm-up and limbering down exercise. Group II (control group) did not participate in any specific training. However, they performed regular physical education activities. The subjects were verbally motivated to perform better in training. All the training sessions were fully supervised and none of them reported any injury. However, muscle soreness, discomfort and fatigue were reported in the early weeks which subside later and there were no dropout in the study. Testing Procedure Heart Rate At Rest"

To measure Resting Heart rate at rest used "Non-invasive Automatic blood pressure monitor". Uses the oscilometric method of resting heart rate measurement. Resting heart rate of each subject was recorded in the morning time between 6.00 am and 7.00am. Ten minutes before taking the heart rate the subject was asked to sit and rest himself comfortably on a chair. The investigator wraps the cuff around the arm by placing arm on a table so that the cuff will be at the level of the heart. Just pres start/stop button and the cuff will start to inflate automatically. When the measurement is complete the arm cuff automatically deflates and the resting heart rate and blood pressure systolic/diastolic are displayed.

Explosive Power

To measure the explosive power in terms of horizontal. used an outdoor jumping pit, measuring steel tape mat and marking with lime powder. The subjects stand behind a take-off line with feet several inches apart. Before jumping the subjects dips at the knee and swings the arms forward. Indoor administration is the best accomplished by placing a tape measure on the floor at right angles to take-off line and permitted the subjects to jump along the line. Measurement can be made by extending the tape to the point of the jump. Students must take-off from both feet simultaneously jump as long as possible and land on both feet. Try not to fall backward after the landing. They can jump further by crouching before the jump and swing your arms. The scoring is given by distance to the nearest point from the take-off line to the closest heel position. The best out of three trails were recorded.

STATISTICAL ANALYSIS: The data were collected from the two groups prior to and after the experiment period. Heart rate at rest and Explosive power was statistically examined by employing analysis of covariance (ANCOVA). To find out significant difference level of confidence was fixed at 0.01.

RESULTS & DISCUSSION

The mean and standard deviation on Resistance training and Endurance training in series and parallel on Heart rate at rest and Explosive power are presented in Table-I and Table-II. The 'F' value of adjusted post-test was numerically higher than table 'F' value. Hence, there exists a significant difference between resistance training and endurance training in series and parallel on Heart rate at rest and Explosive power group and control group.Adjusted post-test means indicates that the resistance training and endurance training in series and parallel on Heart rate at rest and Explosive power (horizontal) has significantly improved when compared with the control group. It has shown clearly in table –I and table-II.

TABLE-I.

ANCOVA FOR THE PRE AND POST-TEST DATA ON HEART RATE AT REST

Test		Series and Parallel group	Control group	Source of variance	df	Sum of square	Means square	Obtained 'F' ratio
Pre-test	X	75.00	74.98	B	2	2.58	1.29	3.07
	σ	0.43	0.48	W	27	17.85	0.42	
Post -test	X	65.21	73.01	B	2	225.82	112.91	104.55*
	σ	0.15	0.50	W	27	45.36	1.08	
Adjusted Post–test	X	65.04	72.85	B	2	47.12	223.56	120.19*
				W	26	76.26	1.86	

* Significant at 0.05 level of confidence.

The table value for significant at 0.01 level with df 2 and 27 and 2 and 26 are 3.35 and 3.37 respectively.

Table -I shows that the pre–test means of series and parallel and control groups are 75.00 and 74.98 bpm respectively. The obtained 'F' ratio of 3.07 for pre-test means is less than the table value of 3.35 for df 2 and 27 required for significance at 0.05 level. The post-test means of series and parallel and control groups are 65.21 and 73.01 bpm respectively. The obtained 'F' ratio of 104.55 for post-test means is greater than the table value of 3.35 for df 2 and 27 required for significance at 0.05 level. The adjusted post-test means of series and parallel and control groups are 65.04 and 72.85 bpm respectively. The obtained 'F' ratio of 120.19 is greater than the table value of 3.37 for 2 and 26 required for significance at 0.05 level. The results of the study indicate that there is a significance among adjusted post-test means of series and parallel training group and control groups on Heart rate at rest.The adjusted post-test mean values on Heart rate at rest of series and parallel training group and control groups are graphically depicted in figure-I.

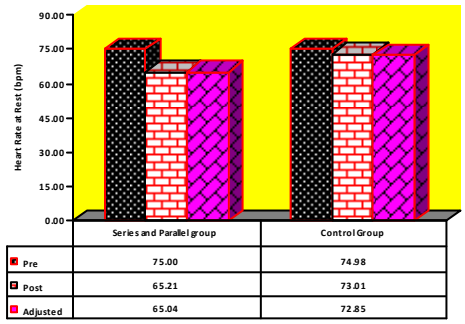

Figure -I: Bar Diagram On Heart Rate At Rest Of Pre, Post And Adjusted Post-Test Means Of Series And Parallel And Control Groups.

Table-Ii.

Ancova For The Pre And Post-Test Data On Explosive Power (Horizontal)

Test	Series and parallel group	Control group	Source of variance	df	Sum of square	Means square	Obtained 'F' ratio

Pre-test	X	1.62	1.59	B	2	0.006	0.003	0.333
	σ	0.07	0.08	W	27	0.358	0.009	
Post -test	X	1.99	1.60	B	2	1.303	0.651	40.69*
	σ	0.17	0.07	W	27	0.673	0.016	
Adjusted post–test	X	1.97	1.61	B	2	6.64	3.32	55.33*
				W	26	2.46	0.06	

* Significant at 0.05 level of confidence.

The table value for significant at 0.01 level with df 2 and 27 and 2 and 26 are 3.35 and 3.37 respectively.

Table-II shows that the pre–test means of series and parallel and control groups are 1.62 and 1.59 mtr respectively. The obtained 'F' ratio of 0.333 for pre-test mean is less than the table value of 3.35 for df 2 and 27 required for significance at 0.05 level. The post-test means of series and parallel and control groups are 1.99 and 1.60 mtr respectively. The obtained 'F' ratio of 40.69 for post-test means is greater than the table value of 3.35 for df 2 and 27 required for significance at 0.05 level. The adjusted post-test means of series and parallel and control groups are 1.97 and 1.61 mtr respectively. The obtained 'F' ratio of 55.33 is greater than the table value of 3.37 for 2 and 26 required for significance at 0.05 level.The results of the study indicate that there is a significance difference is existed among adjusted post-test means of series and parallel training group and control groups on explosive power (Horizontal). The adjusted post-test mean values on explosive power (Horizontal) of series and parallel training group and control groups are graphically depicted in **figure-II**

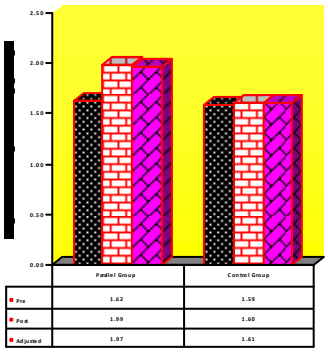

Figure - Ii : Bar Diagram On Explosive Power (Horizontal) Of Pre, Post And Adjusted Post-Test Means Of Series And Parallel And Control Groups.

Conclusion:

Heart rate at rest is increased by Resistance training and Endurance training in series and parallel for untrained women.Explosive power (Horizontal) is significantly increased by Resistance training and Endurance training in series and parallel for untrained women.

Recommendations: Series and Parallel type of Resistance training and Endurance training is recommended to improve Heart rate at rest Series and Parallel type of Resistance training and Endurance training is recommended to improve explosive power in terms of horizontal distance.

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Effect Of Selected Yogic Treatment On Various Physiological Variables Of Middle Aged Women Suffering from Infertility

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Introduction: -

It is a sweet dream of women becoming mother. Women of all over the world think that life is incomplete without becoming a mother. In our society those women without a child is being neglected by others and it is regarded as a curse. Those women are sometimes being prevented from taking part in Hindu rituals. But it is not the fault of the women suffering from infertility; there are some biological reasons behind this. Some physiological problems like blood sugar, improper secretion from glands were considered to be the cause of infertility. Research is still going on this problem. Physicians are now using medicines to remove these physiological problems of the women and create a situation which is conducive to fertility but hundred percent successes is yet to be achieved. So other methods are also thought of, that is alternative medicines. Vigorous exercises can easily reduce some of the problems in a fast rate. But in underdeveloped and developing countries the socio economic conditions and natural shyness of women do not permit participating in such exercises in open area or on the play ground, especially in rural areas. Yogic exercises can be performed in a hall or in a room behind the eyes of the spectators which may give easy feelings of the women. Yogic exercises involve, stretching, bending, twisting and holding in the postures and thus it can help to maintain proper glandular secretion. The investigator believed that the Problem of this infertility may be removed through systematic practice of Yogasana. In spite of being partially able to succeed in curing this problem of infertility medical science largely entails the expense of large amount of money. Besides this there is an ample apprehension of bad side effects on the patients for prolonged use of medicines. It is not at all costly to use Yogasana in improving physical and physiological conditions of breeding procedure. It is also completely exempted from side effects if correct procedure is being followed. Yogasana practices seems to be easier because most of the citizens of our country are poverty-stricken and hopelessly unable to undertake better and developed medical service . Yogasana is mostly accessible to most of the rural poor people because it does not require costly instruments or a big area.With a belief that proper and prolonged practice of Yogasana may float smile in infertile women with the blessing of sacred motherhood. With the noble objective of this societal welfare the researcher has undertaken this effort.

Methodology :- The subjects of the present study were thirty middle aged women from the District of 24 Parganas (S) and East Midnapur of West Bengal. The age of the subjects ranged from twenty four years to thirty years. All the subjects went to the Sarada Nursing Home for treatment as a patient of infertility where a large number of patient having same problem were treated. Out of all, thirty patients who had the same physiological problems; fifteen patients were selected to form the Control Group and other fifteen patients were selected to form the Experimental Group. During the treatment period both groups were asked to follow the prescribed medicine and diet chart prepared by the Gynecologist and Dietician. Experimental group was asked to practice selected yogic posture under the supervision of the Research scholar when the control group remained free from this yogic treatment. Only the effect of medicine was recorded on the control group while the combined effect of medicine and yogic exercises was recorded on the experimental group.

Selection of variables :- Thyroid Stimulating Hormone, Prolactine, Blood Sugar Fasting, Blood Sugar P.P.

Statistical Procedure**:-**Analysis of covariance and Mean Difference between the Pre and Post Treatment score were obtained by employing the statistics of't' ratio.

Result and Discussion:-

Table-1:MEAN DIFFERENCE OF THE VARIABLES OF CONTROL GROUP.

Variables	Test	Mean	SE	't' Ratio

TSH	Pre Test	5.694	0.145	13.593*
	Post Test	3.723		
Prolactine	Pre Test	22.464	0.409	11.697*
	Post Test	17.680		
Blood Sugar Fasting	Pre Test	126.733	1.506	12.306*
	Post Test	108.200		
P.P Blood Sugar	Pre Test	163.333	1.928	12.932*
	Post Test	138.400		

't' $_{(0.05)}$ 14= 2.045

*Significant at 0.05 level of confidence

From table-1 it was observed that there were significant differences between pre and post treatment scores in the respect of all the variables tested.

Table-2:MEAN DIFFERENCE OF THE VARIABLES OF EXPERIMENTAL GROUP.

Variables	Test	Mean	SE	't' Ratio
TSH	Pre Test	5.919	0.222	16.883*
	Post Test	2.171		
Prolactine	Pre Test	22.188	0.893	13.417*
	Post Test	10.207		
Blood Sugar Fasting	Pre Test	127.467	1.561	20.286*
	Post Test	95.800		
P.P Blood Sugar	Pre Test	165.733	2.208	16.304*
	Post Test	129.733		

't' $_{(0.05)}$ 14= 2.045

*Significant at 0.05 level of confidence

From table-2 it was observed that there were significant differences between pre and post treatment scores in the respect of all the variables tested

Table-3:PERCENTAGE OF IMPROVEMENT IN RELATION TO PHYSIOLOGICAL VARIABLES OF CONTROL AND EXPERIMENTAL GROUP.

Variables	Improvement in Percentage	
	Control Group	Experimental Group
TSH	34.615	63.322
Prolactine	21.296	53.998
Blood Sugar Fasting	14.624	24.843
P.P. Blood Sugar	15.265	21.722

Table -3 showed that Improvement in Percentage of the Experimental Groups were better than the Control Groups in respect of all the variables.

The present study was a comparison between two groups- one following a diet chart and taking of medicine and other following the diet chart, medicine and yogic exercises prescribed by the investigator, and the result shows a ratio of 1:3 of the women conceiving that support the findings of the results.

Conclusion:- Use of Yogasana and medicine on the subjects resulted in improved functioning of the thyroid gland, pituitary gland and splin then the subject taking only medicine

Recommendations:-It was recommended that:-1)Study might be conducted on with more number of subjects and involving other variables like progesterone, cholesterol, blood pressure etc. 2) Similar study conducted on the male subjects suffering from infertility.3) Similar study might be conducted on women in the age group of 30-35 years, 36-40 years and also 41-45 years.

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A Study Of Transformation On Stroke Volume Responses To Exercise Stress With Aerobic And Anaerobic Training

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Abstract
The study was intended to evaluate the alterations on stroke volume responses to exercise stress with aerobic and anaerobic training among untrained male college students. Forty-five untrained male college students, in the age group of twenty to twenty-five years were selected as participants, and they were segregated into three groups namely: control, aerobic and anaerobic training groups. The duration of experimentation period was restricted to twelve weeks and the frequency of training was thrice a week. The other independent variable confined to this study is aerobic exercise stress testing using Bruce treadmill protocol to evaluate its influence on stroke volume. The data on stroke volume were measured at rest and after exercise conditions from all the three groups, before and after twelve weeks of experimentation. The data thus collected was subjected to three-way factorial ANOVA with repeated measures on last two factors. The findings of the study revealed that the stroke volume at rest and after exercise conditions of aerobic and anaerobic training groups altered significantly for better as a result of respective training, where aerobic training has the upper hand as compared to anaerobic training for its effectiveness on stroke volume.

Introduction

Human beings acclimatize in a variety of ways depending upon the stresses to which it is exposed. Reactions to excessive stresses are modified by the individual attributes of each person. The length of exposure to stresses modifies the nature of changes and the resiliency of those changes. Thus, upon exposure to an active stress, the body undergoes a hierarchy of responsive changes, the physiological and biochemical changes to increase oxygen supply to body tissues are noticeable in those body systems that are directly related to oxygen delivery, but the changes probably occur in all organ systems.In physiological response to acute exercise, there are several components that dictate what will be the magnitude and direction of the physiological response. The key components of “acute exercise” are the intensity at which the exercise is performed and the duration of the individual exercise bout (McArdle, Katch & Katch, 1996; Pollock & Wilmore, 1990). Typically the greater the intensity of exercise, the greater the degree of stress placed upon the physiological system. Relative to duration, typically extending the length of time of an exercise bout at any given intensity tends to amplify the physiological response; that is, as a person exercises longer and longer, one can see a gradual and further increase in the physiological and biochemical levels (Galbo *et al*., 1977). Exercise, a common active stress, can elicit cardiovascular abnormalities not present at rest. Dynamic exercise is preferred for testing because it puts a volume stress rather than a pressure load on the heart and because it can be graduated. When dynamic exercise is begun or increased, oxygen uptake by the lungs quickly increases. After the second minute, oxygen uptake usually remains relatively stable at each intensity of exercise. During steady state of exercise, heart rate, cardiac output, blood pressure, and pulmonary ventilation are maintained at reasonably constant levels (Rowell, 1986).

The body’s response to dynamic exercise consists of a complex series of cardiovascular adjustments to provide active muscles with the blood supply appropriate for their metabolic needs, to dissipate the heat generated by active muscles, and to maintain the blood supply to the brain and the heart.

Exercise is an incredibly important part of a healthy person's life. Exercising regularly helps to hone one's athletic skills by strengthening the muscles across the bodies, and also by enhancing the functioning of all internal organs. When the body engages in exercise training several times a week or more frequently, each of these physiologic systems undergoes specific adaptations that increase the body’s efficiency and capacity. The magnitude of these changes depends largely on the intensity and duration of the training sessions, the force or load used in training, and the body’s initial level of fitness.Exercise is considered to be a more intensive physical activity than the normal activities of daily living. There are two main types of exercises:

aerobic exercise and anaerobic exercise. Aerobic exercise is a physical activity that increases the activity of the pulmonary and cardiovascular systems. It requires an increase in oxygen to be used and transported to the muscle. Conversely, anaerobic exercise is physical activity of a short duration and of less intensity than aerobic exercise. It does not requires an increase in oxygen to be used and transported to the muscle.Aerobic and anaerobic training focuses on very different results on the body, it is easy to assume there are many different adaptations the body must make if one were to choose to only exclusively train aerobic or anaerobic. There is a scarcity of research work carried out to identify the impact of training modalities on stroke volume responses to exercise stress. Hence, the investigator proposed to examine whether stroke volume responses to exercise could be significantly influenced by different training protocols.

Methods and Procedures

Forty-five untrained male college students, in the age group of twenty to twenty-five years were selected as participants, and they were segregated into three groups namely: control, aerobic and anaerobic training groups. The participants were selected from Visakapattinam of Andhra Pradesh.

The aerobic and anaerobic training programs were used as experimental treatment. The duration of experimentation period was restricted to twelve weeks and the frequency of training was thrice a week. The other independent variable confined to this study is aerobic exercise stress testing using Bruce treadmill protocol to evaluate its influence on the stroke volume. The data on stroke volume were measured at rest and after exercise condition during both pretest and posttest. The standardized testing procedures and instruments used to collect the data on stroke volume were as presented in the table-1.

Table – 1: Dependent Variable and their Respective Tests

Variables	Instruments/methods	Unit of Measurement
Stroke volume	Doppler Ultrasound	ml/beat

Experimental Design and Statistical Techniques

The experimental design used in this study was random group design involving forty-five untrained male college students, who were segregated into three groups of fifteen each. The data thus collected from experimental and control groups at rest and after exercise condition during pre and post test have been analyzed by three-way factorial ANOVA with repeated measures on last two factors. In all the cases level of confidence was fixed at 0.05 for significance.

Results of the Study

The data on stroke volume have been analyzed by three-way factorial ANOVA (3x2x2) with repeated measures on last two factors and the obtained results are presented in table-2.

Table 2 indicates that significant differences exist among groups irrespective of training and exercise conditions on stroke volume, and also between pretest and posttest data on stroke volume irrespective of groups and exercise conditions. Thereby, significant difference exists for the interaction of groups at pre and post tests on stroke volume irrespective of exercise conditions.

Table 2 also reveals that significant differences exist between resting and exercise conditions irrespective of groups at pre and post tests on stroke volume, and also for the interaction of groups at rest and after exercise conditions irrespective of pre and post tests on stroke volume.

TABLE – 2: THREE WAY FACTORIAL ANOVA ON STROKE VOLUME

SOURCE OF VARIANCE	SUM OF SQUARES	DF	MEAN SQUARES	OBTAINED "F" RATIO
Groups	4051.744	2	2025.872	185.509*
Error (Group)	458.667	42	10.921	
Training	8120.450	1	8120.450	757.909*
Groups and Training	4003.300	2	2001.650	186.8218*
Error (Training)	450.000	42	10.714	
Exercise	143312.450	1	143312.450	23993.315*
Group and Exercise	138.433	2	69.217	11.588*
Error (Exercise)	250.867	42	5.973	
Training and Exercise	107.339	1	107.339	41.259*
Training, Exercise and Group	49.144	2	24.572	9.445*
Error	109.267	42	2.602	

*Significant at .05 level of confidence

(Table values required for significance at .05 level with df 1 & 42 and 2 & 42 are 4.07 and 3.23 respectively.)

Furthermore, table 2 shows that significant difference exists on stroke volume among resting and after exercise conditions at pre and post tests irrespective of groups. The results of the study indicate that

significant differences exist in the three way interaction of groups, training and exercise conditions on stroke volume.

Table 3 indicates that stroke volume did not vary significantly between groups during pre test period at rest and after exercise conditions, however, significant difference exists on stroke volume between groups at rest and after exercise conditions during posttest period (*for which the post hoc test was performed and presented in table 4 & 5*). The result of the study also indicates that stroke volume at rest and in response to exercise of aerobic and anaerobic training groups altered significantly for better as a result of training. However no significant changes on stroke volume were found among tests at resting and in response to exercise condition of control group. Furthermore, the findings indicates that stroke volume of all the three groups elevated significantly in response to exercise during pretest and posttest period.

Table – 3: The Simple Effect Scores on Stroke Volume

SOURCE OF VARIANCE	SUM OF SQUARES	DF	MEAN SQUARES	"F" RATIO
Groups at rest during pre test	3.355344	2	1.677672	0.644763
Groups after exercise during pre test	3.466333	2	1.733167	0.66609
Groups at rest during post test	1464.874	2	732.4372	281.4901*
Groups after exercise during post test	2649.617	2	1324.809	509.1502*
Tests at rest and group I	2881.2	1	2881.2	1107.302*
Tests at rest and group II	1888.141	1	1888.141	725.65*
Tests at rest and group III	0.3	1	0.3	0.115296
Tests after exercise and group I	4368.121	1	4368.121	1678.755*
Tests after exercise and group II	3141.644	1	3141.644	1207.396*
Tests after exercise and group III	0.833167	1	0.833167	0.320202
Tests during pre test and group I	23352.3	1	23352.3	8974.75*
Tests during pre test and group II	22632.51	1	22632.51	8698.119*
Tests during pre test and group III	21816.09	1	21816.09	8384.353*
Tests during post test and group I	27300.8	1	27300.8	10492.24*
Tests during post test and group II	26581.6	1	26581.6	10215.84*
Tests during post test and group III	21924.06	1	21924.06	8425.849*
Error	109.267	42	2.602	

*Significant at .05 level of confidence
(Table values required for significance at .05 level with df 1 & 42 and 2 and 42 are 4.07 and 3.23 respectively.)

Table - 4: The Scheffè S Test for the Differences between Paired Means on Stroke Volume of Groups at Rest during Post Test

Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Difference	Confidence Interval
84.200	81.067		3.133*	1.497
84.200		65.733	18.467*	1.497
	81.067	65.733	15.334*	1.497

*Significant at .05 level of confidence

Table 4 shows that significant differences exists between aerobic and anaerobic training groups, aerobic training and control groups and anaerobic training and control groups on stroke volume at resting condition during post test period. It is inferred from the result of the study that the stroke volume at resting condition of aerobic training group is significantly better than anaerobic training group during post test period.

TABLE – 5: THE SCHEFFÈ S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS ON STROKE VOLUME OF GROUPS AFTER EXERCISE DURING POST TEST

Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Difference	Confidence Interval
144.533	140.600		3.933*	1.497
144.533		119.800	24.733*	1.497
	140.600	119.800	20.800*	1.497

*Significant at .05 level of confidence

Table 5 shows that significant differences exists between aerobic and anaerobic training groups, aerobic training and control groups and anaerobic training and control groups on stroke volume after exercise condition during post test period. It is inferred from the result of the study that the stroke volume in response to exercise of aerobic training group is significantly better than anaerobic training group during post test period.

Discussions on Findings

The results of the present study are in conformity with the findings of the previous research studies. It is fact that numerous physiological variables change as a result of exercise to maintain homeostasis and muscular work. Piira and others (2010) assessed the heart rate (HR) dynamics and found that cardiac vagal outflow is attenuated and vasomotor sympathetic activity elevated during exciting sports events.

The stroke volume in highly trained persons can continue to increase up to near maximal rates of work (Scruggs *et al*., 1991; Gledhill, Cox & Jamnik, 1994). Several factors contribute to the increase in stroke volume from sports training. The athlete's heart structure augments stroke volume. Left ventricular end-diastolic internal diameter and left ventricular end-diastolic wall thickness increase in parallel so that their ratio is not significantly altered (White, *et al*., 1987). Stroke volume increases in parallel with the increased end-diastolic volume so that muscle fiber shortening is maintained.

Conclusions

Based on the findings of the study it was concluded that the stroke volume at rest and after exercise conditions of aerobic and anaerobic training groups altered significantly for better as a result of respective training, where aerobic training has the upper hand as compared to anaerobic training for its effectiveness on stroke volume.

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A comparative study on Cardio-Vascular Efficiency between Kho-Kho and Kabaddi Players Of Z.P.High School,Nalgonda Dist ,Telangana.

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Introduction

Cardio-respiratory endurance is a basic component of physical fitness. It is characterized by moderate contractions of large muscle groups for relatively longer periods of time during which maximum adjustments of cardio-respiratory system are necessary. The cardio-respiratory endurance factors have been identified with the following:

Oxygen requirement.Blood ejection velocity.Pulse pressure after works andPulse recovery after easy work.

An efficient cardio-respiratory system means a better supply of food and the muscles and quick recovery after exercise. Cardio-respiratory endurance is dependent on combined efficiency of blood vessels. Heart and lungs.The pulse may be felt in the superficial arteries by pressing them against the underlying bones. The pulse is usually taken at the radial artery in the lower portion of the fore arm. The pulse corresponds to the pressure changes brought about by the ejection of blood from the heart into corta and is a guide for ascertaining the number of heart contractions. The average pulse rate of a healthy person is seventy to eighty beats/minute. For trained athletes resting pulse rate is fitness to twenty beats/minute. Lower than the average rate. This has been attributed to alterations in the autonomous nervous system, because the senatorial mode in the right atrium is influenced by autonomous nervous system.During physical activity, there is an increase in the blood circulation, which increases the rate of transportation of oxygen, carbon dioxide and metabolites formed during the muscular contraction. The increase in the rate of blood flow is due to a combination of two factors. An increase in the pulse rate and an increase in the blood volume output from heart per beat which in turn depends on the intensity of work and has a linear relationship with the amount of oxygen consumed.

The Study Aims To Know The Cardio Vascular Efficiency Of The Players Of The Two Games I.E Kho-Kho And Kabbad.I.This Study Is To Determine The Significant Difference Of Cardio Vascular Efficiency Between Kho-Kho And Kabbadi Players Of Nalgonda Dist.

Methodology

The purpose of this study was to find out the cardio vascular efficiency between the Kabaddi and Kho-Kho players boys in Nalgonda District through “Harvad Step Test”. In order to achieve this purpose, seventy five kabbadi and seventy five Kho-Kho boys were selected at random. The subjects were between fourteen to sixteen years of age.

SAMPLE: seventy five Kho-Kho players boys from High. School and seventy five Kabaddi players boys from High Schools in Nalgonda , Telangana.. were selected at random.. The subjects of both group were normal healthy students without any physical disability, particularly heart and lungs, during selection.

The subjects was asked to stand in front of a bench and to step up and down on a 18 inches bench for a long period as possible up to four minutes. The cadence was step up exercise per 4 minutes. For getting correct rhythm and cadence metronome was ceased. The subject was instructed to do the steps in co-ordination with the metronome. For the first tick of the metronome the subject put his first foot on the stepping bench. For the three tick the subject brought down the first foot the placed on the bench and for the fourth tick he brought the second foot back to the floor. Thus step was maintained for four minutes.

Duration of exercise -4 minutes using an 18 inches bench during of exercise. If a subject was not able to continue the exercise for the prescribed period of time, the duration for the exercise was recorded independently for the subjects.

The subject was asked to sit down on the bench immediately following the termination of the exercise. Then the pulse was counted from one minute rest after exercise. The first pulse count is 3- $3^{1/2}$minute.

The sum of the scores obtained from the pulse counts and the duration of time of the exercise were used to calculate the physical efficiency index according to the following formula.

Physical Efficiency Index $= \frac{\text{Duration of exercise in seconds x 100}}{\text{2 x (sum of pulse counts to recovery)}}$

APPARATUS The following apparatus were used for the conduct of this Event: 1 .A stop watch 2 .A bench of 18inches high 3 .Metronome

Results and Discussion:

The Mean, The Difference Between Mean, Standard Deviation T Ratio Of The Kho-Kho And Kabaddi Players In Nalgonda District, Telangana.

S.No.	Name of the District	Mean	Mean Difference	SD	M	't' - Ratio
1.	Kho-Kho players in Nalgonda district., TS.	68.11		4.2264	0.4878	
			4.59			6.6764
2.	Kabaddi players in Nalgonda,T.S	63.52		4.1957	0.4843	

Discussion:

The controlled data from the total scores of kabaddi and Kho-Kho players of High School boys in Nalgonda District were analyzed and interpreted. The't' – ratio was calculated to findout whether there was any significant differences between mean obtained from the two groups.The mean, the difference between means, standard deviation of the Kabaddi and Kho-Kho players and 't' ratio were shown in the above table.

Cardio-vascular efficiency of

Kho-Kho players is = 68.11

Kabaddi players is = 63.52

Conclusion

The results of the collected after statistical analysis proved that there was a slight difference in the cardio-vascular efficiency between kho-kho and kabaddi players boys in Nalgonda,District, Telangana. The results were obtained in favor of the kho-kho players. Even though the null hypothesis was rejected at 0.05 level of confidence. The difference was meager. This may be due to the fact that both group boys' players are involving in similar type of training and conditioning programmes.The slight difference may also be due to the fact that the research scholar conducted the study only on number of subjects. If the study might have been conducted as large sample the results would have been better and more accurate.

Recommendations

A similar study may be conducted in other districts and states.It may be profitable if its administered on a large number of subjects.A similar study may be conducted to find out the endurance for residential and non-residential school boys.A comparative study may be conducted in the physical and psychological parameters of residential schools.A study to be conducted in other age groups of residential and non-residential school boys and girls

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Nature or nurture? The secret behind the distance king: An Ethiopian three gold and one silver Olympic medalist, Kenenisa Bekele

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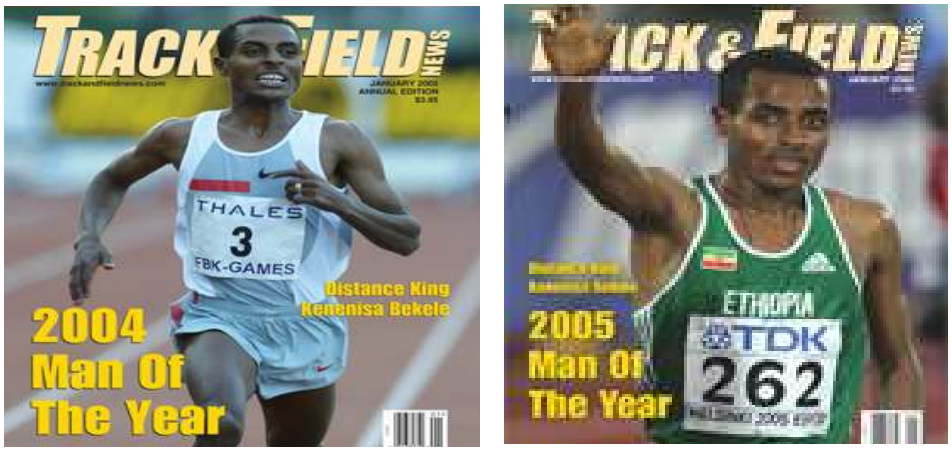

Figure: 1 Kenenisa Bekele Man of the year (2004 and 2005)

Introduction:

Kenenisa Bekele is the first Ethiopian athlete won four Olympic medals (3 gold and 1silver) in Athens and Beijing Olympic Games. First he won gold and silver in 10,000 and 5000 meter in Athens Olympic Games respectively. And again he won double gold in 10,000 and 5000 meter in Beijing Olympic Games with a new Olympic record. He is the most accomplished runner and many consider him one of the greatest distance runners of all time. Who was called by someone "King of 5000 and 10,000 meter race" and "Kenenisa Anbesa" which mean Kenenisa the lion. He is the older brother of Tariku Bekele also an accomplished world class distance runner. "Kenenisa Bekele's running style included a dramatic burst of speed in the last leg of a race. In 2003, he ran the last 100 meters of a distance race in eleven seconds, which would have qualified him for the 100 meter dash. The same year he ran the last 200 meters of a race in 24 seconds. Few competitors can match his closing acceleration." (Norbert Brockman) Kenenisa means 'rich' in Oromifa; Bekele means 'grew' or 'prospered' in Amharic. Kenenisa was born June 13, 1982 and raised a little far from Bekoji, in the Ethiopian highlands. He is from a middle class family which was not exactly very rich, but not poor either. He grew up in a house full of love and affection. According to the tradition of his environs, spent most of his childhood as he helped family in the farm and sell the eggs from the chicken they had in their backyard. His parents were very keen on educating their children. Therefore, they all went to school at an early age where he used to walk 7 km to school in a round trip. Kenenisa was very active in sport and played soccer as a boy, one day when he was playing football in school, Mr. Sentayehu Eshetu saw him run very fast as a right winger and advised him to take up track events. Kenenisa competed in the Oromiya regional cross country championships where he finished second and selected to represent Oromiya in the Ethiopian Cross Country Championships. In his first ever race in Addis Ababa took 6th place and qualified for the world cross country championships in Belfast.

As soon as he returned from Belfast, he was approached by the Muger Cement sports club and joined the team under the wings of Coach Tolosa Kotu. He is the older brother of Tariku Bekele, also an accomplished world-class distance runner. (kenenisabekele.net)According to (track and field news January, 2005) annual

edition reported that year-ending issue has hit the streets in all its glory, with distance superstar Kenenisa Bekele once again being chosen as Athletes of the Year. Kenenisa Bekele … holds the world record and Olympic record in both 5000 and 10,000 meters events. He is the reigning Olympic champion in both events. He is the most accomplished runner in IAAF world cross country championships history, with six long (12 km) course and five short (4 km) course titles. He won the 10,000 m title at the world championships in athletics four times running from 2003 to 2009. Kenenisa was unbeaten over 10,000 m from his debut in 2003 until 2011, when he failed to finish at the World Championships final. At the 2009 world championships in athletics he became the first man to win both 5000 m and 10,000 m title at the same championships. Over 5000 m he has also won World Championship bronze (2003), two African championship title and one all African Games gold medal. He also won the 3000 meters title at the world indoor championships in 2006. With his vast array of medals, many consider him to be one of the greatest distance runners of all time. Regarding his achievement visit iaaf.org/athletes website

Kenenisa was hopeful, to win both the 5000 m and 10,000 m titles in Beijing Olympic Games. As he indicated in his own web site he learned a very big lesson. The races in the Olympics are nothing special. He hyped them in his own mind that they were life-and-death. As he gave his words Kenenisa won both men's 5000 and 10,000 meter race in the Beijing Olympic Games set a new Olympic record. After his stunning victories at the Beijing Olympics, Kenenisa returned home to a hero's welcome, with million cheering and dancing Ethiopians greeting him at the airport.

Discussion:

Kenenisa Bekele tells us about his experience as an athlete and individual.

Question: Why did your parents select this name for you? Tell me if there any reason.

Answer: Kenenisa means virtue and happiness. My parents gave me this name because I was born when their life become joyful.

Question: Generally speaking, what was your childhood like? (Where did you grow up and what was it like there?)

Answer: During my childhood I raised a village little far from Bekoji in Ethiopian highland, I used to play with my friends and look after cattle. At the same time I started education when my age allowed me. As far as my behavior is concerned, I was not strong in getting along with others. During my school age, I used to make pocket money by selling hens and eggs. The money was used for school expenses.

Question: Did you have any favorite as a child, if you have what kind?

Answer: Playing

Question: Describe the games you played as a child.

Answer: During winter, I used to play with whips because of its striking sound. Spraying water chasing and other games, after I grew up a little higher I starting playing balls made of rugs.

Question: What kind of sports you played most during your childhood?

Answer: Actually I don't have to say I play most. I used to play any games like rug balls at school.

Question: What did you want to be when you grew up?

Answer: I don't have specific profession in mind but I always think to complete my education successfully and achieve higher level.

Question: Is there a person that really changed the course of your life by something that they did? If there who were they and what did they do? If there is no, how the course of your life changed?

Answer: I used to rank first at school competitions. As the result, my friends encouraged me to keep it up. Then I heard the great deeds of Derartu, Haile, and Fita's victory in radio which inspired me. Also at school I heard the great deed of Abebe Bikla and Mirut's victory in Olympic Games and I told myself that I could make similar success if I participate in athletics.

Question: Did you play on any sports teams? If so, please tell me its strong and weak side

Answer: Yes, at Mugar Cement factory. The enterprise should work hard by employing many athletes. The strong side of the enterprise is that it established B club at Assela to create new generation of athletes.

Question: How do you spend your leisure time?

Answer: I don't have much leisure time. With the little time I have, I watch television, film and chat with my children.

Question: What were your favorite foods?

Answer: Traditional food called Chechebisa, Qita, traditional bread and yoghurt.

Question: Describe the size of the town where you lived

Answer: It was a rural village away from Bekoji. The village is characterized by hills with ups and downs. I was brought up playing on these hills.

Question: In your personal opinion what are the secrets of your great success?
Answer: The main secret of my success is setting objective and pursuing it with determination on top of this perform the job with high sprit. Be genuine, hard working, endure challenges and free from addictions.
Question: What sort of extracurricular activities did you participate in as a teen?
Answer: I have never participated in any club.
Question: What do you feel when you practicing for Olympic Games?
Answer: I tell myself that I should repeat the history of Olympics Hero such as Abebe bikila, Mamo Wolde and Miruts Yifter.
Question: What is your feeling before the start of the race in Olympics you participated?
Answer: I feel a very good sentiment because I usually dream of becoming world class athlete.
Question: What is your feeling during the race in Olympics you participated?
Answer: During the race thinking when I take the gold medal after the last bell, carrying my country's flag and round the court after victory, thinking the entire world watching on TV my victory and thinking that I should not surrender. My dreams come true in Beijing Olympic Games brought home two gold medals. I had full confidence winning the race and told my coaches can do better for me and my country and I did it and repeat history.
Question: Are you free from consuming alcohol and smoking cigarette?
Answer: Yes
Question: Are you strictly following your training program?
Answer: Yes of course, while the regular exercise is twice a day but I do three times.
Question: Describe the personalities of your family members.
Answer: I have three brothers and two sisters. From my brothers, my younger brother is following my footsteps whereas the rest of my brothers are farmers. My sisters are housemaids – married.
Question: What was your position in the family? Were there any advantages or disadvantages?
Answer: I am the second son in my family. This did not have neither positive nor negative impact.
Question: Are there any physical characteristics that run in your family?
Answer: My father had strong and powerful body during his adulthood. I think that strength passed on to me.
Question: Did your parents or grandparents come here from another place, if it is so, from where and when?
Answer: My parents lived in Shoa (central of Ethiopia) before they moved to Arsi. They married here and gave birth.
Question: Did your family move often and if so, where and how long did they stay there?
Answer: They were here. They didn't go anywhere.
Question: What was the discipline like at your home?
Answer: My family has good Oromo culture inherited from previous generations. Respect for elder lies is one of the important values. Children are reprimanded when they make mistakes and also comprehend our interests.
Question: Did your family support, oppose, or encourage you?
Answer: At the beginning they objected to my participation in athletics because they thought it could affect my result in school. But as I became successful in athletics, they gave up objecting.
Question: How would your parent(s) describe you as a child?
Answer: I was a kind of person very agreeable. I don't like intimidated. I don't talk much, I respond only asked.
Question: What kind of character you inherited from your family most valuable for you?
Answer: I learnt avoiding malicious behavior, good result by hard working and positive thinking.
Question: What were your family's attitudes toward education and to be an athlete?
Answer: My parents urged me to give priority to education because they want me to succeed in education. But after I become successful in athletics they stopped.
Question: Of all the things you learned from your parents, which do you feel was the most valuable?
Answer: Positive and genuine mentality, hard working, avoiding malicious thinking
Question: Are there any stories about famous relatives in your family?
Answer: No, there was no one.
Question: Who do you admire most in your family?
Answer: My father was a respected and hard working farmer in the village and so was my mother.
Question: What's the farthest from home you've ever been, if so, for how long?
Answer: No.

Question: What is your personal philosophy towards this world that you would like to pass along to the next generation?
Answer: Most people want good life; however, I will be happy if their dreams come true. Our world is full of bad and good things. Sometimes you cannot get what you wish instead you get the opposition. How can young

generation become successful under this uncertain condition? First they should protect themselves from HIV and other diseases and think positive.
Question: Where did you attend grade school?
Answer: Koma Welash Gira next Welkite Peasant Association
Question: How many years of education have you completed? Do you have a college degree? If so, what was your field of study?
Answer: I am now 10th grade and I scored 3.6
Question: How did you get to school, if you walked, how far?
Answer: On foot, it takes 7 km in round trips.
Question: How do you pass your break time in a school?
Answer: I used to play with my friends.
Question: Are there any teachers you particularly inspired you to incline to be an athlete? If so, who is he and how?
Answer: We ran, compete and win during sport period. Later, a man called Sintayehu at Bekoji helped me.
Question: What kind of extracurricular activity have you had while you were in school?
Answer: I did not participate
Question: How has your school prepared you for this job?
Answer: First of all education is a key to solve problems. Therefore, it helped me reach where I am now. Secondly, it helped me to speak international language.
Question: Courses have you had that is related to athletics? If so, how far these courses helped you for your career?
Answer: I didn't take any course.
Question: While you were in training, did you live away from home, if so, for how long?
Answer: I didn't stay out for long but I used to stay out only for a matter of a week during regional and zonal competition.
Question: What is your personal opinion that you would like to share across the novice athletes to be successful in their career?
Answer: They shouldn't depend on others. If they work hard they can get what they want.
Question: Whom do you most admire out of your family? Why? Is there any input for your career?
Answer: I admire Miruts because he won two gold medals in Moscow Olympic Games in 1980. I followed his footsteps and won two gold medals at Beijing Olympic Games in 2008.
Question: Is there any teacher you admire most?
Answer: I like all teachers of biology, geography and sport.
Question: What was the discipline like at school?
Answer: Though I was not too sociable, I am a disciplined one.
Question: How was the sport activity in your school, and your participations?
Answer: I participate particularly in athletics.
Question: Were you ever given any special awards for your sport activities in your school? If so, tell me.
Answer: I ran a short distance of 400 meter and won. Hence, sport program called me a best runner.
Question: What did your father do for a living?
Answer: Agriculture
Question: What did your mother do for a living?
Answer: Agriculture
Question: Did you contribute to the family income? If so, how was it?
Answer: I took after cattle; I used to mow crops and weeds out.
Question: In general how was your family income like?
Answer: My family relatively had enough wealth so that they rear us modestly.
Question: Tell me your achievements in Olympic you participated.
Answer: In 2000 Athens Olympic Games I won silver and gold medals in men's 5000 and 10,000 meters respectively. In 2008 Beijing Olympic Games I won two gold medals in men's 5000 and 10,000 meters.
Question: Tell me you ever given any special awards for achievements.
Answer: There are so many. I can't count. Look at the internet.

Question: Tell me that you earn any honors or were you recognized for your great achievements in or outside of Ethiopia?
Answer: One automobile at the national level, land financial rewards from federal and regional government
Question: Of all your achievements in which are you most proud of?
Answer: Olympic Games particularly Beijing.

Question: Do you think that your achievements inspired others to pursue others novice athlete? If so, who are these?
Answer: Yes, including my brother and many other young Ethiopians were inspired by my victory.
Question: Tell me about the sport facilities in the city you were trained.
Answer: There was no sport center; however, it is clear that athletics can be practiced in different places by personal efforts. In doing so, one can achieve good results.
Question: Do you think that it is enough about budget allocation for Olympians in the Olympic Games you participated?
Answer: Yes, there was no budget shortage. The teams exercise properly and compete sufficiently without financial shortage.
Question: How did the government support and encourage athletes to be successful?
Answer: It is very good. Let it keep up.
Question: How did the people encourage athletes?
Answer: The people highly participate in a hero welcome after athletes return home following international competitions and Olympic Games.
Question: What is your personal opinion in which area if the government pays more attention the results will be much better?
Answer: High attention should be given training young generation.
Question: What are some goals you're trying to accomplish in the future in your profession?
Answer: New records in Marathon and repeating similar result in Olympics.
Thank you! I wish you the same.

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Prioritize effective factors on development of sports tourism from the perspective of sports experts

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Abstract:
Today, tourism as the main pillar of sustainable development is considered. The importance of this industry and its role in economic, social and cultural development has caused many managers and local, regional and national planners anywhere in the world trying and planning to expand it.
One of the most important issues in the development of tourism is sports tourism. In this study tries the major obstacles to the development of sports tourism in the view of experts in sports federations are examined by means of questionnaires. In this study to identify effective factors and rating of these factors, AMOS software is used. According to the Statistics test results relationship between the political (t = 3.77), economic t = 2.35), and cultural (t = 2.28) variables with the development of sports tourism is confirmed. Also, due to the correlation coefficient can be said that economic factors have the greatest impact and then finally cultural factors and political factors as the most important Effective factors on the development of sports tourism was introduced.
Key words: Tourism, sports tourism, sports federations

Introduction:

Nowadays development of tourism in all areas, whether national, regional or in the international level is taken into consideration by government planners and private companies. Many countries have sought increasingly to the fact that for improving economic situation must take the initiative to meet and find new ways (Lotfi, 1384). Tourism is one of the most dynamic economic activities of present era that plays an important role in local sustainable development. This industry by combining internal and external sources has social, economic, environmental and cultural benefits. In many countries, nowadays tourism as a major force in advancing the country's economic growth is considered and by providing strategic opportunity, diversify the local economy and cause employment and create an income, and increase the value of entering sources into the local environment (Bidokhti et al., 1389). Today, tourism is so important in socio - economic development of the countries that the economists called it invisible exports (Shaw and Williams, 2004). Many countries know this dynamic industry as the main source of income, employment, private sector growth and development of the Infrastructure structure. Although in different regions, circumstances are different, Tourism has always is an important factor for economic development (Abrahimi and Khosroyan, 1384). The development of the tourism industry, particularly for developing countries with problems such as high unemployment rate, Limited financial resources and single-product economic are faced, has great importance (Tabibi et al., 1386). One of the types of Tourism is in the sports area. In the meantime, Gibson (2005), is provided one of the most comprehensive definitions in the area of sports tourism. Sports tourism is Recreational travel that people leave their home temporarily to take part in physical activity, watching physical activity or respect to the attractiveness of physical activity. Sports tourism is always faced with different challenges.That with identifying these challenges and effective factors on the development of it, many of these issues can be solved in this area (Halpenny, 2011). In this study, tries to answer this question in the field of sports tourism what factors are effective?

The necessity and importance of the research:

Today, tourism as the main pillar of sustainable development is considered. The importance of this industry and its role in economic, social and cultural rights has caused many managers and planners of local, regional and national levels anywhere in the world trying and planning to expand it. (Bidokhti et al., 1389). Iran's economy relies heavily on revenues from oil exports and its macroeconomic variables by following world oil

prices experiencing the strong volatility in over time. Governing process on variables such as GDP, gross investment, Per capita income, etc. in the last three decades of Iranian economy, clearly indicate this subject. Hence, in order to diversify sources of economic growth and foreign exchange earnings, as well as create new job opportunities in the country, the development of tourism has great importance; Because Iran is among the top ten countries in the world in terms of tourist attractions and has great potential for tourism and international tourism (Tabibi et al., 1386). Meanwhile, according to the World Bank report Iran's income from the tourist attraction in 2009 will face a 33 percent reduction and reach to a billion US dollars.

In 2008, Iran's tourism revenue is $ 1.5 billion and this figure for 2007 was 1.2 billion dollars (Eco news, 1388).At the same time according to this case that basis of five-year plans all administrative units are required to achieve better performance in this area. Tourism industry officials as one of the most High-income industries in the world can take an effective step in this area. In the meantime, one of the major tourism expressed in terms of sports tourism. In this context, it should be stated that Iran, despite high potential in this regard has been unable to demonstrate good performance in this area. While surrounding countries such as Qatar, UAE and East Asia countries very well has been used these potential. Perhaps one of the reasons for this matter is lack of attention to effective areas on the development of sports tourism in the country. Because studies in this area is very few, and Research gaps well understood. Thus, in this study is trying with comprehensive approach and careful consideration of area of these matter is identified very well and solutions for improve it is provided.

Theoretical Foundations

In the field of sports tourism and tourism development various research has been done. Bayat et al (1392) in a research entitled the study of effective factors on the development of tourism as factors of national sports event from the perspective of the people involved in sports have identified these effective factors. In this study the pushing factors, preventive, natural attractions and sports hub with tourism development, there is a significant relationship. Farahnaz Miraj. (1386) in a research entitled the effect of the tourist attractions of Semnan province on the dynamics of employment stated: Tourism that in recent years for some of World countries is located at the top sources of income. From long time ago in our country has always been in potentially good condition, but in terms of some of the economic concerns has not found its position. As among the world's countries has the tenth place in tourist attractions. While in terms of economic income doesn't have an important place. However, revenue from province's tourism in the fourth development plan 123296/42 million riyals forecast, Which, if successful, through which 948 new jobs could be created in the province that covers 66/24% of unemployment in the province and if we create efficient management, only 2.7% of the province's passing tourism that 12 million visitors a year attraction will solve the problem of unemployment in the province. Seyed Ali Badri (1388), in a research titled the economic impact of tourism on rural areas has stated that uncontrolled and spontaneous growth of tourism with effect on the foundations of the rural economy has various economic consequences. This article seeks to identify and analyze the effects of tourism in rural areas of the central part of Noshahr, based on the principles of sustainable tourism and the principles of related theory. According to this method, used research is Descriptive- analytical, that with using objective and subjective data derived from questionnaires completed by the heads of households and rural Islamic Councils is done.Research variables, has qualitative and quantitative nature and in collecting subjective data of Likert scale and for data analysis of statistical test of parametric correlation and nonparametric test was used.

The results show that although tourism has led to positive effects and outcomes such as job creation, especially jobs for young people and increase the income of residents and multiplier coefficient in the rural area of Mentioned areas, But the effects and negative consequences of economic such as rising prices for goods and services in the tourist season, Rising land prices and generally increase the cost of living of Residents and excessive dependence of the village economy on tourism have been followed.

Komeil Tabibi in research titled the study of status of the relationship between tourism development and economic growth in Iran states that today tourism, is one of the largest economic sector in many countries is considered. Tourism for Iran that heavy reliance on oil revenues can come as a way to get rid of dependence on oil's income and exit of the monocultural economy. Based on the successful experience of many countries in the growth of the tourism industry and its importance to economic growth and development, this paper examines the relationship between international tourism and economic growth in Iran by using Ali Granjeri pattern during the years 1383-1338.

The results of this research show that the scientific relationship between tourism and Iran economic development, a two-way scientific relationship and between these two variables, there is a long-term equilibrium. Halpenny (2011) in the research, study the effective factors on participation of sports tourism. In this research on effective environmental factors on the development of sports tourism is emphasized. Eugenio-Marin,et al (2004) ,examine the relationship between tourism and economic growth in Latin American

countries during 1985 and 1998. They used panel data and Arellano-Bond Assessor for dynamic panel and the estimate of the relationship between economic growth and per capita growth of tourism have gained. The results of their study suggest that the tourism industry for economic growth in low- and middle-income countries such as Latin American countries is appropriate.

Kim et al (2006), test the causal relationship between tourism and economic growth in Taiwan. A causal test followed by the group method is performed, to indicate the direction of causality between tourism and economic growth. The results suggest that there is a long-term equilibrium relationship between tourism and economic growth in Taiwan, and also the relationship between these two variables is a two-way Causal relationship.

Dritsakis (2005) Effect of long-term tourism and economic growth in Greece by using the Granger Causality test is tested. There was a collective Vector between GDP, Effective exchange rate and income from international tourism over the period 1960 and 2000, respectively. Granger causality test that based on the correct model was founded, found that there is a strong two-way causal relationship between income from international tourism and economic growth, similarly, there is a causal relationship between effective exchange rate and economic growth, as well as the effective exchange rate and income from international tourism in this period was observed in Greece. Balaguer and Cantavella (2002), in a study, test the role of tourism in economic growth of Spain. Their hypothesis is that tourism leads to growth or Co-integration and causality test was confirmed. Their results showed that economic growth in Spain, at least in the last three decades obviously and significantly led to the sustainable development of international tourism.

Research Hypothesis:

1. Cultural factors have significant impact on the development of sports tourism.
2. Political factors have significant impact on the development of sports tourism.
3. Economic factors have significant impact on the development of sports tourism.

Research Methodology

This research method is applied, descriptive and survey. The statistical population of research of all experts and scholars in the field of tourism in the different sports federations in Tehran are formed. The sample size is determined based on Morgan table and to distribute research tool simple methods of classification is used. As well as, in the rating of factors and identification of effective factors of questionnaire based on theoretical principles is used. Validity of study tool through the validity of context and reliability based on Cronbach's alpha coefficient is determined. In this study, economic factors In the form of fluctuations of exchange rates, monetary inflation, the cost of travel to the country, recreational facilities, transport facilities in the political dimension of managers support, Authorities Coordination, simplify the visa process, and in cultural dimension, Public support for the development of tourism , social behavior of people, public interest, cultural infrastructure as the most important components on the basis of previous research are presented.

Analysis of the results

First, the demographic sample in the form of gender, marital status and history of relationship with the sports federations are provided in Table 1.

Table 1 - study the status of demographic sample of research

Frequency Percent	Group	Demographic characteristics
65	Man	Gender
35	Woman	
85	Married	Marital
15	Single	
35	Under 1year	History of relationship with federation
30	2to 3years	
20	3to 4years	
15	more than 5 years	

According to Table 1, 65 percent of men group and 35 percent of women group have been selected. In addition, 85% in married section are married and 15 percent were in the single group. In terms of history of relationship also 35 percent of people with history relationship under 1 year, 30 percent of people with a history of 2 to 3 years, 20 percent with history of 3 or 4 years, and 15 percent had a history of 5 years. As well

as the results of analysis of study variables In the form of correlation between variables and mean and standard deviation are given in Table 2.

Table 2 features of research structures

3	2	1	Standard Deviation	Average	structure

Economic (1) 3.70 1.40 1
Political (2) 4.99 1.08 0.562 ** 1
Cultural (3) 3.66 1.23 0.481 0.444 ** ** 1
** Correlation at the level of 0.01 percent

Path analysis and hypothesis test

finally, the results of study and analysis of research assumptions with software in Table 3 and Figure 1 is presented. Presented assumptions in the form of Amos 22software is examined. As shown in Table 5, According to the results of Research statistic test the relationship between the political (t = 3.77), economic(t = 2.35), and cultural (t = 2.28) variables with the development of sports tourism is confirmed.

Also, due to the correlation coefficient can be said that economic factors have the greatest impact and then cultural factors and finally political factors as the most important effective factors on the development of sports tourism was introduced.

Table 3: Evaluation of assumptions and path analysis

Approval / rejection relationship	Significant level	Path coefficient	T-statistics	dependent variable	Independent variable
Approval	***	0.13	2.12	Sport Tourism	Political factors
Approval	0.01	0.28	2.35	Sport Tourism	Economic factors
Approval	0.02	0.26	2.28	Sport Tourism	Cultural factors

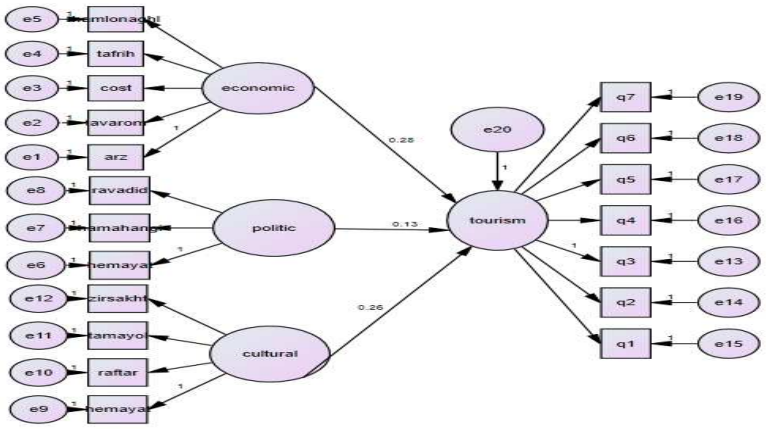

Figure 1: The results of hypothesis test

Conclusion

Sport Tourism is one of the most important sources of income for many countries. Every year various countries around the world are acting voluntarily to Receiving License for the sports courses

And given the opportunities available trying to use their facilities in order to provide better tourists services for sports tourists in two form of athletes and spectators. Unfortunately, in this area in the country appropriate facilities for training courses and sports for arrival of athletes in the country does not exist, And Iran could not use the existing capacity in this area. This despite the fact that it seems the major problem in this field in three areas of cultural, political and cultural to be identifiable.

In this context, it is recommended to pay attention to these areas in order to reduce barriers, considered by managers of sports and tourism. The results of this research show that with respect to the Test results of statistic Test of relationship between political (t = 3.77), economic (t = 2.35), and cultural (t = 2.28) variables with the development of sports tourism is confirmed.

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A study on Self confidence of sports persons and non-sports persons

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Abstract
In recent years researchers have become increasingly interested to know whether the personality characteristic is related to athletic performance. An analysis of determinants of athletic performance and discussions with participants in a number of sports from recreational to national competitions, suggest that desire to win/will to win and self confidence are important factors in athletic performance. A self-confident person perceives himself to be socially competent, emotionally matured, intellectually adequate, successful, satisfied, decisive, optimistic, independent, self-reliant, self-assured, forward moving fairly assertive and having leadership qualities. Apart from these some psychological factors such as anxiety, self-confidence, adjustment and achievement motivation also influence the sports career and performance of sportsmen. Many factors affect the development of self-confidence. Parent's attitudes are crucial to children's feeling about themselves, particularly in children's early years. When parents provide acceptance, children receive a solid foundation for good feelings about themselves. If one or both parents are excessively critical or demanding, or if they are overprotective and discourage moves toward independence, children may come to believe they are incapable, inadequate, or inferior. However, if parents encourage children's moves toward self-reliance and accept and love their children when they make mistakes, children will learn to accept themselves and will be on their way to developing self-confidence.

Introduction

Sports give appreciation of not only the complexity of man's struggles with himself and his opponents but also of the vastness of his feeling of togetherness and love for others. A sport is an institutionalized competitive activity that involves physical exertion or the use of relatively complex physical skills by individuals. Whole participation in motivated by a combination of the intrinsic satisfaction associated with the activity itself and the external rewards caused through participation. Modern sports training gives greater emphasis on preparing the athletes psychologically than physically, though both play a significant role. Physical educators and coaches believe that without psychological preparation, there is little chance of success at the higher level of competitions. Several investigations have revealed that apart from somatic and psychological variables, higher level of performance depends upon an athlete's psychological makeup. A player is psychologically fit for the game, if he possesses the required preparation, emotional stability, motivation, intelligence and educability to accomplish the task. By creating tension, elevated heart rate, blood pressure and anxiety can become barrier to performance. No player without will to win and self confidence can achieve the required goal. Psychological preparation of athlete is an important aspect of the total preparation of the athlete for better performance. In recent years researchers have become increasingly interested to know whether the personality characteristic is related to athletic performance. An analysis of determinants of athletic performance and discussions with participants in a number of sports from recreational to national competitions, suggest that desire to win/will to win and self confidence are important factors in athletic performance.

A self-confident person perceives himself to be socially competent, emotionally matured, intellectually adequate, successful, satisfied, decisive, optimistic, independent, self-reliant, self-assured, forward moving fairly assertive and having leadership qualities. Self confidence is a positive attitude of oneself toward one's self-concept. It is an attribute of perceived self. Self-confidence refers to a person's perceived ability to tackle situations, successfully without learning on others and to have a positive self-evaluation. Self-confidence, person perceives himself to be socially competent, emotionally mature, intellectually adequate, successful, satisfied, and independent, forward moving and having leadership qualities.

Many factors affect the development of self-confidence. Parent's attitudes are crucial to children's feeling about themselves, particularly in children's early years. When parents provide acceptance, children receive a solid foundation for good feelings about themselves. If one or both parents are excessively critical or demanding, or if they are overprotective and discourage moves toward independence, children may come to believe they are incapable, inadequate, or inferior. However, if parents encourage children's moves toward self-reliance and accept and love their children when they make mistakes, children will learn to accept themselves and will be on their way to developing self-confidence.

Statement of the Problem

The purpose of the present study was to compare self confidence of sports persons and non-sports persons.

Hypothesis

These may not be any significant, difference in self confidence between sports person and non-sportsperson

Significance of the Study

The present study undertaken by the investigator may be justified as worthwhile on the following grounds.

Self confidence appears to be one of the important, psychological traits for any person for achievement and success in life. Self confidence enables a person to improve upon his performance. A knowledge of the results of the study may be useful for athletes, coaches and trainers. The results of the study can help subjects in knowing their self confidence level and assessing it. A knowledge of the results of the study can be used for motivation purposes. The results of the study can be used for feedback purposes.

Methodology

In this the details regarding the selection of subject, criterion measure, sample selected for the study, selection of tool for the study, description of tool used, administration of the tool, collection of data and statistical technique employed have been presented.

Sample Size

Sample for the present study consisted of one hundred (N=100), subjects who were in the age group of 18-24 years. Out of 100 subjects serving as sample for the present study, fifty subjects (N=50) belonged to sports group and fifty subjects (N=50) belonged to non sports groups.

Selection of the Tool

In order to collect data necessary for the present study there was a need for an objective psychological tool that would measure self confidence. The self confidence inventory developed and standardized by M Basavanna

Description of the Tool

The self-confidence test designed and standardized by Basavanna consists of a series of questions numbering one hundred (100). Each item or question in the questionnaire has got two alternative answers. Each subject will have to tick for an alternative answer either "TRUE" or "FALSE". For each question subject has to put a tick mark against any of the two alternative answers that would reveal the response of self confidence of each subject. The total score that an individual would get in response to all the 100 items of the test would be his self-confidence score. According to the scoring key, the scores would be between 0 to 100. Lower the score higher would be the level of self confidence and vice versa.

Scoring

Scoring of the responses given by each subject to the questionnaire was done by the researcher himself. For each correct response the one (1) mark was given. The details of correct and incorrect responses for each item in the questionnaire have been clearly stated in the scoring key. The sum total of the marks obtained by each subject, in response to all the items of the inventory would represent the total score of self confidence of each subject.

Statistical Procedure

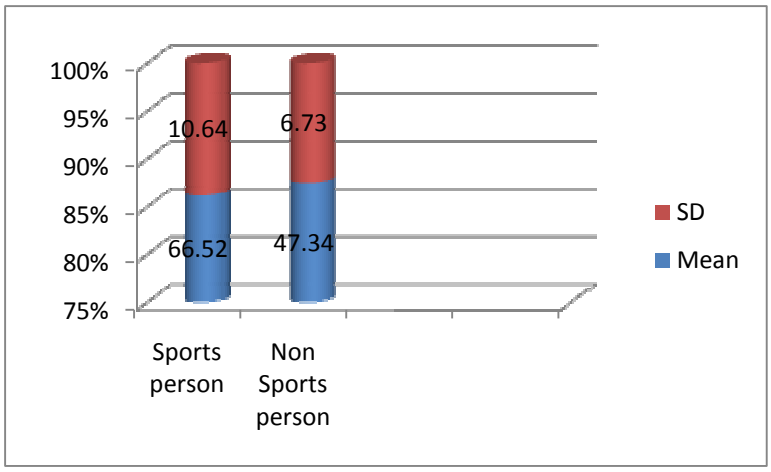
To test the research hypothesis, 't' test for difference of means was used with the level of significance being set at 0.05 percent.

ANALYSIS AND INTERPRETATION OF DATA

To achieve the main purpose present investigation the investigator administered Basavanna's self-confidence inventory to one hundred subjects (N=100) in the age group of 18-24 years who had participated in the Mysore city and Mysore University intercollegiate tournaments during the year 2014-15. The sample included fifty sports persons (N=50) participating in individual sports and fifty non sportspersons (N=50). Necessary data relevant to the present study were collected through the responses of the selected subjects to the self-confidence inventory administered to them. Statistical analysis of data then revealed the following findings which have been presented in table 1.

Table I
Descriptive statistic

Self-Confidence	N	Mean	S.d.	Z value
Sportsperson	50	66.52	10.64	10.77
Non sportsperson	50	47.34	6.73	



The table no;1 and graph shows that, the mean score of self-confidence of sportsperson was 66.52 with Sd of 10.64 and that the mean score of self-confidence of non sportspersons was 47.34 with Sd 6.73.
From the above table the calculated Z value was greater than 1.96. We reject the null hypothesis at 5% level of significance. That is, there exists a significant mean difference in self confidence among sports persons and non-sportspersons at 5% level and significance.
It was concluded from the results of the study that the sportsmen selected as subjects for the present study were on the high in self confidence levels and that there were significant differences between sportsperson and non sportsperson in their mean self-confidence scores. Thus the hypothesis formulated in the present study was rejected.
Self-confidence is the belief that one has in his own ability and ones belief in success. It was found, that, there were significant differences in self-confidence levels of subjects belonging to sports persons and non-sportspersons. This may be attributed to the factor of, effect of sports participation on subjects. The subjects of the present study were participants at the intercollegiate level and not elite athletes. The levels of sports participation and competitions also influence their confidence level. The exposure of athletes to intercollegiate competitions are limited for these students participating in intercollegiate competitions. Lack of experience in participation, that is participating in sports competition at lower levels and not at higher levels of sports competitions may also influence one's confidence and belief in one's abilities. These levels of competitions may enhance self-worth, self-belief, self-assurance and self-acceptance which are the components of self-confidence. The subjects in the present study were in the age group 18-25 years of age. That the age and corresponding exposure to participation in sports also have an impact upon one's level of self-confidence.
The factors such as age, training, experience, exposure, and the level of competitions may have been the causes influencing such results. The impact of sports participation over a few years might have been the influencing factors in the subject's high level of self-confidence.
On the contrary, the subjects belonging to the non sports group, might not have experienced success and may not have greater achievements. They might have some success in their academic life which may not be enough to increase their belief in their own abilities. Successes and achievements in one's life are very important factors that contribute to increase in self confidence levels. Lack of experience and exposure may also be the factors that have a negative effect on the confidence levels of subjects belonging to the non sports groups.

Hence, there may be a significant difference in self confidence levels between sportspersons and non-sportspersons.

Summary, Conclusion And Recommendations:

To achieve the main purpose present investigation the investigator administered Basavanna's self-confidence inventory to one hundred subjects (N=100) in the age group of 18-24 years who had participated in the Mysore city and Mysore University intercollegiate tournaments during the year 2014-15. The sample included fifty sports persons (N=50) participating in individual sports and fifty non sportspersons (N=50). Necessary data relevant to the present study were collected through the responses of the selected subjects to the self-confidence inventory administered to them. Statistical analysis of data then revealed the following conclusions.

Conclusion

The mean score of self-confidence of sportsperson was sports was 66.52 with Sd of 10.64 and that the mean score of self-confidence of non sportspersons was 47.34 with Sd 6.73.

From the above table we infer that the calculated Z value was greater than 1.96. We reject the null hypothesis at 5% level of significance. That is, there exists a significant mean difference in self confidence among sports persons and non-sportspersons at 5% level and significance.

It was concluded from the results of the study that the sportsmen selected as subjects for the present study were on the high in self confidence levels and that there were significant differences between sportsperson and non sportsperson in their mean self-confidence scores. Thus the hypothesis formulated in the present study was rejected.

Recommendations

Scope of the study may be enlarged to include a larger number of subjects and sportsmen or sportswomen participating at higher levels of sports competition. Self confidence levels of elite sportsmen may be studied and compared with subjects from other sports groups.Studies on self confidence of sportspersons based on training age may be considered for further research.Influence of different kinds of sports activities in self confidence levels may be studied.

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Impact exercises (PNF) to improve the range of motion and muscle strength for volleyball players' injured partial rupture of the lateral ligaments of the knee joint

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1- Introduction and significance of the research:

Sports injuries constitute a major threat to the level of athletes in different games, sports injuries often occurring during training and competition in the private the locomotors system injuries, and that because of pressures that shed during the effort on the joints, ligaments (portfolio of Synovial), muscles, tendons, paras. Which may cause severe injury or chronic.

Volleyball and one of the collective games, which is characterized by excitement and enthusiasm among players and spectators, given the difficulty of its requirements, the players enhance their capabilities efficiently and continuously so as to ensure the rapid and the ongoing shift from defense to the case of the attack and guarantee to maintain the safety of the players from various injuries.

Researchers take a new kind of (exercise rehabilitation) in the rehabilitation of the partial rupture lateral ligament of the knee joint, where researchers in the rehabilitation program based on exercise (PNF), which were not previously addressed in the rehabilitation programs, this exercise working to rehabilitate ligaments side of the knee joint .

1-1-Research problem:

All rehabilitation programs in specialized centers based on the experience of attending physician (medical point of view) only. Researchers work on the preparation of curriculum rehabilitation through the use of modern exercises (PNF) in the rehabilitation of injured ligament collateral of the knee joint,

Dependent on scientific bases and references of Arab and foreign sources, In the preparation of this curriculum to increase the joint surrounding muscle strength and rehabilitation of injured player before returning to play again after injury

1-2-Research objectives:

1. Prepare exercises (PNF) for the rehabilitation of the injured through the partial exercise of the lateral ligament of the joint kinetic.
2. Identify the impact of exercise, prepared by researchers for the purpose of improving the (the range of motion and joint strength) to the injured players in a game of volleyball.

1-3-Hypotheses:

There are significant differences between the test (pre and post) to the variables of the research sample.

1-4-Delimitation and limitation:

Researchers rely on a sample of volleyball players' injured partial rupture of the lateral ligament and the number (8) of the players, who are attending sports medicine center in Baghdad for the purpose of the treatment, for the period from 09/15/2014 up to 10/11/2014.in the Hall of Rehabilitation Center in sports medicine in Baghdad

The researchers did not take into consideration the nutritional habits followed by those injured players or their behavior outside the times of treatment.

1-5-Technique (PNF)

It is a technique based on the use of muscle contractions before elongation of muscle to get the most amount of muscle relaxation working. PNF exercises as working to reduce the reflected deeds of resistance to elongation of the muscle, also increases the range of motion and there are several things to consider when performing an exercise technique (PNF).

1. The player must take the status of elongation so that feels a sense of prolongation the muscle.
2. Fellow clutching the part that has been work elongation to him.
3. Fellow pays reverse (direction) elongation for 6-10 sec, then relax when performing elongation trying colleague (to prevent any movement of the part that has been work elongation to him.
4. During that fellow is trying to moving part increased by further from the previous status until the player feels elongation.
5. Return to paragraphs no. (2) Repeat the previous 3-4 times, before it disappears feeling elongation

Prolongation through assistance: fellow, who have a full knowledge of his mission to help his fellow and without this assistance the player, will be exposed to the risk of injury. The fellow to perform the full mission by performing technique (PNF) (prolongation with the help of fellow)

Where fellow helps you to install the prolongation status for longer to help you reach the status prolongation up to the disappearance of a sense of prolongation gradually

- The player has to be in a relaxed state and breathe easily during exercise.
- Must prove fellow put stretching for 30 sec.

The use of muscle contractions Oizumtrah combat in light of the continuous repetition contractions a specific times punctuated by muscle relaxation. This exercise works to reduce the reflected Holdings acts to prolong the process of muscle, increasing range of motion.

3- Research Methodology:

The researcher used the experimental method to fit the sample and the nature of the research problem.

3-1- Research sample:

Method of selecting the sample from the imperatives of scientific research, which the test is always associated with the original community from which the sample. Has been chosen sample are intentional free choice on the basis of it was investigating the purposes of the study carried out by the researchers, they are volleyball players injured and totaling (8) players.

The researchers conducting the homogeneity of the sample as shown in Table (1)

Table (1)

Measurement	mean	Mede	standard deviation	Sprains of coefficient	Significant
Weight (kg)	**58,3**	**58**	**1,21**	**3,091**	**Not significant**
Length (m)	**1,635**	**171**	**2,82**	**0,86**	**Not significant**
Age (years)	**16,5**	**16**	**1,37**	**1,47**	**Not significant**

3-2-The tests used in the research:

1. (Test) flexible the thigh flexion forward from a standing position.2. (Test) the ability to prolongation the flexibility extends the trunk.3. (Test) the muscle strength of the legs of the jump forward.

3-3-Exploratory experience:

For the purpose of the work to stand on the accuracy and validity of research, you should do test on a sample of the original community, which will apply the tests to make sure this experience is going in miniature. Exploratory experiment was conducted on a sample consisting of (3) players.

3-4- objectives of the experiment have been identified are:

1. Identify the appropriate tools used in the research.2. Know the time it takes to conducting the tests.
3. For the purpose of avoiding mistakes that could fall out when the tests during the performance of the main experiment to research.4. Recognize the possibility of support staff in terms of efficiency appropriate number.

3-5-Pretest:

Pre tests were conducted on a sample research date of 15/9/20104. The tests were conducted (pre) specific in research.(Have been mentioned before)

3-6-The application of the main experiment to search:

It was initiated by applying vocabulary training curriculum date of 09/20/2014 until 08/11/2014, the researchers prepare exercise commensurate with the level of the sample and that contributes to the development of strength and prolong the trunk and legs of the volleyball player, was the implementation of the curriculum in the preparation period and the number of units training (24) and training unit is divided into eight weeks of (3) training units in the week, was the implementation of exercises in the main section in the beginning were ripples training load

3-7-Posttests:

After applying vocabulary training curriculum has been conducting the posttests date of 10/11/2014, the researchers careful to the obligation to provide the conditions that have been made in the Pretest.

4- Data analysis and results:

1.Mean 2-Mede 3- Standard deviation 4- Sprains of coefficient

Table (2);Showing mean and standard deviations and the value of (T) calculated variables in research

test	measuring unit	Pretest		Posttest		Value (T) calculated	Significant
		S	X	S	X		
(Test) of the trunk behind - the flexibility of the trunk	Cm	42,13	8,91	45,11	7,32	4,31	Moral
(Test) forward from a standing position	Cm	17,51	5,32	19,0	4,83	4,65	Moral
(Test) jump forward	Cm	1,930	0,198	2,213	1,01	3,27	Moral

Show of the table (2) that the value of (t) calculated for the tests is the largest of the values of (t) Tabulated the (2.26) under the degree of freedom (7) since the values of (t) the calculated value is greater than (t) Tabulated. This means that there is a significant difference in favor of the post tests, the researchers attribute this development to use exercises (PNF), which are commensurate with the performance of the players, and exercise is working to raise the motor domain of the joints level, and increase the method kinetic to accelerate to the parties of the quantity and quality.The exercises (PNF) help to muscle strengthening and tendons and ligaments and increase the speed of their work with the use of the sports activity.

As well as possible to avoid various injuries through maximum performance

Table (3):Display and analysis of the results the differences between the tests (pre and post) to the variables of the research

test	Average difference	standard deviation	Value (T) calculated	Significant
(Test) of the trunk behind - the flexibility of the trunk	2,99	1,31	3,83	Moral
(Test) forward from a standing position	1,49	1,85	3,45	Moral
(Test) jump forward	0,28	2,97	4,01	Moral

Value (T) Tabulated (2.26) at the line level (0.05)

Show of the table (3) that the value of (T) calculated for the tests is greater than the value (T) Tabulated amounting (2.26) under the degree of freedom (7), this means significant differences in favor of Posteriori tests and this goes back to the training curriculum and which led to the evolution of performance of the players from through the use of exercises (PNF).Sports training that leads to the occurrence of physiological changes and provides level of performance sports whenever these changes in order to achieve a positive adjustment of the body systems to perform physical endurance. The use of this exercise, which is one of the exercises prolongation as performance art Advanced lead to accelerate the of neuromuscular response through the excitability of sensory receptors, as produced by the or facilitate relax the muscles working as The molecules (PNF) conducting therapeutic natural to rehabilitate injured players, as is the way to develop flexibility, so that the exercises (PNF), has positively influenced the element of flexibility which was reflected in the level of performance skills important in the study led to the high level of performance.

Conclusions:

1. The proposed training program using exercises (PNF) performance to improve the level of performance of the injured players.2. The presence of significant differences between the test results (pre and post) in the tests to improve the level of kinetic muscle power.
3. Exercise user help raise the level of kinetic domain.

Recommendations:

1. Training curriculum using exercises (PNF) works to improve the flexibility and long-kinetic and muscle strength of the players.2. Working on the use of various techniques and specific training and methods (for rehabilitation) in order to raise the level of performance to the injured players.
3. The importance of using these exercises because of its impact on the economy, increase in the effort through improved compatibility within the muscle.
4. It is necessary to the continued research on other samples and other games of that positive influence in raising the level of performance.

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Analysis Of Kinanthropometric Characteristies Of High And Low Performance 100 Meter Sprinters

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Abstract
The purpose of this study was to find out kinanthropometric characteristics in high performer and low performer 100meter sprinters. 20 male 100meter sprinters of age 14 years were assessed for the present study. Out of which 10 were high performers and 10 were low performer. All subjects were assessed for height, weight, girths, diameters, and skin fold thickness. The data were analyzed by applying descriptive statistic i.e., mean, standard deviation & t-test to find out the significant differences between high & low Performer of 100meters sprinters. The low performer of 100meter sprints possess significantly greater skin fold measurements ($p<0.05$). In Height, Leg length, Body Girths and Skeletal Diameters no significant differences were found ($p>0.05$). It is concluded that in some of the parameters there was significant differences between high & low performer in 100 meters sprinters and high performer athletes showed better kinanthropometric measurement.
Keywords: Kinanthropometry, Bodyweight, Height, Circumference Skinfold thickness.

Introduction

Kinanthropometry is a scientific study of the measurements of human movements. It provides a standardized technique for measurement of height, weight ,circumference, skin folds, diameters, predication of physique, body fat% body type, lean body mass of an individual. Kinanthropometry is widely used for sports talent identification, human growth study, performance enhancement in sports etc.

Kinanthropometry examines the link between anatomy (structure) and performance (function) (MacDougall et al., 1982).Physical characteristics and body composition have been known to be fundamental to excellence in athletic performance (Mathur 1985), (Mandeep Singh 2010). Today it has been widely accepted by the experts that top performance in sports is achieved if an athlete possesses the basic anthropometric characteristics suitable for the event. Anthropometric factors may have different effects in different sports disciplines and over different distances. (Hagan et al., 1987)

Body composition also makes an important contribution to an individual's level of physical fitness for performance.

Several studies on various body characteristics of different sports activities have been carried out by many researchers and they concluded that strong relationship exists between structure and performance (Gualdi Russo & Graziani, 1993; Rienzi, 2000; Tanner 1964, Carter 1984; Morrow et al., 1982; Singh et al, 1987; Guennadi, 1990; Bell & Rhodes, 1975; Toriloa, 1987).

Speed of movement is an essential physical capacity for high level of performance in many sports. 100 meter sprint, which is an excellent track & field sports, has been widely accepted as a highly competitive as well as recreational event all over the world. The sports performance is not a product of one single system. It is the product of the total physique of the sports person (Tandon, 2001). Top level performance in particular Athletic event demands particular size of the body and shape. There was strong relationship between the structure of an athlete, and specific task. (De Garay, 1974) Many characteristics of the human body play major roles in the action of sprinting. The apparently simple skill of sprinting is actually dependent on an "athlete's ability to combine the actions of the legs, arms, trunk and so on into a smoothly coordinated whole" (Hay, 1993). As far as the 100 meter sprinter's characteristics are concerned, interrelationship of kinanthropometric characteristics and performance of the athletes remained less reported, especially in Indian context. Thus the aim of this work is to analyze body composition, skeletal diameters, length measurement, circumference and its effect on the performance of sprinters.

Methodology

The present study was conducted on 20 male 100 meter sprinters (10 high performers and 10 low performers) of the age group of 14 years. The data of athletes was collected at Athletics Summer Camp 2015 in Aligarh Muslim University U.P. India. The Sprinters having participation of at least two years were selected for the current study.Group-I with average timing ≤ 12 sec. in 100 meter sprint were considered as High performance athletes and Group-II with average timing > 12 sec. 100 meter sprint were considered as Low performance athletes.Selection of subject, selection of variables, criterion measures, collection of data, administration of tests and statistical technique, for the analysis of data, have been described.

Sample

The samples consisted of randomly selected 24 Athletes of the age group of 14 years.

SNO.	SPRINT EVENT	SAMPLE SIZE
1	High Performance Athletes	10
2	Low Performance Athletes	10

Variables

Tools used

1. Height was measured by Anthropometric rod set to the nearest 0.5cm.

Height
Body weight
Length measurement
(i) Leg length
(ii) Upper leg length
(iii) Lower leg length
Body Girths
(I)Calf girth
(ii)Thigh Girths

5. Skeletal Diameters
(I) Knee Diameters
(ii) Ankle Diameter

6. Skin fold
(I) Calf skin fold
(ii) Thigh skin fold

2. Body weight was measured by weighing machine to the nearest 0.5kg.
3. Girth was measured by non stretchable steel tape to the nearest 0.5 cm.
4. Skeletal Diameters was measured by sliding calliper.
5. Skin fold was measured by Harpendon skin fold caliper to the nearest 0.1mm.

Statistical Analysis

The relationship of kin anthropometric variables to athletic ability was established by computing descriptive statistics for each characteristic, like Mean, Standard deviation, T-value. Data was analyzed using SPSS (statistical package for the social sciences, version 16.0).

Results

Mean, SD & t-value of height, weight, leg length, upper leg length, lower leg length, thigh girth, calf girth, Knee Diameters, Ankle Diameters, thigh skin fold, calf skin fold, Table no:-1,2,3,4,5, respectively.

Table (1) Physical characteristics of high performer and low performer sprinter

Variables	High performers(N=10)		Low performers(N=10)		t-value
	Mean	SD	Mean	SD	
Height(cm)	165.2	9.21	164.2	8.96	0.808
Body weight(kg)	49.5	9.33	54.1	12.93	0.373

p>0.05

Table (2) Length measurement (cm) of high performer and low performer sprinter

Variables	High performers(N=10)		Low performers(N=10)		t-value
	Mean	SD	Mean	SD	
Leg length	80.3	5.79	79.0	3.94	0.564
Upper leg length	40.1	3.75	39.4	3.34	0.664
Lower leg length	40.8	2.35	40.4	2.72	0.729

p>0.05

Table (3) Body Girths (cm) of high performer and low performer sprinter

Variables	High performers(N=10)		Low performers(N=10)		t-value
	Mean	SD	Mean	SD	
Thigh Girth	43.4	5.08	46.8	6.19	0.196
Calf Girth	30.3	2.36	32.0	2.62	0.145

p>0.05

Table (4) skeletal diameter (cm) of high performer and low performer sprinter

Variables	High performers(N=10)		Low performers(N=10)		t-value
	Mean	SD	Mean	SD	
Knee diameter	11.97	0.68	12.41	1.41	0.385
Ankle diameter	9.4	0.46	9.6	1.45	0.682

p>0.05

Table (5) skin fold (mm) of high performer and low performer sprinter

Variables	High performers(N=10)		Low performers(N=10)		t-value
	Mean	SD	Mean	SD	
Thigh Skin fold	3.73	0.58	10.21	2.94	2.095**
Calf Skin fold	2.94	2.46	6.82	2.09	1.966**

**Indicates p<0.05

Discussion:

The result of the present study shows that the 100meter sprinters differed in skin fold measurement with regard to their performance level. The low performer 100 meter sprinters possess significantly greater skin fold measurement as observed by Legaz & Eston, (2005). Whereas in Height, Leg length, Body Girths and Skeletal Diameters no significant difference were found. The amount of fat and thickness of skin folds seem to be important for performance in runners. The high performer sprinters showed significantly better almost all kinanthropometric measurements than low performer sprinters. Similar results were found in the studies on other games and events (Demuth et al., 2007; Rajinder, and Jaskaran, 2006; Zaccangi and Guladi-Russo, 2001.) Body shape, muscle strength, the relative lengths of legs, heels and toes as well as fine tuned nervous system to pull the whole thing together are just some of the biological attributes to make world class runner. Usain Bolt is taller and leaner than most top sprinters of the world. Scientists have also found also that there are certain natural variants of a gene called ACTN3 that can boost the performance of fast twitch muscle fibers, (sprint gene). Yet most experts would agree that a world class sprinter is born rather than made

.

Conclusion

From the present study it is concluded that in most of the parameters there were insignificant differences between high performer of 100 meters sprints and low performer of 100 meter sprints. The high performer sprinters showed better kinanthropometric measurements scores. It is concluded that various kinanthropometric characteristics compounds of body composition scores has clear impact on the performance of sprinters.

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A Comparative Study of Percent Body Fat in Tribal and Non Tribal Hockey Players of Chhattisgarh

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Abstract
The aim of the present study is to compare percent body fat of tribal and non tribal male hockey players of Chhattisgarh. To conduct the study 50 tribal origin male hockey players (Average age 21.67 years) and 50 non-tribal origin male hockey players (Average age 22.34 years) from Chhattisgarh were selected as sample. The criterion for selection of subjects was participation in inter collegiate hockey tournament and domicile of Chhattisgarh. Omron body fat analyser was used to assess percent body fat in selected subjects. The results indicate that the percent body fat in non tribal male players was higher than the norms set for field hockey whereas percent body fat of tribal male hockey players came with the norm of 8-15%. It was concluded that tribal male players have ideal percent body fat as compared to non tribal male hockey players.
Keywords : Percent Body Fat, Tribal, Non Tribal, Hockey

Introduction

Total mass of fat when divided by total body mass gives us measure of body fat percentage. It includes essential as well as storage body fat. Fat acts as a source of fuel in human body. However it is also true that too much body fat also hinders flexibility and endurance in sports settings. The requirement of ideal percent body fat for optimal performance varies according to sports. For example, the typical value for percent body fat in basketball (Men's) is recommended to be between 11-16% while for field hockey (Men's), it is 8-14%. (Wilmore, 1994[1]).

The importance of percent body fat lies in its relationship with agility, endurance and flexibility [(Peter Van Hendel, 1982)[2]]. Since field hockey requires all the above aspects, percent body fat is a major factor which contributes towards optimal performance in hockey.

Despite its importance, percent body fat of male hockey players of India has not been assessed in the light of ethnicity which is surprising because quite a lot of Indian hockey players do come from tribal areas. This fact is quiet evident while scanning for related literature which shows quite a few a studies on different sports as well as hockey viz., Kansal et al (1987)[3], Slater (2005)[4], Bayios (2006)[5], Sharma et al. (2012)[6] exploring psychological, biomechanical and physiological aspects but none with regard to percent body fat of male hockey players in the backdrop of their tribal, non-tribal belongingness. To fill this void, the present study was planned with specific objective to assess percent body fat of male hockey players of Chhattisgarh in the light of their tribal, non-tribal belongingness.

Hypothesis

Significant difference will be observed in percent body fat of tribal and non tribal male hockey players.

Methodology :-

The following methodological steps were taken in order to conduct the present study.

Sample :-

To conduct the study 50 tribal origin male hockey players (Average age 21.67 years) and 50 non-tribal origin male hockey players (Average age 22.34 years) from Chhattisgarh were selected as sample. The criterion for selection of subjects was participation in inter collegiate hockey tournament and domicile of Chhattisgarh.

Tools:

Percent Body Fat :

Percent body fat of the selected subjects was analyzed by Omron Body Fat Analyser.

Procedure:

Percent body fat of selected subjects was assessed by Omron Body Fat Analyzer in a laboratory like conditions. Instructions given with the instrument were strictly followed by the investigator. After recording the scores related percent body fat, obtained data was tabulated according to their respective groups.

To compare percent body fat between tribal and non-tribal male hockey players , 't' test was used. Result depicted in table 1.

Result And Discussion

Table 1:Comparison of Percent Body Fat between Tribal and Non Tribal Male Hockey Players

Groups	Percent Body Fat		Mean Diff.	't'
	Mean	S.D.		
Tribal Male Hockey Players (N=50)	14.15	2.88	1.95	2.53 (p<.05)
Non Tribal Male Hockey Players (N=50)	16.10	4.62		

Results presented in table 1 indicate that percent body fat in non tribal male hockey players (M=16.10) was found to be significantly higher as compared to tribal male hockey players (M=14.15). The calculated t=2.53 is statistically significant at .05 level also gives additional weightage to this finding.

The results clearly indicate that percent body fat in tribal male hockey players are within the norms of 8-15% as set for field hockey whereas non-tribal male hockey players have higher percent body fat as compared to standard norms. Malina (2005)[7] have also compared the body composition of different ethnic groups and found that these differences may be a direct result of lifestyle factors, most notably diet as well as differences in activity and training levels. Hence, the results of the present study clearly indicate the impact of ethnicity on percent body fat of male hockey players.

Conclusion

On the basis of results, it was concluded that tribal male hockey players possess ideal body composition in terms of percent body fat as compared to non tribal male hockey players.

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"The Effect of Specific Strength Training programme on Hockey Ability Development and Performance of Skills among University Male Hockey Players."

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Abstract:
The main aim of the study is find out the "The Effect of Specific Strength Training programme on hockey ability development and Performance of skills among University Male Hockey Players." For the purpose of the study is 100 male hockey players were selected from different Universities in the state of Andhra Pradesh, they were selected random by lot method as subjects and their age group between 18 to 25 years took part in the study. The selected subjects confined to this study were randomly classified in to four groups of 25 each. The data collected from the groups before and after the experimental were statistically examined for significant improvement and development of training performance by dependent. Analysis of the covariance (ANCOVA) was used since four groups were involved wherever the ratio was found to be significant for adjustment post mean "Scheffe's post hoc test was applied to determine the paired means difference was significant. In all the cased 0.05 level of significant was fixed. The result of the study showed that there was significantly improvement and development was found in selected among the subjects.

Introduction

Hockey is indeed said to be the oldest of all games played with a ball and stick. It has the thrill of a romantic journey travelling around the world in search of a home where it would be accorded the respect it deserves. It has become a reality in India. Hockey is one among the fastest team sports. The name of the game reflects the shape of the main implement used the old French word "Hoquet" meant a shepherd's crook and some experts believe that the game was simply named by making a few alterations to the spelling of the old French work. Hockey is a game skill which calls for keen eyes, physical fitness and speed of movements. The hockey was formalized in England 1876; the game is popular throughout Europe, Pakistan, Newzealand, Asia, Africa and India. It is the "National Game of INDIA "F.N.Creek (1986).

Significance of the study

The finding of the study will explore the performance of University hockey players in hockey skills such as Dribbling –Passing, Rolling- Flick, and Stopping -Hitting.This study may help to understand the effect of utilizing the standard equipments on the development and improvement of skills performance in hockey.The study may be a great valuable and helpful to hockey coaches as well as Physical Education Teachers for adopting scientific methods of practice to improve and develop the skills performance among University male hockey players.

Hypothesis

It is hypothesized that the effect of Specific Strength Training programme on hockey ability development and Performance skills will significantly improvement of speed on hockey skills among University male hockey players.

It is hypothesized that there may be significant improve on cardio respiratory endurance due to the relative effect of specific strength training programme on hockey ability development and performance of skills among University Hockey Players.

It is hypothesized that there may be significant that improvement of explosive power due to related effect of performance and development of hockey ability among University male Hockey Players.

Need of the study

The effect of specific strength training programme on hockey ability development and performance of skills among University male hockey players its commendable contribution to one's level of ability.

It is that concurrent of the specific strength training programme may have significant influence to know the efficacy and effect of development on hockey skills ability among University male hockey players.

Methodology

The main purpose of the study is *"The Effect of specific strength training programme on hockey ability development and performance of skills among University male hockey players"* Hence, it is to achieve that the purpose of the study 100 male Hockey players were selected from different Universities In Andhra Pradesh served as subject. The subject was selected at random by lot method. The age groups of the subjects were ranged between 18 to 25 years.

Subjects & Variables

100 male Hockey players from Various Universities from Andhra Pradesh in the age groups 18 to 25 years were selected their consent.

The selected subjects were randomly assigned to both the concurrent training and control groups of twenty five each.

The selected criterion subjects were assessed using standard tests and procedures, prior to and immediately after the training.

Training Protocol

The training period the experimental groups underwent their respective training programme four days per week for eight weeks in addition to their selected subjects and regular activities.

Every day the workout lasted for 30 to 45 minutes approximately including warm–up & warm-down period.

Experimental Design

The experimental design used in this study was random group design involving hundred subjects who were divided in to four groups of twenty five each.

This study consisted that such as the effect of specific strength training programme on hockey ability development and performance of skills among University male hockey players.

The data collected from the four groups before and after the experimental period were statistically examined for significant improvement by dependent't' test.

Statistical Technique

The analysis of covariance *(ANCOVA)* was used as a statistical procedure with four groups were involved the *'F'* ratio was found to be significant for adjusted post means, *Scheffe's* test was followed as a post hoc test to determine which of the paired means difference was significant. In all the cases, the level of confidence was fixed at 0.05 levels for significance.

Result Of The Study

The result of this study overall relationship between selected skill test in hockey ability development and performance of skills among University male hockey players was numerically presented in the below table.

Table – 1

Mean and Standard deviation of Skill Test Score :

Sl. NO.	Skill Test	Unit of Measurement	Test Score Mean	Test Score Deviation
1.	Dribbling & Passing	Points	24.46	4.54
2.	Rolling & Flick	Seconds	32.14	1.50
3.	Stopping & Hitting	Points	12.01	2.57

Table-2

Correlation Coefficient of Skill Test Items for Reliability:

Sl. No.	Skill Test	R	Level of Significance
1.	Dribbling & Passing	0.872	0.01
2.	Rolling & Flick	0.850	0.01
3.	Stopping & Hitting	0.866	0.01

The table value required for 248 df for 0.01 level of significance is 0.164

Conclusion

The result of the study revealed that all the skill items such as, Dribbling & Passing, Rolling & Flick, Stopping & Hitting are reliable.

The finding of the study explored that all the effect of specific strength training programme on hockey ability development and performance of hockey skill test items are having validity and objectivity.

As the skill tests have fully satisfied the scientific authenticity such as reliability, validity, objectivity and norms, the battery of skill test in hockey performance and development skills can use widely for the different Universities of male University hockey players of Andhra Pradesh.

With the help of these training skill test items, the Physical Educationists and Coaches can classify and identify the specific strength training hockey development and performance of hockey skills among University male hockey players.

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The Comparison Between Hamstring And Quadriceps Exercise On A 30 Meter Shuttle Run

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Abstract
Resistance training as an effective method to improve the speed in running is not widely known. The purpose of this study was to examine the effects of four weeks leg resistance training on the 12thResidential College SepakTakraw athletes. Thirty male college SepakTakraw athletes (N = 30); (age M =20.00 ± 2.68) years (height M = 271.60 ± 8.50) cm; (weight M = 65.42 ± 8.99) kg who were recruited by using the purpose sampling method. These subjects were randomlydivided into two groups. There were fifteen people for the group that underwent only hamstring resistance training (n = 15) and another fifteen in a group that underwent quadriceps resistance training (n = 15). Both experimental groups carried out eight sessions of resistance training within four weeks. The results revealed that both the experimental groups showed a significant difference on the speed after the intervention. The group which carried out the quadriceps intervention was (t = 3.13, df = 14, p<.05). The second group which carried out hamstring intervention was (t = 1.45, df = 14, p<.05). As a result the Quadriceps group had more significant changes compared to the hamstring group.

Keywords: Hamstring Exercise, Quadriceps Exercise, 30 Meter Shuttle Run

Introduction

Resistance training is a modality of exercise that has a grown popularity over the decades particularly for its role in improving athletic performance by increasing muscular strength, power, speed, hypertrophy, balance and coordination according to Williamet al.(2002). Athlete's today train with weights much more frequent compared to previous generations. Because of this, they are physically stronger and faster than before. However, the program design for weight training has to be precise towards the specificity of sports. This includes the types of movement, muscle action and energy source which will be explained in further chapters.According toWilliam et al.(2002), they suggest that with only proper technique and program, athletes or non–athletes can improve their strength, power, endurance, and speed. Therefore, it is important to know that even with resistance training but without proper program design and proper exercise instruction there will still be effects but not as effective as having a proper program design.

According to Christopher(1997),it is generally accepted that sprint performance, like endurance performance, can be improved considerably with resistance training. Resistance training especially, plays a key role in this process. However, the hamstrings, adductor magnus and the gluteus maximus apparently are the most important muscles for running. Nevertheless in this study, we have only experimented the resistance training on quadriceps and hamstring comparing which plays a more vital role in sprinting on the thirty meter shuttle run. The hamstring and quadriceps are one of the most important muscles for sprinting. However, some might use weight training exercises to train specific adaptations of the nervous system, this includes general hypertrophy and neuronal activation, velocity specific (speed–strength) and movement specific (sprint associated exercises) strength training (William et al., 2002). Strength, power and speed are inherently related to one another, because they are all output of the same function.

The biceps femoris, semitendinosus and semimembranosus muscles make up the hamstrings and are located on the back of your thigh. Your front thigh muscles, or quads, are the rectus femoris, vastusmedialis, vastusintermedius and vastuslateralis. Your hamstrings extend your hip and bend or flex your knee, whereas your quads flex your hip and extend your knee. Both muscle groups stabilize your knee, especially during weight-bearing activities (William et al., 2002). Some of the other key muscles that play a big part of the sprint are the hamstrings, the adductors, and the gluteus maximus. These muscle groups are one of the largest in the body and they are the most important muscles to make the most contribution to speed, balance, and coordination. According to William et al. (2002) different training methods are proposed to improve power output for these muscles.

According to William et al. (2002), different training methods such as lowering the repetitions, or changing the weight training program, for instance having low repetitions with average amount of sets but with more load will build strength. This can be proven by the muscles that you see on sprinters. Sprinters like Assaffa Powell, Usain Bolt, and Tyson Gay have large skeletal muscle. These large skeletal muscles are known as fast twitch muscle. Today, it is generally accepted the fact that sprint performance, like endurance performance, can improve considerably with training. Resistance training plays a definite key role in this process (Christopher, 1997). Sprint performance can be viewed multi – dimensionally as an initial acceleration phase (0 -10m), a phase of maximum running speed (10 – 20m) and a transition phase in between. Immediately following the start action, the powerful extensions of the hip, knee and ankle joints are the main accelerators of body mass (Martin, 1999).

According to William et al. (2002), different training methods are proposed to improve power output of these muscles. Some of them aim for hypertrophy, and others aim for specific adaptations of the nervous system. Therefore, this study aims to increase explosive power in the legs. Therefore, the weights used by subjects are (80% out of 1RM) on the exercise machine but under low velocity and slow excitation and contraction of the muscle (Christopher, 1997). Studies have shown that for a 30m sprint–100m sprint, the best pacing strategy is an all-out effort, even if this causes a strong reduction of velocity at the end of the race several authors have divided the sprint performance into 3 phases (Rehn et al., 2007).

According to William et al. (2002) the expression and development of power is important from both a sports performance and lifestyle perspective. By definition, more power is produced by the same amount of work is completed in a shorter period of time, or when a greater amount of work is performed during the same period of time. All sporting events involve some degree of power production such as hitting, striking, carrying, rowing, throwing, running, sprinting, tackling and many other actions (William et al., 2002).

Objectives

1. *To measure the speed of the subjects before intervention.*
2. *To compare the pre and post of the speed of sprint of the 30 m shuttle run via time gate before and after the 4 weeksquadriceps and hamstring training.*
3. *To compare the significant difference between the speed of the subjectspre and post training of 4 weeks quadriceps and hamstring resistance training.*

Method

Experimental method was applied in this research. An intervention of resistance training program was designed to the experimental groups (n = 30 subjects). The training program was conducted in a period of one month, twice per week, with a total of 8 sessions of resistance training.

Subjects

The subjects of this research were thirty male 12thResidential CollegeSepakTakraw athletes in total (N = 30); (age M = 20.00 $\pm$ 2.68) years (height M =271.60 ± 8.50) cm; (weight M = 65.42 ± 8.99) kg using purpose sampling method. These subjects were equally divided into two groups. Fifteen for the group that underwent hamstring resistance training (n = 15) and another group underwent quadriceps resistance training (n = 15).

Measurements

For speed assessment, the 30 meter, shuttle – run which was developed by Leger & Lambert (1982) was used as the instrument of this research to assess the speed of the athletes using the accuracy of the time gate provided by Sport Centre of University Malaya. The 30 meter run is a popular field test, commonly used to assess sports teams (Bird et al., 1998).

This test was conducted twice, pre – test and the post – test to compare the effects of the difference of speed of the athletes before and after resistance training. The test involves running a distance of 30 meters on the track. This is to test the speed of the subjects before and after the intervention. This is so we can see the effects of the intervention. Comparing both hamstring and quadriceps the plays a vital role in sprinting. The track was carefully measured with a 100m measuring tape. The beginning and the ending of the track was marked by a tape so that the subjects know when to stop. The timing gate was also used to assess the accuracy of the moment the athlete reaches the end of the run. The surface was flat, straight and non – slippery to prevent the subjects from falling down (Bird et al.,1998).

Before starting the test, the subjects were tested, they were required to do a 5 – 10 minute warm up session on their legs, specifically the quadriceps, hamstrings, adductors, gluteus maximus, hip flexors and other important muscle groups. According to Prentice, (2007), the warm – up routine increases the body core temperature, stretches ligaments and muscle and increases flexibility. Warm – up routines have been known to be important in reducing injury and muscle soreness (Prentice, 2007).

After the warm up has been carried out and all the subjects were ready to carry out the test, they were all instructed to get ready behind the starting line. We will randomly choose one by one to carry out the 30 meter sprint test. The time gate starts calculating the minute the athlete crosses the time gate. They are told to sprint as fast as they could in order to be more accurate with the intervention which will be carried out the week after (Bird *et al*, .1998).

After all 30 subjects were tested with the sprint the data was all written down exactly how it was measured by the time gate. As soon as the athlete reaches the finishing line my group assignment member will collect the data first and allow the subject who just ran to rest. If the subject fails to finish the 30 meter sprint by not stopping exactly at the finish line or the other time gate. He will be called to carry out the test again. There were no bench marks on how fast they should finish the 30 meter race but the subjects were more competitive than usual.

After the test, the subjects required to carry out a cool-down period included stretching activities as was done during the warm up routine. The cool-down period prevents pooling of blood in the arms and legs, thus maintaining blood pressure and enabling the body to cool and return to a resting state (Prentice, 2007). According to Prentice (2007), experience and observation indicate that people who stretch during the cool-down period tend to have fewer problems with muscle soreness after strenuous activity.

Procedure

The coach from the 12 residentialcollegeSepakTakraw team, University of Malaya was fully informed that these 30 athletes will be going through a test and a weight training program. He fully understands and approves this experiment to be carried out.

The 12th collegeSepakTakrawteam were invited to be the subjects of this research. The researchers conveniently chose 30 subjects who became the subjects of this research. The subjects were equally divided into two groups, group A who will be carrying out the quadriceps exercise and group B who will be carrying out only hamstring exercises. Additionally, they were informed of the potential risks and benefits and signed an informed consent form. Subjects were assured that individual data were going to be kept confidential. To insure anonymity of subjects and confidentiality of data, subjects were assigned a study number and collected data was entered on a computer spreadsheet by the number. They were instructed that their participation in the study was voluntary, and that they could withdraw from the study at any time with no repercussions.

They were given opportunity to ask questions about this research and were thanked for their co-operation towards this research. Before the implementation of the pre-test and the training program of this research, subjects were provided to answer a Physical Activity Readiness Questionnaire (PAR-Q).

Both the experimental groups of this research were instructed to do a pre-test by using the 30 meter shuttle - run test which was developed by Leger & Lambert (1982) to test their speed before they started the 8 sessions of resistance training intervention

The resistance training was given to both groups. However they were told to carry out their daily life as usual but to only commit to the resistance training every week for four weeks to two sessions a week. Therefore they will have to commit to all the eight sessions in total. The subjects were also instructed to refrain from any exercise aside from activities of daily living. Some of the exercises that were not allowed were any form of resistance training in the gym especially in the lower part of the body. Otherwise, the data or the result will not be accurate.

Before the resistance training intervention is carried out, the athletes were told to carry out a test on their 1RM maximum. By testing their 1RM maximum, we can estimate the right weights to lift during the intervention. This will help make the data more accurate when it comes to explosive strength.

The Resistance Training Program

The resistance training program was carried out twice a week for four weeks in total of eight sessions. Variables of the exercises were all carefully measured to build explosive strength for the athletes.

According to Kraemer (1994)'s study, explosive strength is a characteristic of performance that is common in many sporting endeavours. However, training very frequently includes reduced velocity, "strength" training which develops capacities which are only appropriate for a very few activities for example weight lifting. Therefore with training the legs appropriately, we can increase the speed of the athletes (Kraemer, 1994).

According to Kraemer (1994), training with heavy loads (70 – 120% of 1RM) improves maximal isometric strength but not the maximal rate of force development. In some cases it might even reduce the ability of the muscles to develop force rapidly. On the other hand, light load training with an accent on speed of movement increases an athlete's ability to rapidly develop force. Explosive strength performance is affected by the interaction between agonist, antagonist, and synergistic muscles involved in joint movements. To produce a fast movement, resistance must be low. Thus, training should concentrate on relaxing antagonist muscle groups while contracting the agonist muscles. This can only be accomplished by specific-action training (Kraemer 1994).

The resistance training program will be based on Kramer's study about explosive strength. That is to include 40% of 1RM. The execution of concentric and eccentric would be less than 1 second concentric, 1-2 seconds eccentric. Explosive strength is the measurement of the speed of muscle contraction therefore; the faster a person can carry the same amount of load is to be considered to have more explosive strength (Kraemer 1994).

Table 1: Eight Sessions of Resistance Training Program

Session	Type of Exercise	Recovery Period	Repetitions	Set	Speed Execution
1	(A)-Leg Extension (B)-Leg Flexion	1 minute/set	15 reps	3	Medium
2	(A)-Leg Extension (B)-Leg Flexion	1 minute/set	15 reps	3	Fast
3	(A)-Leg Extension (B)-Leg Flexion	1 minute/set	15 reps	3	Fast
4	(A)-Leg Extension (B)-Leg Flexion	1 minute/set	15 reps	3	Fast
5	(A)-Leg Extension (B)-Leg Flexion	40 seconds/ set	15 reps	3	Very fast
6	(A)-Leg Extension (B)-Leg Flexion	40 seconds/set	15 reps	3	Very fast
7	(A)-Leg Extension (B)-Leg Flexion	40 seconds/set	15 reps	3	Very fast
8	(A)-Leg Extension (B)-Leg Flexion	40 seconds/set	15 reps	3	Very fast

According to Kraemer (1994), acute program variables such as sets, repetitions, speed of execution, load, and other variables determine the goals athletes specifically weight training to reach their goals. For this experiment, researches only want to focus on explosive strength alone. Knowing that explosive strengthaffects the speed of sprinting and many other sports, researchers want to see the difference of strength between two muscle groups which is the antagonist (hamstring) and the protagonist muscle (quadriceps).

Therefore, the program is set as such, 15 repetitions, 3 sets, rest time between 40 seconds to 1 minute between sets, speed of execution to be fast which is 1 second concentric and 2 second eccentric. The reason why the first session is medium (based on table 1) it is because the researches want the athletes to adapt to the exercise before doing it faster (Kraemer 1994).

The speed of execution is fast because we want to build more explosive strength and short lifts on the leg muscle. This will cause the leg muscles to use more ATP (Adenosine Triphosphate) that focuses on short but strong explosive power for the body. This will help in the sprint during the post test. It is important to train this energy system because even in SepakTakraw, they will need ATP energy for short but powerful kicks in the air. Besides that jumping and running is also very important in SepakTakraw, said the coach of SepakTakraw 12th Residential College. This is a win–win situation as the athletes get to train they will help in the experiment.

As the sessions advance (Table 1), notice that after session 4 the time of rest and recovery reduces by 60% from 1 minute to 40 seconds. This is to also build explosive strength. At the same time speed of execution becomes faster as the training periods come to an end. This is to optimize the ATP in the body to produce shorter burst of energy. However, the variables that are constant and remain are the type of exercises, repetitions and sets. The alphabetical indicates “A” as Group A and “B” as Group B. For group A they carried out the quadriceps exercise (leg extension) and group B with hamstring exercise (leg flexion).

In order to achieve the greatest benefits from the training program, the principle of overload was applied. For a physical component of fitness to improve, the system must work harder than it is used to working. The system must experience stress so that over a period of time it will improve to the point where it can easily accommodate additional stress (Prentice, 2007).

The Statistical Package for Social Sciences SPSS (v 21.0, SPSS Inc, Chicago, IL) was used for statistical analysis. All the data collected from this research were analysed by using this statistical software.

In order to compare the speed between male 12th CollegeSepakTakraw athlete’s independent samples *t*-tests were used. This method was used to examine differences between the pre-test and the post-test of the speed of both the experimental group (n = 30), the significant (2-tailed) score was determined. Statistical significance was set at $p<.05$.

RESULTS

Table 2: Descriptive analysis of the speed for the 12thCollege SepakTakraw athletes on the 30 meter shuttle run test between pre – test and post – test

Group	Pre-test (Mean± S.D)	Post-test (Mean± S.D)
Hamstrings (Group A)	5.55± 0.58	5.26 ± 5.27
Quadriceps (Group B)	5.83 ± 0.48	4.99 ± 0.58

The paired samples *t*-test results on the HamstringGroup (Group A) on the 30 meter shuttle run revealed significant difference of the speed level (t = 1.45, df = 14, p<.05). The paired samples *t*-test results on the Quadriceps Group (Group B) on the 30 meter shuttle run post-test also revealed significant difference(t = 3.13, df = 14, p<.05).Independent samples *t*-test between the Hamstring and the Quadriceps Groups on 30 meter shuttle run test shown significant differencebetween groups(t = -1.48, df = 28, p<.05).

DISCUSSION

The main purpose of this study was to examine the effects of resistance training on the speed ofSepakTakraw athletes from University Malaya. This is the first study to be carried out in comparison of both lower body muscles which was the hamstring and quadriceps. This research was carried out to improve the speed of the SepakTakraw athletes of 12th Residential College. As a result, the major finding of this study was the implementation of eight sessions in 4 weeks of resistance training specifically in the legs of both experimental groups of hamstring and quadriceps (n = 30; male = 30). The result (t = -1.48, df = 28, p<.05) shows that the resistance training for hamstring and quadriceps, improve the speed of the athletes significantly among the male SepakTakraw athletes, the results of this study supported the study by William et al.,2002.Based on the independent sample *t* – test of hamstring and quadriceps pre and post – test we can conclude objective (b) to compare the pre and post of the speed of sprint of the 30 m shuttle run via time gate before and after the 4 weeks quadriceps and hamstring training.Speed of the athletes improved due to the resistance training of the hamstring and quadriceps. For the pre – test (t = - 1.40, df = 28, p>.05). As figure shows, p> .05 indicates that there were no significant changes before doing any strength training. However, results shown that after 4 weeks of continuous resistance training showed that both quadriceps and hamstring group had improvements in speed. It is proven from the paired sample *t* – test that quadriceps group had a higher significant difference compared to the hamstring group. The results of current study ultimately show that quadriceps is more effective in sprinting (Greenberg 2004).

Conclusion

In conclusion, it is clearly proven with the present study that resistance training is a suitable and effective way for the SepakTakraw athletes to improve their explosive muscular strength. However, the training period have to prolong to a longer period so that better effects can show. There are a lot of types of resistance training that can be designed and applied as a training method to enhance the explosive muscular strength of the athletes from other sports and also for general health. The frequency of total sets per session, type of the training, the intensity and the duration of the training can be modified within the context of the resistance training program to make sure that the training is overload and progression throughout the training sessions based on the FITT principle.

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Body Mass Index and Waist-to hip ratio among Junior Free Style Wrestlers

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Abstract
Aim: The purpose of the study was to observe the body mass index and waist-to-hip ratio (abdominal obesity) in male junior free style wrestlers. Method(s): A total of 150 male junior free style wrestlers of different weight categories with an age ranged from 17 to 19 year volunteered to participate in this study and they were further divided into five groups on the basis of their weight. The body mass index (BMI), waist circumference (WC), hip circumference (HC) & waist to hip ratio (WHR) were recorded with standard procedure. Results: The mean age, height, weight, BMI, waist circumference, hip circumference and waist to hip ratio of 150 male junior free style wrestlers was 18.52 ± .69 year, 168.78± 3.58cm, 61.85±8.21Kg, 21.68± 2.56 Kg/m² , 70.67± 7.04cm, 87.66± 4.94cm and .80 ± .04, respectively. Conclusion: It is concluded from the results of the present study that BMI, waist circumference and waist-to-hip ratio of different weight categories of male junior free style wrestlers were normal.
Keywords: BMI, Waist circumference, Hip circumference, Waist-to-hip ratio

Introduction

Wrestling is a sport as old as mankind itself. Wrestling is split into Greco-Roman and Freestyle disciplines. In Freestyle wrestling, the competitors have a much greater freedom. They can use not only their arms and bodies, but also their legs and can take a hold of their opponent anywhere that allows them to overpower and gain total control of them (FILA- International federation of Associated Wrestling Styles] guidelines and rules,2009).The changes in regulation of wrestling have forced several modifications in the fitness requirements of successful wrestlers, which as a result caused an evolution in the training methods (Yoon 2002; Horswill 1992; Sharratt et al. 1986).Wrestling has been described as an intermittent physical event which produces great strength and muscle power demands of both the upper and lower body (Hu¨bner-Woz´niak et al. 2004; Kraemer et al. 2001; Horswill et al. 1989; Sharratt et al. 1986). The majority of wrestlers are concerned about the amount of body weight because competitors are matched based on body-weight. They generally want to minimize the body fat level and the total body weight without losing their body strength and power (Yoon, 2002). However, no relation was shown between the percentage of fat mass (%FM) and the level of wrestling success (Yoon, 2002 and Horswill, 1992). A good level of physical fitness is needed to be successful in most sports, but the relative importance of each component is dependent upon the sport chosen. Simple anthropometrical measurements were taken to rule out obesity (particular abdominal). Body mass index (BMI) which was calculated as weight in kilograms divided by the square of height in meters is the most widely used and is a simple measure of body size (Coldiz et al., 1995). However this measurement does not account for variation in body fat distribution and abdominal fat mass. Excess intra-abdominal fat is associated with greater risk of obesity related morbidity than in overall adiposity (Ho et al., 2001). Waist circumference (WC) and waist-hip ratio (WHR) are the measures of visceral or abdominal fat mass. These measures are independent of height and muscle mass, have emerged as important predictors of risk of obesity related diseases and are thus very useful indicators of excess body fat and increased health risk (Folsom et al., 2000). Measurements of WC and WHR are relatively simple and easier to calculate. It has been reported that WC and WHR showed significant association with myocardial infarction as compared to BMI (Yusuf et al., 2005; Welborn et al., 2003).

The purpose of present study was to observe body mass index (BMI), waist circumference (WC) and waist-hip ratio (WHR) as predictors of health risk for being overweight among the different weight category of male junior wrestlers. However, in India very few studies examined obesity profile for junior wrestlers of different weight categories. Furthermore, examination of health related physical fitness profile that is abdominal obesity in male junior wrestlers can be very helpful for optimizing their training programs to improve wrestling performance.

Materials and Method

The present study was conducted on one hundred fifty male junior free style wrestlers, age ranged from 18 to 20 years. The participants were divided into five groups on the basis of their weight (as per Federation Internationale Des Luttes Associees [FILA- International federation of Associated Wrestling Styles] guidelines and rules 2009) and each group was comprised of 30 subjects:

(i) Group 1: 46-50Kg (ii) Group 2: 55Kg (iii) Group 3: 60 Kg (iv) Group 4: 66 Kg (v) Group 5 -74Kg. Body weight, height and waist & hip circumferences was recorded with standard procedure (Norton et al. 1996 and Ross & Marfell-Jones 1991). The statistical software SPSS (SPSS v. 16, Inc. Chicago, IL) free trial version was used for all descriptive statistics. The results are reported as means and standard deviations (SD). The one-way ANOVA and post hoc (Scheffe) test was used for different weight groups. The use of $p<.05$ was considered to be statistically significant.

Results and Discussion

Table 1 shows Mean ±SD of Age, height, weight, BMI, hip & waist circumference and waist-to-hip ratio of different groups. The mean age of group1, group2, group3, group4 and group5 was 18.13±.77 year, 18.77±.69 year, 18.53±.68 year, 18.50±.68 year and 18.67±.47 year. The mean body mass index (BMI) of group1, group2, group3, group4 and group5 was 18.54±.65Kg/m², 19.74±.77Kg/m², 21.69±.90Kg/m², 23.25±.85Kg/m² and 25.18±1.43Kg/m² respectively.A trend of increase in the mean value of BMI was observed from group1 to group5. In spite of a trend of increase, BMI of the present study population revealed that subjects of different group were normal except only group5 whose subjects were overweight as per the categories of BMI given by NHLBI Obesity Education Initiative (2000). The mean waist circumference of group1, group2, group3, group4 and group5 was 64.13±2.25cm, 65.76±2.60cm, 68.73±1.85cm, 72.56±3.77cm and 82.16±3.45cm respectively. A trend of increase in the mean value of waist circumference was observed from group1 to group5. In spite of a trend of increase, waist circumference of the present study population revealed that subjects of different group were normal. The normal values of waist circumference of men was <90cm as given by Zimmet and Alberti (2006) (Table 1). The mean waist-to-hip ratio of group1, group2, group3, group4 and group5 was .77±.02, .78±.01, .79±.02, .81±.02 and .86±.02 respectively. A trend of increase in the mean value of waist-to-hip ratio was observed from group1 to group5. In spite of a trend of increase, waist-to-hip ratio of the present study population revealed that subjects of different group were normal. The normal values of waist-to-hip ratio for men is <.90cm as given by WHO (2000a) (Table 1). A trend of increase in the mean value of BMI, waist circumference and waist-to-hip ratio from group1 to group5 of the present study population may be due to an increase in their body weight for example the body weight range of the subjects in group1 was 46-50Kg and group5 was 74Kg .

Table 1. Mean ±SD of Age, height, weight, BMI, hip & waist circumference and waist-to-hip ratio of different groups

Variable(s)	Group	N	Mean	Std. Deviation
Age, year	1	30	18.13	.77
	2	30	18.77	.69
	3	30	18.53	.68
	4	30	18.50	.68
	5	30	18.67	.47
	Total	150	18.52	.69
Height, cm	1	30	166.69	2.62
	2	30	168.00	2.62
	3	30	168.46	3.24
	4	30	168.95	2.79
	5	30	171.80	4.37
	Total	150	168.78	3.58

Weight, Kg	1	30	51.50	1.33
	2	30	55.70	1.41
	3	30	61.50	.88
	4	30	66.33	1.40
	5	30	74.25	3.22
	Total	150	61.85	8.21
Body mass index (BMI), Kg/m²	1	30	18.54	.65
	2	30	19.74	.77
	3	30	21.69	.90
	4	30	23.25	.85
	5	30	25.18	1.43
	Total	150	21.68	2.56
Waist circumference, cm	1	30	64.13	2.25
	2	30	65.76	2.60
	3	30	68.73	1.85
	4	30	72.56	3.77
	5	30	82.16	3.45
	Total	150	70.67	7.04
Hip circumference, cm	1	30	82.90	1.56
	2	30	84.20	2.05
	3	30	86.76	2.43
	4	30	89.33	3.50
	5	30	95.14	1.79
	Total	150	87.66	4.94
Waist-to-hip ratio, WHR	1	30	.77	.02
	2	30	.78	.01
	3	30	.79	.02
	4	30	.81	.02
	5	30	.86	.02
	Total	150	.80	.04

Further, the analysis of variance revealed that the variance in the mean values of age, height, weight, body mass index, waist circumference, hip circumference and waist-to-hip ratio among different groups was statistical significant ($F=4.18$ $p\leq.05$, $F=10.43$ $p\leq.05$, $F=706.97$ $p\leq.05$, $F=230.09$ $p\leq.05$, $F=186.19$ $p\leq.05$, $F=125.77$ $p\leq.05$ and $F=65.16$ $p\leq.05$) (Table 2).

Table 2. ANOVA of Age, height, weight, BMI, Hip and Waist circumference and Waist-to-hip ratio among different groups

Variable(s)		Sum of Squares	F	Sig.
Age	Between Groups	6.97	4.18	.003
	Within Groups	60.46		
Height	Between Groups	427.42	10.43	.000
	Within Groups	1484.95		
Weight	Between Groups	9562.39	706.97	.000
	Within Groups	490.31		
Body mass index (BMI)	Between Groups	849.94	230.09	.000
	Within Groups	133.90		

Waist circumference	Between Groups	6184.16	186.19	.000
	Within Groups	1204.01		
Hip circumference	Between Groups	2826.81	125.77	.000
	Within Groups	814.72		
Waist-to-hip ratio, WHR	Between Groups	.15	65.16	.000
	Within Groups	.08		

*significant at the 0.05 level

The scheffe posthoc revealed (Table 3) that the difference was statistical significant at .05 level in age (group1 vs. group2), height (group1 vs. group5; group2 vs. group5; group3 vs. group5; group4 vs. group5), weight (group1 vs. group2, group3, group4, group5; group2 vs. group3, group4, group5; group3 vs. group4, group5; group4 vs. group5), body mass index (group1 vs. group2, group3, group4, group5; group2 vs. group3, group4, group5; group3 vs. group4, group5; group4 vs. group5), waist circumference (group1 vs. group3, group4, group5; group2 vs. group3, group4, group5; group3 vs. group4, group5; group4 vs. group5), hip circumference (group1 vs. group3, group4, group5; group2 vs. group3, group4, group5; group3 vs. group4, group5; group4 vs. group5) and waist-to-hip ratio (group1 vs. group4, group5; group2 vs. group4, group5; group3 vs. group4, group5; group4 vs. group5).

Table 3. Scheffe Post-hoc Multiple Comparisons of Age, height, weight, BMI, Hip and Waist circumference and Waist-to-hip ratio among different groups

Dependent Variable	(I) group-1 50kg;group-2 55kg; group-3 60kg; group-4 66kg; group-5 74kg	(J) group-1 50kg;group-2 55kg; group-3 60kg; group-4 66kg; group-5 74kg	Mean Difference (I-J)	Sig.
Age	1	2	-.600*	.020
		3	-.400	.258
		4	-.367	.347
		5	-.533	.054
	2	3	.200	.854
		4	.233	.768
		5	.067	.997
	3	4	.033	1.00
		5	-.133	.963
	4	5	-.167	.920
Height	1	2	-1.31	.643
		3	-1.77	.335
		4	-2.26	.118
		5	-5.11*	.000
	2	3	-.46	.989
		4	-.95	.856
		5	-3.80*	.001
	3	4	-.49	.986
		5	-3.34*	.004
	4	5	-2.85*	.021
Weight	1	2	-4.20*	.000
		3	-9.99*	.000
		4	-14.82*	.000
		5	-22.74*	.000
	2	3	-5.79*	.000
		4	-10.62*	.000

		5	-18.54*	.000
	3	4	-4.83*	.000
		5	-12.75*	.000
	4	5	-7.92*	.000
Body mass index (BMI)	1	2	-1.20*	.000
		3	-3.14*	.000
		4	-4.70*	.000
		5	-6.64*	.000
	2	3	-1.94*	.000
		4	-3.50*	.000
		5	-5.43*	.000
	3	4	-1.55*	.000
		5	-3.49*	.000
	4	5	-1.93*	.000
Waist circumference	1	2	-1.63	.311
		3	-4.60*	.000
		4	-8.43*	.000
		5	-18.02*	.000
	2	3	-2.96*	.004
		4	-6.80*	.000
		5	-16.39*	.000
	3	4	-3.83*	.000
		5	-13.42*	.000
	4	5	-9.59*	.000
Hip circumference	1	2	-1.30	.346
		3	-3.86*	.000
		4	-6.43*	.000
		5	-12.24*	.000
	2	3	-2.56*	.002
		4	-5.13*	.000
		5	-10.94*	.000
	3	4	-2.56*	.002
		5	-8.37*	.000
	4	5	-5.81*	.000
Waist-to-hip ratio,WHR	1	2	-.007	.858
		3	-.018	.071
		4	-.038*	.000
		5	-.089*	.000
	2	3	-.011	.507
		4	-.031*	.000
		5	-.082*	.000
	3	4	-.019*	.047
		5	-.070*	.000
	4	5	-.051*	.000

*significant at the 0.05 level

Discussion

The anthropometric measurements like waist circumference (WC), hip circumference (HC) (Okosun et al., 2000a), and body mass index (BMI) (Vikram et al.,2003) were considered measurements of obesity and diagnostic components of the metabolic syndrome.However, waist-to-hip ratio (WHR) is considered as an appropriate marker of abdominal obesity (Snehalatha et al., 2003).The results of the present study were in agreement with the previous research reports that there is direct relationship among abdominal obesity and WHR in type 2 diabetics. As per BMI values junior freestyle wrestlers of different group in this study were normal except group5 who were overweight but the values of waist circumference and waist-to-hip ratio showed that all junior freestyle wrestlers of different group had normal value. Total body fat is not the sole source of the adverse health complications of obesity; rather the fat distribution or the relative proportion of lipids in various potential lipid deposition compartments is what determines the metabolic risk of the individual. Upper body obesity, manifested clinically by increased waist circumference, is known to be associated with cardiovascular disease. The findings of the present study clearly showed that junior freestyle wrestlers of different group were with normal value of waist circumference and waist-to-hip ratio (indexed as abdominal adiposity) which was in direct agreement with the studies of Horswill et al. (1989).

Conclusion: It is concluded from the results of the present study that BMI, waist circumference and waist-to-hip ratio of different weight categories of male junior free style wrestlers were normal.

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Predominance of Selected Anthropometric and Motor Fitness Variables on Playing Positions of Soccer Players

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Abstract
The study was proposed to comprehend the selected Anthropometric and Motor Fitness variables that contribute to the classification of soccer playing positions of players. One hundred and sixty five (165) football players from nine (9) universities, who participated in the All India Inter University football tournament held in Kottayam during the last week of December 2013, were selected as subjects with an informed consent. The age of the selected subjects ranged from 18 through 25 years. The selected subjects were categorized on the basis of their playing positions (*Forwards - 48; Midfield - 41; Defenders - 58; and Goal keepers - 18*). The anthropometric measurements and motor fitness variables were assessed utilizing calibrated instruments, standardized methods, procedures and tests. The experimental design used in this study was stratified group design involving convenient sampling. The discriminant analysis was performed to analyze the data collected using SPSS. In all the cases level of confidence was fixed at 0.05 for significance. The results show that statistically significant difference on height, agility, speed, and speed endurance among soccer players of different playing positions. Yet, discriminant equation with inclusion 7 of 16 independent variables (a*nthropometric and motor fitness*) in computing the equation as: D = – 50.018 + 0.012 (Height) + 0.023 (Thigh girth) – 0.002 (Arm length) – 0.057 (Explosive strength) + 1.568 (Agility) + 0.906 (Speed) + 2.005 (Speed endurance), and consequently it implies that soccer players of different playing positions can be predetermined as it is predominantly influenced by selected Anthropometric and Motor Fitness Variables.

Keywords: Anthropometric, Motor Fitness, success in soccer, discriminant analysis.

Introduction

Scientific knowledge in various areas of research has seen multifold evolution especially in recent years. In Sports and Games, scientific data is largely factual leading to better analysis and reliable results. Although Sports performance is a result of complex human performance, having several dimensions, a careful and rational analysis of data can lead to meaningful conclusions. Sports researchers often accept that a top-notch feat is the result of numerous aspects, advocating a multidimensional approach in studies on talented players (Regnier *et al*., 1993; Reilly *et al*., 2000). Burwitz *et al*. (1994) also recommend interdisciplinary performance-related sports science research.

Performance in sports is influenced by morphological and anthropometric characteristics, functional parameters (Scott, 1991; Singh *et al*., 2010) and fitness (Nikitushkin & Guba, 1998). Soccer is a very popular sport, played in many countries through the world, and gaining immense popularity among the youngsters in India today. The soccer skills are more complex as dribbling, kicking, juggling, and so forth are to be performed mostly by foot and other parts of the body except hands, which made it interesting to participate and witness. Excelling in team sports like soccer at elite levels demands for multidimensional characteristics.

Research in male professional soccer has shown that the physical characteristics of players (Nevill, Holder, & Watts, 2009) and the fitness demands in official competition have substantially evolved over recent decades (Strudwick & Reilly, 2001). The capability of a sportsperson in a team game emanates from various anthropometric and motor fitness variables of the players. Contemporary science is enormously concerned in approximating the optimum anthropometric make-up of a player. So the scanning and selection of a particular player may be achieved successfully to a great extent by measuring anthropometric components.

When a team consisting of all talented players is assessed as a whole, physical and performance levels of individuals do not get highlighted since they become homogeneous and evened out. As a consequence, measures of general performance characteristics are usually not sensitive enough to detect differences between elite and sub-elite players (Bangsbo *&* Lindquist, 1992). Yet, there are major individual differences in the physical demands of a player in part related to the position in the team. A number of studies have compared playing positions (Reilly & Thomas, 1979; Ekblom, 1986; Bangsbo *et al*., 1991; Bangsbo, 1994).

Specific dimensions of the structure of the human body taken at specific sites to give measures of girth and width are called anthropometric. They include the body size and body proportions. Measurements of body size include such descriptive information as height, weight and surface area, while the measures of body proportions describe relationship between height, weight, among length, width and girths of various body segments. It has been observed that top athletes in some sports tend to have those proportions to biologically aid the performance (Mathews, 1973). Physical fitness is the capacity of an individual to perform a given task requiring muscular force. The greater the physical fitness, the longer can a person work and the more efficient will be his performance and his capacity for recovering from fatigue (Willgoose, 1961).

Playing positions in Soccer may have a considerable effect on their performances. Therefore, it would be of interest to explore the predominant anthropometric and motor fitness variables that categorizes soccer playing positions of players, since there has been a very little research with regard to it. Thus, the researcher is encouraged to verify the predominance of anthropometric and motor fitness variables that determines the soccer playing positions of players. This study was proposed to comprehend the selected anthropometric and motor fitness variables that contributes to the classification of soccer playing positions of players.

Methods and Procedures

One hundred and sixty five (165) football players from nine (9) universities, who participated in the All India Inter University football tournament held in Kottayam during the last week of December 2013, were selected as subjects with an informed consent. The age of the selected subjects ranged from 18 through 25 years. The selected subjects were categorized on the basis of their playing positions (*Forwards - 48; Midfield - 41; Defenders - 58; and Goal keepers - 18*). The anthropometric measurements and motor fitness variables were assessed utilizing calibrated instruments, standardized methods, procedures and tests. The experimental design used in this study was stratified group design involving convenient sampling. The discriminant analysis was performed to analyze the data collected using SPSS. In all the cases level of confidence was fixed at 0.05 for significance.

Results of the Study

In order to comprehend the anthropometric and motor fitness variables that contribute to the classification of soccer players playing in different positions, discriminant analysis was applied. Non-standardized canonical discriminant function coefficients were used to derive the regression equation that classifies soccer team players to the categories namely: forwards, midfielders, defenders, and goalkeepers based on their anthropometric and motor fitness variables.

The data on anthropometric and motor fitness variables among soccer players of different playing positions is analyzed and given in Table 1.

Table 1 reveals a statistically significant difference in the level of certain anthropometric (*height*) and motor fitness (*agility, speed, and speed endurance*) variables among soccer players of different playing positions.

Table 1:ANOVA on Selected Anthropometric and Motor Fitness Variables among different Playing Positions of Soccer Players

Determinant Variables	Soccer Playing Positions				F ratio	Significance
	Forwards	Midfielders	Defenders	Goalkeepers		
Height	168.92 ± 5.79	167.72 ± 4.49	170.24 ± 4.99	172.17 ± 4.73	3.920	.010
Weight	63.29 ± 4.76	62.50 ± 5.48	64.34 ± 6.07	65.14 ± 5.50	1.406	.243
BMI	22.30 ± 1.45	22.22 ± 1.71	22.27 ± 1.90	22.03 ± 1.52	.120	.948
Fat percent	14.71 ± 9.51	14.49 ± 4.14	13.80 ± 4.02	13.02 ± 3.91	.438	.726
Thigh girth	51.65 ± 3.32	51.59 ± 4.22	52.14 ± 3.81	50.50 ± 3.82	.875	.455
Calf girth	35.00 ± 1.94	35.32 ± 2.03	35.55 ± 2.96	34.83 ± 1.98	.685	.562
Arm length	76.06 ± 3.46	76.44 ± 2.59	76.70 ± 2.84	77.50 ± 3.00	1.092	.354
Leg length	98.15 ± 4.36	97.57 ± 4.41	99.16 ± 4.25	99.83 ± 3.87	1.776	.154
Elbow width	6.54 ± 0.43	6.52 ± 0.44	6.64 ± 0.47	6.52 ± 0.39	.788	.502
Knee width	8.56 ± 0.64	8.68 ± 0.66	8.61 ± 0.68	8.33 ± 0.58	1.197	.313
Explosive strength	54.67 ± 2.01	54.85 ± 1.53	54.91 ± 1.66	55.89 ± 0.68	2.411	.069
Flexibility	12.17 ± 4.80	12.37 ± 4.66	13.26 ± 5.01	13.17 ± 6.10	.537	.657
Agility	11.49 ± 0.31	11.98 ± 0.40	12.87 ± 0.50	12.59 ± 0.38	105.274	.000

Speed	5.49 ± 0.27	5.58 ± 0.28	6.00 ± 0.38	5.86 ± 0 .22	27.323	.000
Speed endurance	12.56 ± 0.26	12.82 ± 0.23	13.15 ± 0.18	12.98 ± 0.03	73.493	.000
Reaction time	11.79 ± 4.12	13.51 ± 4.73	12.81 ± 3.6 3	13.06 ± 3.32	1.420	.239

Source: Primary Data

Table 2:Test of Equality of Group Covariance Matrices using Box's M

GROUP		Rank	Log Determinant	Box's M	Approx. F	df1	df2	Sig.
1	Forwards	7	-.348	218.620	2.341	84	16170.827	.000
2	Midfield	7	.107					
3	Defenders	7	-.090					
4	Goalkeepers	7	-7.410					
Pooled within-groups		7	.469					

Source: Primary Data

Table 2 reveals the test of the multivariate normality of the data. The Rank (7) of the covariance matrix indicates that this is a 7 x 7 matrix, the number of variables in the discriminant equation. The natural log of the determinant of forwards, midfielders, defenders, and goalkeepers covariance matrices is -0.348, 0.107, -0.090 and -7.410 respectively. Pooled within groups covariance matrix composed of the means of each corresponding value within the four 7 x 7 matrices of the forwards, midfielders, defenders, and goalkeepers are 0.469. The Box's M value of 218.620 is a measure of multivariate normality, based on the similarities of the determinants of the covariance matrices for the successful and less successful players. The approximate *F* value of 2.341 reveals that the determinants from the two levels of the dependent variable (*forwards, midfielders, defenders, and goalkeepers*) differ considerably as the significance value is 0.000, and thereby it suggests that the obtained data is not found to be multivariate normal.

Table 3:Eigenvalues and Wilks' Lambda

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation	Test of Function	Wilks' Lambda	Chi-square	df	Sig.
1	2.553[a]	93.5	93.5	.848	1 through 3	.238	227.856	21	.000
2	.117[a]	4.3	97.8	.324	2 through 3	.844	26.924	12	.008
3	.061[a]	2.2	100.0	.239	3	.943	9.352	5	.096

Source: Primary Data

a. First 3 canonical discriminant functions were used in the analysis..

The Eigen value of 2.553 is the proportion of variance explained by factor for the first (1) canonical discriminant function. The % of variance for the function 1 is 93.5%, and cumulative % of the function accounts for 93.5%. The correlation among players with different levels of achievement success for discriminant scores is high as the obtained canonical correlation of 0.848 ($p < 0.05$), which indicates that canonical discriminant function discriminates the four different levels of dependent variables (*forwards, midfielders, defenders, and goalkeepers*) well. To conduct a discriminant analysis that predicts membership into four groups based on the dependent variable categories (*forwards, midfielders, defenders, and goalkeepers*) and creating the discriminant equation with inclusion 7 of 16 independent variables (*anthropometric and motor fitness*) selected by stepwise procedure based on the minimization of Wilks' lambda at each step with an F-to-enter of 1.15 and an F-to-remove of 1.00. The observed chi-square value of 227.856 denotes that there is a significant difference among players of different playing positions based on the discriminant function.

Table 4:Analysis of Unstandardized Canonical Discriminant Function Coefficients

Variables	Functions		
	1	2	3
Height	.012	.244	-.080
Thigh girth	.023	-.028	-.152
Arm length	-.002	-.223	.109
Explosive strength	-.057	-.050	.520
Agility	1.568	.279	.596
Speed	.906	1.610	-1.020
Speed endurance	2.005	-2.675	-.598
(Constant)	-50.018	1.713	-9.134

Source: Primary Data

Table 4 shows the list of coefficients and the constant of the discriminant equation. Each subject's discriminant score would be computed by entering their variable values for each of the 7 variables in the equation. The discriminant equation was as follows:

D = – 50.018 + 0.012 (Height) + 0.023 (Thigh girth) – 0.002 (Arm length)
– 0.057 (Explosive strength) + 1.568 (Agility) + 0.906 (Speed)
+ 2.005 (Speed endurance)

The discriminant score of the data collected for soccer players of different playing positions is graphically illustrated in Figure 1 through 4.

Figure 1: Graphical Representation of Canonical Discriminant Function 1 of Forwards

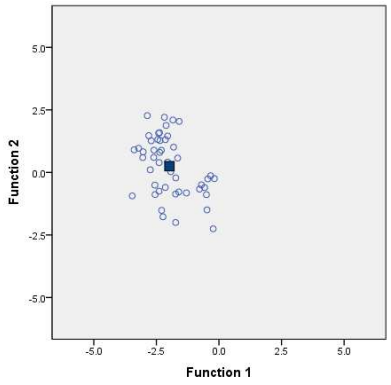

Figure 2: Graphical Representation of Canonical Discriminant Function 1 of Midfielders

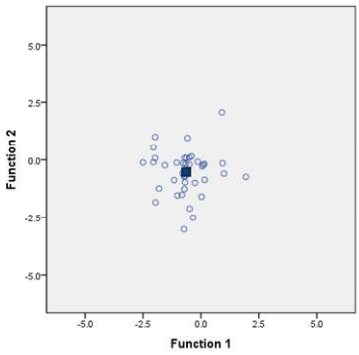

Figure 3: Graphical Representation of Canonical Discriminant Function 1 of Defenders

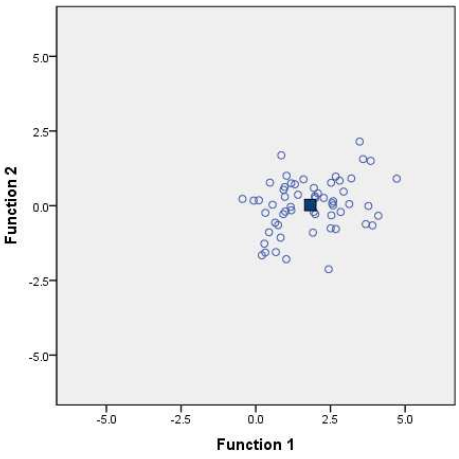

Figure 4: Graphical Representation of Canonical Discriminant Function 1 of Goalkeepers

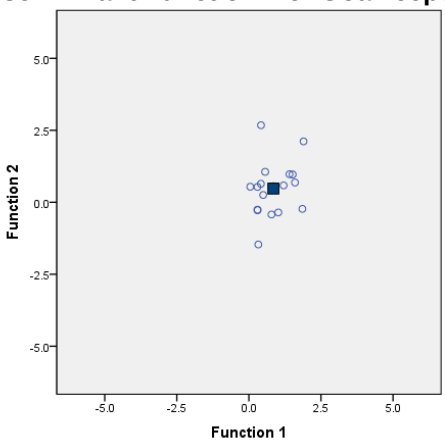

Table 5: Classification Results

		Group	Predicted Group Membership				Total
			Forwards	Midfield	Defenders	Goalkeepers	
Original	Count	Forwards	36	12	0	0	48
		Midfield	7	30	1	3	41
		Defenders	0	6	38	14	58
		Goalkeepers	0	2	1	15	18
	%	Forwards	75.0	25.0	.0	.0	100.0
		Midfield	17.1	73.2	2.4	7.3	100.0
		Defenders	.0	10.3	65.5	24.1	100.0
		Goalkeepers	.0	11.1	5.6	83.3	100.0

Source: Primary Data

a. 72.1% of original grouped cases correctly classified.

Table 5 summarizes the number and percentage of players classified correctly and incorrectly as forwards, midfielders, defenders, and goalkeepers. It is found that 68.5% of original grouped cases (*players*) were correctly classified.

Conclusions

The results of this study imply that soccer players of different playing positions can be predetermined as it is predominantly influenced by selected anthropometric and motor fitness variables.

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Subcutaneous Fat Distribution Pattern, Percent Fat and LBM in Junior Free Style Wrestlers

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Abstract
Aim: The aim of this present study was to observe subcutaneous fat distribution, percent fat and lean body mass through skinfold thickness in male junior free style wrestlers. Method(s): A total of 150 male junior free style wrestlers of different weight categories with an age ranged from 17 to 19 year volunteered to participate in this study and they were further divided into five groups on the basis of their weight. The various skinfold-thickness, percent fat and LBM were recorded with standard procedure. Results: The mean age, height, weight, percent fat and LBM of 150 male junior free style wrestlers was 18.52 ± .67 year, 168.78± 3.58cm, 61.85±8.21Kg, 11.79±2.94% and 88.20±2.94% respectively. Conclusion: It is concluded from the results of the present study that percent fat and LBM of different weight categories of male junior free style wrestlers were normal.
Key words: Body Fat, LBM, Skinfold-thickness

Introduction
Freestyle wrestling is one of the main styles of amateur competitive wrestling. Freestyle wrestling is practiced in three two-minute periods with a 30-second rest between rounds in current international competition. A wrestler wins the match when he has won two out of three periods. A wrestling match requires tremendous physical activity, power and strength of body musculature as well as isometric force for various wrestling techniques (Horswill, 1992). The majority of wrestlers are concerned about the amount of body weight because competitors are matched based on body-weight. They generally want to minimize the body fat level and the total body weight without losing their body strength and power (Yoon, 2002).Finding the ratio of fat-free mass (FFM or lean body mass, LBM) to fat mass (FM) in athletes is very important; so that the little changes in body composition determines health and performance of the athletes (Houtkooper and Going, 1994). And in some competitions like wrestling and weight lifting, an appropriate body composition influences the competition result (Heyward and Stolarczyk, 1996). Especially, those who are involved in weight measuring for their sports category (like wrestling), weight of the body should be observed and it needs a regular program. There are several methods for determining the body composition of different groups, which differ in terms of cost, time period, and measurement problems (Claros et al., 2005). Amongst many methods to measure body composition, the subcutaneous skinfold thickness method is known as a standard method (Mírza et al., 2004 ; Katch, 1969).Coolville et al. (1989) have compared methods for estimation of body fat in body builders. They tested Jackson-Pollock's seven-point subcutaneous fat and bioelectrical impedance on 21 athletes (including 9 men and 12 women) and then these two methods were compared to underwater weighing. Results suggest that there is a weak correlation between bioelectrical impedance and underwater weighing methods (R = 0.36), but the Jackson-Pollock's seven-point subcutaneous fat method has a relatively good correlation with under water weighing (R = 0.84). This study suggested that instead of underwater weighing method we can use Jackson- Pollock's seven-point subcutaneous fat method. The most important aim of the present study was to determine subcutaneous fat distribution pattern (skinfold thickness), the percentage of body fat and LBM using skinfold-thickness, in male junior freestyle wrestlers in Punjab, India.

Materials and Method

The present study was conducted on one hundred fifty male junior free style wrestlers (N=150), age ranged from 18 to 20 years. The participants were divided into five groups on the basis of their weight (as per Federation Internationale Des Luttes Associees [FILA- International federation of Associated Wrestling Styles] guidelines and rules 2009) and each group was comprised of 30 subjects- (i) Group 1: 46-50Kg (ii) Group 2: 55Kg (iii) Group 3: 60 Kg (iv) Group 4: 66 Kg (v) Group 5 -74Kg. Body weight, height and subcutaneous skinfold thickness of biceps, triceps, chest, midaxilary, subscapular, abdominal, suprailiac, thigh and calf and fat and lean body mass percent was recorded with standard procedure (Norton et al. 1996 and Ross & Marfell-Jones 1991). Skinfold measurement (includes epidermis and dermis layers) was done using Harpenden skinfold caliper under a pressure of 10 gm/mm^2. In order to consider validation criteria, we did all measurements on the right side of the body. After marking the desired spot, we take the caliper in our right hand and then we can measure thickness of the subcutaneous fat by pinching the fat. For young male junior freestyle wrestlers (18 to 20), we used the skinfold-thickness method through Durnin and Womersley (1974) four-point equation as follows and substitute the log of their sum into one of the following equations, Where D = predicted density of the body (g/ml), and L = log of the total of the 4 skinfolds (mm). The density value can then converted to Percent body fat (%BF) using the Siri Equation (Siri 1961).

D = 1.1620 - (0.0630 X L)

% Body Fat = (495 / Body Density) – 450 (Siri Equation 1961)

or

%BF = [4.95 / BD - 4.5] 100

The statistical software SPSS (SPSS v. 16, Inc. Chicago, IL) free trial version was used for all descriptive statistics. The results are reported as means and standard deviations (SD). The one-way ANOVA and post hoc (Scheffe) test was used for different weight groups. The use of $p<.05$ was considered to be statistically significant.

Results

Table 1 shows Mean ±SD of Age, height, weight, skinfold thickness (biceps, triceps, chest, midaxilary, subscapular, abdominal, suprailiac, thigh, calf), percent fat and lean body mass (LBM) of different groups. The mean age of group1, group2, group3, group4 and group5 was 18.13±.77 year, 18.77±.69 year, 18.53±.68 year, 18.50±.68 year and 18.67±.47 year. The mean biceps skinfold thickness of group1, group2, group3, group4 and group5 was 3.20±.65mm, 3.50±.66mm, 3.73±.75mm, 3.83±.80mm and 4.45±1.53mm. The mean triceps skinfold thickness of group1, group2, group3, group4 and group5 was 6.12±1.36mm, 6.31±1.26mm, 6.88±.94mm, 7.38±1.55mm and 9.81±3.38mm. The mean chest skinfold thickness of group1, group2, group3, group4 and group5 was 5.41±.97mm, 5.99±1.17mm, 6.46±1.28mm, 6.95±2.58mm and 10.10±4.36mm. The mean midaxilary skinfold thickness of group1, group2, group3, group4 and group5 was 6.22±.97mm, 7.67±2.25mm, 9.91±2.60mm, 11.18±3.13mm and 12.78±4.47mm. The mean subscapular skinfold thickness of group1, group2, group3, group4 and group5 was 6.77±1.30mm, 8.04±2.02mm, 10.30±1.86mm, 11.46±3.35mm and 12.90±4.27mm. The mean abdominal skinfold thickness of group1, group2, group3, group4 and group5 was 6.35±1.18mm, 9.00±3.70mm, 13.45±1.20mm, 15.15±5.06mm and 19.82±6.49mm. The mean suprailiac skinfold thickness of group1, group2, group3, group4 and group5 was 5.50±.63mm, 6.23±1.09mm, 6.50±1.34mm, 6.94±1.69mm and 8.82±1.98mm. The mean thigh skinfold thickness of group1, group2, group3, group4 and group5 was 12.12±1.18mm, 12.14±1.30mm, 12.15±2.14mm, 12.54±3.03mm and 13.04±3.10mm. The mean calf skinfold thickness of group1, group2, group3, group4 and group5 was 13.99±1.14mm, 14.02±1.13mm, 13.44±3.30mm, 12.25±3.59mm and 12.04±3.86mm.The mean percent fat of group1, group2, group3, group4 and group5 was 9.10±1.67%, 10.32±2.13%, 11.92±1.43%, 12.71±2.28% and 14.88±3.06%.The mean percent LBM of group1, group2, group3, group4 and group5 was 90.89±1.67%, 89.67±2.13%, 88.07±1.43%, 87.28±2.28% and 85.11±3.06%.

Table 1. Mean ±SD of Age, height, weight, Skinfold thickness, Percent Fat & LBM of different groups of junior freestyle wrestlers

Variable(s)	Group	N	Mean	Std. Deviation
Age, year	1	30	18.13	.77
	2	30	18.77	.56
	3	30	18.53	.68
	4	30	18.50	.68
	5	30	18.67	.47
	Total	150	18.52	.67
Height, cm	1	30	166.69	2.62
	2	30	168.00	2.62
	3	30	168.46	3.24
	4	30	168.95	2.79
	5	30	171.80	4.37
	Total	150	168.78	3.58
Weight, Kg	1	30	51.50	1.33
	2	30	55.70	1.41
	3	30	61.50	.88
	4	30	66.33	1.40
	5	30	74.25	3.22
	Total	150	61.85	8.21
Biceps skinfold, mm	1	30	3.20	.65
	2	30	3.50	.66
	3	30	3.73	.75
	4	30	3.83	.80
	5	30	4.45	1.53
	Total	150	3.74	1.01
Tricep skinfold, mm	1	30	6.12	1.36
	2	30	6.31	1.26
	3	30	6.88	.94
	4	30	7.38	1.55
	5	30	9.81	3.38
	Total	150	7.30	2.30
Chest skinfold, mm	1	30	5.41	.97
	2	30	5.99	1.17
	3	30	6.46	1.28
	4	30	6.95	2.58
	5	30	10.10	4.36
	Total	150	6.98	2.91
Midaxilary skinfold, mm	1	30	6.22	.97
	2	30	7.67	2.25
	3	30	9.91	2.60
	4	30	11.18	3.13
	5	30	12.78	4.47

	Total	150	9.55	3.72
Subscapular skinfold, mm	1	30	6.77	1.30
	2	30	8.04	2.02
	3	30	10.30	1.86
	4	30	11.46	3.35
	5	30	12.90	4.27
	Total	150	9.89	3.54
Abdominal skinfold, mm	1	30	6.35	1.18
	2	30	9.00	3.70
	3	30	13.45	1.20
	4	30	15.15	5.06
	5	30	19.82	6.49
	Total	150	12.75	6.23
Suprailiac skinfold, mm	1	30	5.50	.63
	2	30	6.23	1.09
	3	30	6.50	1.34
	4	30	6.94	1.69
	5	30	8.82	1.98
	Total	150	6.80	1.80
Thigh skinfold, mm	1	30	12.12	1.18
	2	30	12.14	1.30
	3	30	12.15	2.14
	4	30	12.54	3.03
	5	30	13.04	3.10
	Total	150	12.39	2.30
Calf skinfold, mm	1	30	13.99	1.14
	2	30	14.02	1.13
	3	30	13.44	3.30
	4	30	12.25	3.59
	5	30	12.04	3.86
	Total	150	13.15	2.96
Fat percent (%)	1	30	9.10	1.67
	2	30	10.32	2.13
	3	30	11.92	1.43
	4	30	12.71	2.28
	5	30	14.88	3.06
	Total	150	11.79	2.94
LBM percent (%)	1	30	90.89	1.67
	2	30	89.67	2.13
	3	30	88.07	1.43
	4	30	87.28	2.28
	5	30	85.11	3.06
	Total	150	88.20	2.94

Further, the analysis of variance revealed that the variance in the mean values of age, height, weight, biceps skinfold thickness, triceps skinfold thickness, chest skinfold thickness, midaxilary skinfold thickness,

subscapular skinfold thickness, abdominal skinfold thickness, suprailiac skinfold thickness, calf skinfold thickness, percent fat and lean body mass (LBM) among different groups was statistical significant except calf and thigh skinfold thickness (F=4.18 p≤.05, F=10.43 p≤.05, F=706.97 p≤.05, F=7.30 p≤.05, F=18.17 p≤.05, F=16.97 p≤.05, F=24.45 p≤.05, F=23.99 p≤.05, F=49.35 p≤.05, F=22.82 p≤.05, F=30.86 p≤.05 and F=30.86 p≤.05) (Table 2).

Table 2. ANOVA of Age, height, weight, Skinfold thickness, Fat &LBM percent among different groups of junior freestyle wrestlers

Variable(s)		Sum of Squares	F	Sig.
Age	Between Groups	6.97	4.18	.003
	Within Groups	60.46		
Height	Between Groups	427.42	10.43	.000
	Within Groups	1484.95		
Weight	Between Groups	9562.39	706.97	.000
	Within Groups	490.31		
Biceps skinfold	Between Groups	25.90	7.30	.000
	Within Groups	128.54		
Tricep skinfold	Between Groups	265.31	18.17	.000
	Within Groups	529.32		
Chest skinfold	Between Groups	403.62	16.97	.000
	Within Groups	862.19		
Midaxilary skinfold	Between Groups	834.29	24.45	.000
	Within Groups	1236.57		
Subscapular skinfold	Between Groups	744.87	23.99	.000
	Within Groups	1125.42		
Abdominals skinfold	Between Groups	3335.07	49.35	.000
	Within Groups	2449.41		
Suprailiac skinfold	Between Groups	186.90	22.82	.000
	Within Groups	296.82		
Thigh skinfold	Between Groups	19.21	.90	.463
	Within Groups	770.22		
Calf skinfold	Between Groups	107.67	3.25	.014
	Within Groups	1199.00		
Fat percent	Between Groups	594.57	30.86	.000
	Within Groups	698.32		
LBM percent	Between Groups	594.57	30.86	.000
	Within Groups	698.32		

*significant at the 0.05 level

The scheffe posthoc revealed (Table 3) that the difference was statistical significant at .05 level in age (group1 vs. group2), height (group1 vs. group5; group2 vs. group5; group3 vs. group5; group4 vs. group5), weight (group1 vs. group2, group3, group4, group5; group2 vs. group3, group4, group5; group3 vs. group4, group5; group4 vs. group5), biceps skinfold thickness (group1 vs. group5; group2 vs. group5), triceps skinfold thickness (group1 vs.group5; group2 vs. group5; group3 vs. group4, group5; group4 vs. group5), chest skinfold thickness (group1 vs. group5; group2 vs. group5; group3 vs. group5; group4 vs. group5), midaxilary skinfold thickness (group1 vs. group3, group4, group5; group2 vs. group4, group5; group3 vs. group5), subscapular skinfold thickness (group1 vs. group3, group4, group5; group2 vs. group3, group4, group5; group3 vs.group5), abdominal skinfold thickness (group1 vs. group3, group4, group5; group2 vs. group3,group4, group5; group3 vs. group5; group4 vs. group5), suprailiac skinfold thickness (group1 vs. group4, group5; group2 vs. group5; group3 vs. group5; group4 vs. group5), percent fat (group1 vs. group3,

group4, group5; group2 vs. group4, group5; group3 vs. group5; group4 vs. group5) and lean body mass (LBM) (group1 vs. group3, group4, group5; group2 vs. group4, group5; group3 vs. group5; group4 vs. group5).

Table 3. Scheffe Post-hoc Multiple Comparisons of Age, height, weight Skinfold thickness, Fat &LBM percent among different groups of junior freestyle wrestlers

Dependent Variable	(I) group-1 50kg;group-2 55kg; group-3 60kg; group-4 66kg; group-5 74kg	(J) group-1 50kg;group-2 55kg; group-3 60kg; group-4 66kg; group-5 74kg	Mean Difference (I-J)	Sig.
Age	1	2	-.63*	.008
		3	-.40	.224
		4	-.36	.310
		5	-.53*	.041
	2	3	.23	.743
		4	.26	.635
		5	.10	.985
	3	4	.03	1.000
		5	-.13	.958
	4	5	-.16	.909
Height	1	2	-1.31	.643
		3	-1.77	.335
		4	-2.26	.118
		5	-5.11*	.000
	2	3	-.46	.989
		4	-.95	.856
		5	-3.80*	.001
	3	4	-.49	.986
		5	-3.34*	.004
	4	5	-2.85*	.021
Weight	1	2	-4.20*	.000
		3	-9.99*	.000
		4	-14.82*	.000
		5	-22.74*	.000
	2	3	-5.79*	.000
		4	-10.62*	.000
		5	-18.54*	.000
	3	4	-4.83*	.000
		5	-12.75*	.000
	4	5	-7.92*	.000
Biceps skinfold	1	2	-.306	.810
		3	-.53	.312
		4	-.63	.154
		5	-1.25*	.000
	2	3	-.22	.928
		4	-.32	.771
		5	-.94*	.006
	3	4	-.10	.997
		5	-.72	.073

	4	5	-.62	.171
Triceps skinfold	1	2	-.19	.997
		3	-.75	.675
		4	-1.25	.172
		5	-3.68*	.000
	2	3	-.56	.860
		4	-1.06	.327
		5	-3.49*	.000
	3	4	-.50	.903
		5	-2.93*	.000
	4	5	-2.43*	.000
Chest skinfold	1	2	-.58	.931
		3	-1.04	.599
		4	-1.54	.207
		5	-4.69*	.000
	2	3	-.46	.968
		4	-.96	.677
		5	-4.11*	.000
	3	4	-.49	.961
		5	-3.64*	.000
	4	5	-3.15*	.000
Midaxilary skinfold	1	2	-1.44	.454
		3	-3.68*	.000
		4	-4.96*	.000
		5	-6.55*	.000
	2	3	-2.24	.071
		4	-3.51*	.000
		5	-5.10*	.000
	3	4	-1.27	.584
		5	-2.86*	.008
	4	5	-1.59	.351
Subscapular skinfold	1	2	-1.26	.543
		3	-3.52*	.000
		4	-4.68*	.000
		5	-6.12*	.000
	2	3	-2.26*	.047
		4	-3.42*	.000
		5	-4.86*	.000
	3	4	-1.16	.628
		5	-2.60*	.013
	4	5	-1.44	.409
Abdominal skinfold	1	2	-2.65	.187
		3	-7.10*	.000
		4	-8.79*	.000
		5	-13.46*	.000

	2	3	-4.44*	.002
		4	-6.14*	.000
		5	-10.81*	.000
	3	4	-1.69	.635
		5	-6.36*	.000
	4	5	-4.67*	.001
Suprailiac skinfold	1	2	-.73	.418
		3	-1.00	.126
		4	-1.44*	.005
		5	-3.32*	.000
	2	3	-.26	.971
		4	-.71	.447
		5	-2.59*	.000
	3	4	-.44	.833
		5	-2.32*	.000
	4	5	-1.88*	.000
Thigh skinfold	1	2	-.02	1.000
		3	-.03	1.000
		4	-.42	.973
		5	-.92	.662
	2	3	-.01	1.000
		4	-.40	.978
		5	-.90	.680
	3	4	-.38	.980
		5	-.89	.693
	4	5	-.50	.949
Calf skinfold	1	2	-.03	1.000
		3	.54	.969
		4	1.74	.246
		5	1.94	.149
	2	3	.58	.962
		4	1.77	.228
		5	1.98	.136
	3	4	1.19	.631
		5	1.40	.472
	4	5	.20	.999
Fat percent	1	2	-1.21	.334
		3	-2.82*	.000
		4	-3.61*	.000
		5	-5.77*	.000
	2	3	-1.60	.095
		4	-2.39*	.002
		5	-4.56*	.000
	3	4	-.78	.749
		5	-2.95*	.000

	4	5	-2.16*	.007
LBM percent	1	2	1.21	.334
		3	2.82*	.000
		4	3.61*	.000
		5	5.77*	.000
	2	3	1.60	.095
		4	2.39*	.002
		5	4.56*	.000
	3	4	.78	.749
		5	2.95*	.000
	4	5	2.16*	.007

Discussion:A wrestling match requires tremendous physical activity, power and strength of body musculature as well as various wrestling techniques (Horswill, 1992).In addition to the aerobic and anaerobic capacities, the majority of wrestlers are also concerned about the amount of body weight because competitors are matched based on body-weight. They generally want to minimize the body fat level and the total body weight without losing their body strength and power (Yoon, 2002).The results of percent fat and LBM of junior male freestyle wrestlers of the present study were in agreement with those reported in the literature. Jesus et al (2011) reported that absolute and normalized to kilograms of fat-free mass maximal strength and power of the upper and lower extremity muscles were 7.7–29.9% higher in elite compared to the amateur wrestlers. The lean mass may contribute to the wrestling success, independent of training experience. The elite wrestlers have higher FFM levels and therefore total muscle mass that can generate force compared with amateur wrestlers. In addition, it was interesting to observe that maximal strength and power output in the elite wresting group was superior, not only in absolute, but also when it was normalized to kilograms of fat-free mass. However, no differences were detected in training experience, body fat percentage, 1RM strength and muscle power output of elite compared to the amateur wrestlers. As expected the elite wrestlers in the higher weight classes demonstrated greater maximal strength and muscle power values compared to the wrestlers in the lighter weight classes (Sa´nchez et al. 2010 and Izquierdo et al. 2004, 2002). Horswill et al. (1989) reported that successful wrestlers had significantly lower body fat values compared to unsuccessful wrestlers.

Conclusion: It is concluded from the results of the present study that percent fat and LBM of different weight categories of male junior free style wrestlers were normal.

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Predominance of Selected Anthropometric and Motor Fitness Variables of Successful and Less Successful Soccer Players

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Abstract
The study was proposed to comprehend the selected Anthropometric and Motor Fitness variables that contributed to the classification of soccer players as successful and less successful. One hundred and sixty five (165) male football players from universities comprised of 3 successful and six less successful from among those participated in the All India Inter University football tournament held in Kottayam during the last week of December 2013, were selected as subjects with an informed consent. The age of the selected subjects ranged from 18 through 25 years. The selected subjects were categorized as successful team players (N = 58) **[HOW]** and less successful team players (N = 107) **[HOW]** based on their team's tournament standings. The Anthropometric measurements and Motor Fitness variables were assessed utilizing calibrated instruments, standardized methods, procedures and tests. The experimental design used in this study was stratified group design involving convenient sampling. Discriminant analysis was performed to analyze the data collected using SPSS. In all cases the level of confidence was fixed at 0.05 for significance. The results show that statistically significant difference on calf girth, leg length, explosive strength and speed endurance among soccer players with different levels of achievement success. Yet, discriminant equation with inclusion 4 of 16 independent variables (A*nthropometric and Motor Fitness Variables*) in computing the equation as: D = – 43.504 + 0.125 (Calf girth) + 0.231 (Explosive strength) – 2.104 (Speed) + 3.023 (Speed endurance), and consequently it implies that soccer players with the potential for success can be predetermined as it is predominantly influenced by selected Anthropometric and Motor Fitness variables.
Keywords: A*nthropometric, Motor Fitness, success in soccer, discriminant analysis.*

Introduction

Nowadays the evolution of human scientific knowledge is dramatic in all walks of life and it is factual in the area of games and sports. Sports performance is indeed an aspect of complex human performance, which has several dimensions. Sports researchers often accept that a top-notch feat is the result of numerous aspects, advocating a multidimensional approach in studies on talented players (Regnier *et al*., 1993; Reilly *et al*., 2000). Burwitz *et al*. (1994) also recommend interdisciplinary performance-related sports science research.

Successful sports performance is influenced by morphological and anthropometric characteristics, functional parameters (Scott, 1991; Singh *et al*., 2010) and fitness (Nikitushkin & Guba, 1998). Soccer is the most popular sport, played in many countries throughout the world. The soccer skills are more complex as dribbling, kicking, juggling, and so forth are to be performed mostly by foot and other parts of the body except hands, which makes it interesting to participate and witness. Excelling in team sports like soccer at higher level demands for multidimensional characteristics.

Indeed, research in male professional soccer has shown that the physical characteristics of players (Nevill, Holder & Watts, 2009) and the fitness demands in official competition have substantially evolved over recent decades (Strudwick & Reilly, 2001). The capability of a sportsperson in a team game emanates from various anthropometric and motor fitness variables of the players. Contemporary science is enormously concerned in approximating the optimum anthropometric make-up of a player. So the scanning and selection of a particular player may be achieved successfully to a great extent by measuring anthropometric components.

Anthropometric and motor fitness variables are dimensions of the structure of the human body taken at specific sites to give measures of girth and width. They include the body size and body proportions. Measurements of body size include such descriptive information as height, weight and surface area, while the measures of body proportions describe relationship between height, weight, length, width and girths of various body segments. It has been observed that top athletes in some sports tend to have those proportions to biologically aid the performance (Mathews, 1973). Fitness is the capacity of an individual to perform a given task requiring muscular force. The greater the fitness, the longer a person can work and the more efficient will be his performance and his capacity for recovering from fatigue (Willgoose, 1961).

It would be of interest to explore the predominant anthropometric and motor fitness variables that categorizes soccer players as successful and less successful, since there has been a very little source with regard to it. Thus, the researcher is encouraged to verify the predominance of anthropometric and motor fitness variables that determines the soccer player's level of success. This study was proposed to comprehend the selected anthropometric and motor fitness variables that contribute to the classification of soccer players as successful and less successful.

Methods and Procedures

One hundred and sixty five (165) football players from nine (9) universities who participated in the All India Inter University football tournament held in Kottayam during the last week of December 2013, were selected as subjects with an informed consent. The age of the selected subjects ranged from 18 through 25 years. The selected subjects were categorized as successful team players (N = 58) **[HOW]** and less successful team players (N = 107) **[HOW]** based on their team's tournament standings. The anthropometric measurements and motor fitness variables were assessed utilizing calibrated instruments, standardized methods, procedures and tests. The experimental design used in this study was stratified group design involving convenient sampling. The discriminant analysis was performed to analyze the data collected using SPSS. In all the cases level of confidence was fixed at 0.05 for significance.

Results of the Study

In order to comprehend the anthropometric and motor fitness variable that contributes to the classification of soccer players, discriminant analysis was applied. Non-standardized canonical discriminant function coefficients were used to derive the regression equation that classifies soccer team players as successful and less successful based on their anthropometric and motor fitness variables.

The data on anthropometric and motor fitness variables among soccer players with different levels of achievement success is analyzed and given in Table 1.

Table 1 reveals a statistically significant difference in the level of certain anthropometric (*calf girth and leg length*) and motor fitness (*explosive strength and speed endurance*) variables among soccer players with different levels of achievement success.

Table 1ANOVA on Selected Anthropometric and Psychomotor Variables among different Levels of Successful Soccer Team Players

Determinant Variables	Different Levels of Soccer Team Success				F ratio	Sig.
	Successful Soccer Team Players (N = 58)		Less Successful Soccer Team Players (N = 107)			
	Mean	SD	Mean	SD		
Height	170.31	5.32	168.97	5.15	2.501	.116
Weight	64.29	5.25	63.33	5.67	1.123	.291
BMI	22.16	1.51	22.28	1.77	.196	.659
Fat percent	13.24	3.39	14.64	7.16	1.979	.161
Thigh girth	52.34	3.58	51.32	3.86	2.804	.096
Calf girth	35.81	2.32	34.95	2.35	5.051	.026
Arm length	77.09	2.93	76.24	3.00	3.055	.082
Leg length	99.64	4.26	97.95	4.25	5.936	.016
Elbow width	6.62	0.44	6.54	0.44	1.243	.267
Knee width	8.66	0.66	8.54	0.65	1.375	.243
Explosive strength	55.41	1.56	54.67	1.71	7.518	.007
Flexibility	12.81	5.11	12.65	4.92	.037	.848
Agility	12.32	0.72	12.16	0.70	2.095	.150
Speed	5.67	0.45	5.76	0.34	2.215	.139
Speed endurance	12.99	0.28	12.82	0.32	11.377	.001
Reaction time	12.91	3.56	12.61	4.32	.213	.645

Source: Primary Data

Table 2:Test of Equality of Group Covariance Matrices using Box's M

GROUP		Rank	Log Determinant	Box's M	Approx. F	df1	df2	Sig.
1	Successful	4	-1.956	19.438	1.885	10	64884.010	.042
2	Less Successful	4	-2.185					
Pooled within-groups		4	-1.986					

Source: Primary Data

Table 2 reveals the test of the multivariate normality of the data. The Rank (4) of the covariance matrix indicates that this is a 4 x 4 matrix, the number of variables in the discriminant equation. The natural log of the determinant of successful and less successful players' covariance matrices is -1.956 and -2.185 respectively. Pooled within groups covariance matrix composed of the means of each corresponding value within the two 4 x 4 matrices of the successful and less successful players are -1.986.

The Box's M value of 19.438 is a measure of multivariate normality, based on the similarities of the determinants of the covariance matrices for the successful and less successful players. The approximate *F* value of 1.885 reveals that the determinants from the two levels of the dependent variable (*successful and less successful players*) differ considerably as the significance value is 0.042, and thereby it suggests that the obtained data is not found to be multivariate normal.

Table 3:Eigen values and Wilks' Lambda

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation	Test of Function	Wilks' Lambda	Chi-square	df	Sig.
1	.220[a]	100.0	100.0	.424	1	.820	31.976	4	.000

Source: Primary Data

a. First 1 canonical discriminant functions were used in the analysis.

The Eigen value of 0.220 is the proportion of variance explained by factor for the first (1) canonical discriminant function. The % of variance for the function 1 is 100%, and cumulative % of the function accounts for 100%. The correlation among players with different levels of achievement success for discriminant scores is high as the obtained canonical correlation of 0.424 ($p < 0.05$), which indicates that canonical discriminant function discriminates the two different levels of dependent variables (*successful and less successful*) well.

To conduct a discriminant analysis that predicts membership into two groups based on the dependent variable categories (*successful and less successful*) and creating the discriminant equation with inclusion 4 of 16 independent variables (*anthropometric and motor fitness*) selected by stepwise procedure based on the minimization of Wilks' lambda at each step with an F-to-enter of 1.15 and an F-to-remove of 1.00.

The observed chi-square value of 31.976 denotes that there is a significant difference among players' with different levels of achievement success based on the discriminant function.

Table 4:Analysis of Unstandardized Canonical Discriminant Function Coefficients

Constructs	Functions
	1
Calf girth	.125
Explosive strength	.223
Speed	-2.104
Speed endurance	3.023
(Constant)	-43.504

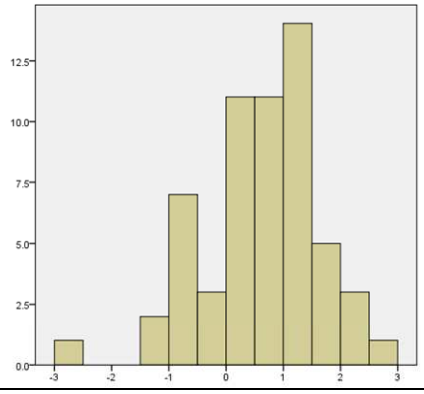
Source: Primary Data

Table 4 shows the list of coefficients and the constant of the discriminant equation. Each subject's discriminant score would be computed by entering their construct values for each of the 4 variables in the equation. The discriminant equation was as follows:

D = – 43.504 + 0.125 (Calf girth) + 0.231 (Explosive strength)
– 2.104 (Speed) + 3.023 (Speed endurance)

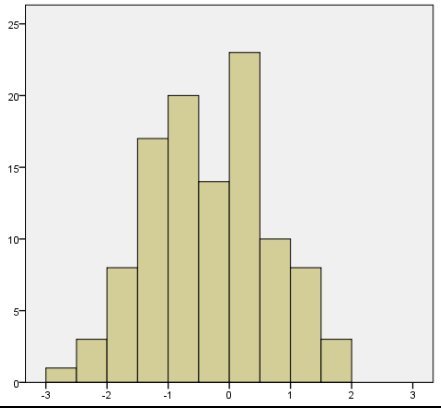
The discriminant score of the data collected for successful and less successful players' is graphically illustrated in Figure 1 and 2.

Figure 1: Graphical Representation of Canonical Discriminant Function 1 of the Successful Team Players



Mean = 0.63
Std. Dev. = 1.020
N = 58

Figure 2: Graphical Representation of Canonical Discriminant Function 1 of the Less Successful Team Players



Mean = -0.34
Std. Dev. = 0.989
N = 107

Table 5Classification Results

		Group	Predicted Group Membership		Total
			successful team	less successful team	
Original	Count	successful team	41	17	58
		less successful team	35	72	107
	%	successful team	70.7	29.3	100.0
		less successful team	32.7	67.3	100.0

Source: Primary Data

a. 68.5% of original grouped cases correctly classified.

Table 5 summarizes the number and percentage of players classified correctly and incorrectly as successful and less successful players. It is found that 41 of 58 players classified as successful soccer team players is correct, while 17 of them were incorrect as the analysis predicts them to be as less successful soccer team players. Furthermore, it is found that 72 of 107 players classified as less successful soccer team players were correct, but 35 of them were incorrect as the analysis predicts them to be as successful soccer team players. Thereby 68.5% of original grouped cases (*players*) were correctly classified.

Conclusions

The results of this study imply that soccer players with the potential for success can be predetermined as it is predominantly influenced by selected anthropometric and motor fitness variables.

[3 findings with supportive evidence and explanation]

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Note: Dr. Ravindran Sir made a note:

1. How (N=58) & (N=107) had come we have to explain about it
2. 3 findings with supportive evidence and explanation]
3. Recommendation: has to be briefed

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Effects of Back Squat And Leg Curl Training On Vertical Jump Performance

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Abstract
Previous studiesin this area more focus on correlations between strength of muscle force, training method and order of exercises which contribution factors on vertical jump performance. The purpose of this study was to examined which type of lower limb exercise training, either back squat or leg curl is better in enhancing vertical jump performance. Twenty-three (N = 23) varsity athletes, sixteenth male (n = 16) and seven female (n = 7); (age M = 20.87 ± 1.06 years; height M = 166.48 ± 8.20 cm; weight M = 57.61 ± 4.47 kg) were recruited for this study. These subjects were randomly divided into two group, back squat group (n = 11) and leg curl group (n = 12) which respectively consists of (male = 8; female = 3) for back squat and leg curl group (male = 8;female = 4). Both experimental groups carried out eight sessions of different type of resistance training in 4-week. The level of leg power for both group were recorded twice; pre-test and post-test based on the vertical jump performance. The results revealed that eight sessions of back squat training are able to induce significant improvement ($t= -7.00$, $df= 10$, $p< .05$) on both male and female. On the other hand, results of this study revealed that the leg curl group also shows a significant difference of the vertical jump performance between pre and post-test ($t= -5.20$, $df= 11$, $p< .05$). These results suggested that 4-week training of back squat and leg curl can improve leg power performance level of varsity athletes who are active in any type sports in the University of Malaya.

Introduction

The ability to jump high is highly demand because it is widely considered as a fundamental physical ability and can be influenced by various physiological factors of the body. According to Temfemo (2009), vertical jumping performance and the ability to generate the acquired impulse for the take-off is depended on a variety of factors such as the ratio of fast and slow twitch muscle fibers,the activation of the lower extremity muscles (Bobbert ,2001; Hasson, 2004). In the case of the vertical squat jump performance for example the jumping height, is greatly depended upon the muscular strength of the leg extensor muscles (Voigt, 1995). However, the whole body peak mechanical power output has been found to be the most important factor regarding vertical jumping performance (Temfemo, 2009).

Power is one of the most important components of physical fitness, which is the key component for optimum performance in sport that require explosive action (Bompa, 1994). This is because, explosive muscular power and rate of force production are the basis for most sporting actions (Thibaudeau, 2006) and (Kraemer,1994). Therefore, it is very important for an athlete to have this skill related physical fitness component to perform in an optimal level during the game. To increase power one must develop muscular strength first because the result in increasing muscle strength will result in increasing power performance. It also has been theorized that increases in the muscular strength and power levels of adolescents after participation in resistance training may improve sporting performance (Faigenbaumet al., 2009).

Resistance training or familiarly known as weight training can be define as an organized exercise in which muscles of the body are forced to contract under tension using weights, body weight or other devices in order to stimulate growth, strength ,power and endurance. It is one of the most effective methods to increase strength, power, and muscle mass(Assumpçãoet al.,2013). Different types of exercise contribute in different targeted muscles and the outcome of each exercises also depended on the intensity of training program. One previous study has found that, high-intensity progressive resistance strength training (HIPRST) improves lower-limb strength more than lesser training intensities.

Back squat is one type of the lower limb exercises which intentionally performed to increase the strength of a group of muscles and able to help in injury prevention and rehabilitation. The squat is an integral part of strength training and injury prevention programs, and it is frequently prescribed in rehabilitative interventions (Cotterman et al.,2005 & Gullet et al.,2008). Generally, varied techniques can be used to perform this exercise because different squat techniques and equipment will provide varied modalities of administration of the resistance load. Therefore, the squat exercise can be adjusted according to the training stimuli demands and injury status of individual athletes (Strutzenberger et al.,2010).

On the other hand, leg curl is one of the preferred exercise which usually performed to train hamstrings and gastrocnemius muscles and also has been examined to treat patient with knee pain associated with tenderness at the inferior pole of the patella where the patellar tendon attaches. This condition has many other names such as patellar tendinitis and patellar tendinopathy (Wong et al.,2006).There are various technique and equipment that can be used to do this exercise. Most of these leg curl machines do not fix the ankle joint during execution of the exercise, so the exerciser is free to select the ankle joint angle (Gallucci& Challis, 2002).

This study using two type of exercise which basically work on same muscles group and joint, therefore, the purpose of this investigation was to examined which type of lower limb exercise training, either back squat or leg curl will contribute in enhancing vertical jump performance of the athletes.

Objectives

1. *To measure the power performance of active male and female athletes.*
2. *To compare the power performance between two experimental groups.*

Methodology

Subject

The subjects of this study were the undergraduate students from University of Malaya(n= 23, mean age 20.78). Most of them are athletes represent their residential college in inter residential college games. Subjects were the purposive samples and they were informed about the nature and risk that may arise in this study such as minor injury. Subjects were randomly assigned into group 1 (Back Squat Exercise) and group2 (Leg Curl Exercise).

Procedure

A day before the experimental begins, all subjects were performing the pre-test. Before the test, subjects were given specific briefing on warming up that they going to be performed. There was a 15 minute general warm up and static stretching before the pre-test.

The vertical jump testing was assessed using a Yardstick vertical jump device. Every subject was given 3 jumps. The subject jumped from both feet with no step in an attempt to touch the higher vane. Vertical jump height was measured to the nearest 1 cm, and the highest absolute height difference was taking as the best score.

General Warm Up: Cardiovascular activity for the duration 5 minutes (light jog) and static stretching were considered an effective general warming up due an increased temperature in the muscle, increased heart rate, and increase blood flow. Increase temperature in the muscle allows for a greater amount of flexibility, which prepares the athlete for the movement demands of the activity,

and an increase in heart rate and blood flow delivers oxygen and other necessary nutrients to the muscle to use during activity (Holt et al., 2008).

The 1 RM test was used to determine the 60% of 1 RM and 70% of 1RM of the total of 23 subjects. During the testing session, subjects performed a series of sets with increasing weight until their 1RM is determined. The subjects rested for at least 2 minutes between the 1RM trials. The 1 RM was recorded as the maximum resistance that could be lifted through the full range of motion, using good form only once. If the weight is lifted with the proper form, the weight will be increasing approximately 2 – 10 kilograms based on the feedback from the subject, and the subject attempted another repetition (Masamoto et al., 2003). The increments in weight were dependent on the effort required for the lift and become progressively smaller as the subject approached the 1 RM. On average, the 1 RM is determined within 6 trials. Failure was defined as a lift falling short of the full range of motion at least 2 attempts spaced at least 4 minutes apart. Throughout all testing procedures, an instructor to subject ratio 1:1 is maintained, and all testing took place in Sport Centre, University of Malaya. Verbal encouragement is offered to all subjects.

Back Squats training:The back squat was a compound, full body exercise. Squat is doing by bending through hips and knees, with the weight on upper-back, until hips come lower than knees ("breaking parallel"). Hamstrings, quads, glutes and groin are indeed the prime movers when squat. But abs, oblique and lower back muscles work to keep from collapsing under the bar. Even arms and shoulders must work to keep the bar in position. This makes the squat a crucial exercise for gaining overall strength and muscle. Squat with proper form, will strengthen the muscles surrounding knees and lower back. This will make knees and lower back stronger and healthier, not weak and get injured easily (StrongLifts, 2014).

Leg curl training: The leg curl is a basic "isolation" exercise targeting one or two muscle groups. It can be performed using a gym bench and apparatus with which load a weight then lift a padded bar, usually with two legs, while reclining face-down on the bench. The leg curl flexes then extends the knee joint and targets the hamstring muscles of the thigh and the gastrocnemius of the calf (Rogers, 2014).

Both experimental groups were given 8 sessions of training within 4 weeks of training period, frequency of the training program was two sessions per week with at least 2 days rest between sessions. There are 3 sets in each session of back squat and leg curl with 12 repetitions, follow by 1 minutes rest between sets. In the first and second week the intensity of 60% is used. Principle of overload is applied after 4 sessions, at the third week of training. The intensities will be increase to 70% of 1 RM. The training program was shown in Table 1.

Table 1:Back Squat & Leg Curl Training Program.

Week	Sessions	Speed of	Intensity (% of RM)	Sets	Repetitions	Rest between
1	1	Medium	60	3	12	1
2	3	Medium	60	3	12	1
3	5	Medium	70	3	12	1
4	7	Medium	70	3	12	1

After completed the 8 sessions of back squat and leg curl training, subjects from both experimental groups were asked to perform the post-test using the vertical jump stand a day after the training program. Same procedure were employed as the pre-test, every subject was given 3 jumps.

Results

The paired samples of the Back Squat Group (pre-test and post-test) revealed significant difference of the vertical jump performance(t= -7.00, df= 10, p< .05). Results of this study also revealed that the paired samples of the Leg Curl Group (pre-test and post-test)had a significant difference of the vertical jump performance(t= -5.20, df= 11, p< .05) between pre and post-test.

Table 2: Independent samples *t*- test between back squat group and leg curl group of post-test results.

Experiment Group	M	SD	S.E Diff	t	df	Sig. (2-tailed)
Back Squat	26.55	2.14				
Vs			1.26	1.02	21	0.32
Leg Curl	25.25	3.44				

Table 2 shown the independent sample t-test between the back squat group and leg curl group on vertical jump performance (post-test), p<.05. There were no significant different between both experiment groups (t= 1.10, df= 21, p> .05).

Discussion

This study found that in paired sample t-test that the back squat and leg curl groups had improved in their post-test from the pre-test in vertical jump performance. It means that with 8 sessions in 4 weeks of Back Squat and Leg Curls Exercises able to induce significant improved in Vertical Jump performance. However, the results of independent sample t-test on the post-test shows that there were no significant differences of vertical jump performance between the back squat and leg curl group(t=1.02, df= 21,p> .05). This indicated that both back squat and leg curl group training has improve in the vertical jump performance.

From the present study, the researcher indeed discovered several limitations which may impair the findings. Firstly, the present study did not manage to get equal number of subject for both group. Hence, only a few data can be analyzed for each group. Secondly, the time frame given to complete the research was relatively short. Lastly, the technique used by some subjects in performing the resistance training may not totally correct. Therefore, the training become not effective because the target muscle they should trained to induce the strength was not totally work. Moreover, most of the subjects were undergraduates student and currently participated in some sports events. So, it was difficult to manage a suitable training period for them to train together.

For future studies, it is recommended that a different and larger subject size to be used. The study time frame should be prolonging to a longer period so that researcher and subject will have more time to do the training session. It is also suggested that different type of training method to be apply so that it can be used to enhance the vertical jump performance of the athletes who engaged varies type of sport in University of Malaya.
In conclusion, from this study it is proven that both back squat and leg curl training were able to enhance vertical jump performance. Even though this study were done only in 4-week but the results between pre and post-test still shows an improvement towards both group. We believed that power performance can be improve by prolong period of time and consistent training sessions so that a better results can be produce. There are also many type of resistance training to increase lower limb muscles strength which can be designed to improve the vertical jump performance.

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The Key To Success In Sports –Stress Management

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Abstract:
It is clear from the finding of this study that girls had higher level of stress than boys as the girls have more challenges to follow Indian orthodox customs, prevailing in the society. When stress affects the brain, with its many nerve connections, the rest of the body feels the impact as well. So it stands to reason that if your body feels better, so does your mind. Exercise and other physical activity produce endorphins-a chemical in the brain that act as natural painkillers-and also improves the ability to sleep, which in turn reduces stress. Meditation, acupuncture, massages therapy; even breathing deeply can cause your body to produce endorphins. And conventional wisdom holds that a workout of low to Moderate intensity makes you feel energized and healthy. Scientists have found that regular participation in aerobic exercise has been shown to decrease overall levels of tension, elevate and stabilize mood, improve sleep, and improve self-esteem. Albert and Monika (2001) reported that even five minutes of aerobic exercise can stimulate anti-anxiety effects. Finding of this study also indicate that coping strategy of physical education students are better than students of engineering profession because of more opportunities of performing physical activities. Brown (1991) found that life events were more likely to cause students to seek medical advice if the students were low in physical fitness, as compared to students high in physical fitness. Therefore, College faculty and parents need to attend specific training and conferences regarding stress management to guide the students on how to manage their stresses in an effective way. Students may need guidance and reassurance from a positive role model and someone whom they can trust to talk to about such pressures, otherwise they may chose negative ways to cope with the stress in their lives. Teachers, parents, and college administration should work together to reduce the level of stress and enhance their coping strategy that promote a healthy lifestyle.
Keywords: Stress Management, healthy, society, sports hamper,

Introduction:
In day to life stress became a big problem in our society, especially in sports. Though a top class sportsman is having scientific coaching and proper nutrition, still he is lacking in showing top class performance because of more stress. Stress always hampers the performance of an Individual in sports competitions. Stress is the response of the body to any demand placed upon them. It arises when they start to worry that they can't cope. It is also considered as the 'wear and tear' of our mind and body as we adjust to the ever changing environment. Basically we can broadly classify symptoms of stress into three main groups. They are 1. Physical Symptoms 2. Emotional symptoms 3. Relational symptoms

Physical Symptoms:
Sleep disturbances, hypertension, headaches or migraine, irregular heart beat, palpitation and chest Paint, fatigue, hair loss, upset tummy, constipation, acid reflux, heartburn, shortness of breath etc

Emotional Symptoms:
Worry, anxiety, irritable, nervous, frustration, depression, moody, lethargy, tired, difficulty in sleeping, Confusion and difficulty in concentrating, inability to think clearly, a sense of helplessness.

Related symptoms: Increased arguments, aggressive and abusive, tendency to over react, anti-social, violence etc.

How to reduce the stress:
Stress is inevitable in life but that doesn't mean that we have to be passive about it and risk being
Stressed out. The following are the tips to reduce stress.

Start a Stress Diary: Keeping a stress diary is an effective way of finding out both what causes you Stress and how to avoid stress.
Exercise: Taking frequent effective exercise is probably one of the best physical stress reduction Techniques available.
Relaxation and Meditation Technique: Relaxation and Meditation Techniques are very good Techniques to over come the stress.
Time Management: Stress is often cited as a result of poor time management. These are often the People who do not prioritize their jobs or tasks.
Develop your social net work: When under stress, it is very natural to withdraw from the world and Concentrate exclusively on solving the problem that causes the stress. Since stress is a main hurdle to the performance of sports men, it shall be given higher priority to be treated. Hence Physical Education and Exercises plays main role for reducing the stress in sports persons or to any other individuals to become success in the life.
Clarity of mind. When you are stressed and running on adrenalin it is harder to make good strategic decisions. I have had some of my best ideas when I have been out of the office and up in the mountains – a place where stress can be left behind and creativity flourishes. Obviously, skipping town for the mountains can't happen all the time, but it taught me the importance of identifying some of the negative consequences of not managing stress on a daily basis in order to gain clarity and avoid making bad decisions.
Energy. When you are overly stressed your energy levels are drained. If you have a team of people reporting in to you they will be looking to you for energy and guidance – developing skills or outlets that allow you to expend negative energy and focus on your passion will always serve you well. Oprah Winfrey has wisely been quoted as saying, "Passion is energy. Feel the power that comes from focusing on what excites you."
Good health. Your immune system can be weakened by excessive levels of stress, which can alter your mood and general sense of well-being. Stress has also been linked to varying illnesses from the common cold to heart disease, anxiety, ulcers and cancer. Without your health it is very difficult to do anything successfully.
Managing stress is a personal process – some people meditate, others exercise. Either way, stress is a normal part of life but it is important to strike a balance between productive stress and the kind that leaves you depleted. Stress cans manifest itself in many ways when you are a student, soldier, and a parent. But you must learn to recognize stress.If you feel that stress is affecting your life, or your studies, your first option is to seek help through an educational counseling center or a veteran's administration facility.
Take control: See if there is something you can change or control in the situation.
Learn how to best relax yourself: Meditation and breathing exercises have been proven to be very effective in controlling stress. Practice clearing your mind of disturbing thoughts.Remove yourself from the stressful situation: Give yourself a break if only for a few moments a day.Set realistic goals for yourself: Reduce the number of events going on in your life and you may reduce the circuit overload.
Avoid extreme reactions: Why hate when a little dislike will do? Why generate anxiety when you can be nervous? Why rage when anger will do the job? Why be depressed when you can just be sad?
Do something for others: Helping others can help get your mind off yourself.
Get enough sleep: Lack of rest just aggravates stress.
Work off stress: Whether it's through workouts, jogging, tennis, or gardening, physical activity can relieve stress. As you have experienced, the military places great emphasis on physical fitness and exercise training. Studies show that physical activity enhances psychological well-being.Develop a thick skin: The bottom line of stress management is "I upset myself."Try to "use" stress: If you can't fight what's bothering you and you can't flee from it, flow with it and try to use it in a productive way.Be positive: Give yourself messages as to how well you can cope rather than how horrible everything is going to be. "Stress can actually help memory, provided it is short-term and not too severe. Additionally, stress causes more glucose to be delivered to the brain, which makes more energy available to neurons, according to a report titled "All stressed up." This, in turn, enhances memory formation and retrieval. On the other hand, if stress is prolonged, it can impede the glucose delivery and disrupt memory.Don't sweat the small stuff: Try to prioritize a few truly important things and let the rest slide.Don't overwhelm yourself: Avoid fretting about your entire workload. Handle each task as it comes, or selectively deal with matters in some priority.Don't self-medicate or escape: Alcohol and drugs can mask stress. They don't help deal with the problems.Most importantly: If stress is putting you in an unmanageable state or interfering with your education, social and/or work life, seek professional help.

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Comparison Of The Effect Between Plyometric Training And Weight Training On Vertical Jump Performance

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Abstract

Previous studies have shown that plyometric training and weight training will improve vertical jump. The purpose of this study was to determine the best method to improve vertical jump. Twenty undergraduates students of University of Malaya (N = 20) with mean age (M = 20.54 ± 1.43) years, mean height (M = 165.32 ± 9.62) cm and mean weight (M = 65.34 ± 6.54) kg were recruited by using the method of purposive sampling. The subjects were randomly divided into plyometric training group and weight training group. Both groups underwent 4 weeks of training sessions. The vertical jump test were taken and recorded twice (pre-test and post-test). The results of this study revealed that 4 weeks of plyometric training group induced significant improvement ($t = -11.921$, $df = 9$, $p < .05$) on the vertical jump test. The weight training group did not induced any significant difference of the vertical jump test between pre-test and post-test ($t = -1.470$, $df = 9$, $p > .05$). The results of current study suggest that plyometric training is more effective method to improve vertical jump performance compared to weight training.

Introduction

A superior vertical jump typically correlates well with leg strength, speed, and others that related with maximum power output. Vertical jump is one of the conventional tests to assess explosive power. A more power output in the athletes will result in higher vertical jump that can be achieve. There are 2 ways to improve the leg power output for the athletes. One of them is through progressive resistance training while the other one is through plyometric training.The most common misconception about vertical jump is that the measurement displays the athlete's ability to elevate off the ground from a run-up, contrary to from a standstill. The effect of this misconception is that many athletes will grossly inflate their vertical jumps (Emel, 2012).

Much research has been focused on the development of maximal strength performance as this neuromuscular quality appears to underpin most other domains of human physical capacity. Although various training methods, including weight training, explosive and ballistic type resistance training methods, electro stimulation training, and vibration training have been effectively used for enhancement of strength performance. There is solid evidence that plyometric training is also effective for improving ballistic and maximal strength(Frantisek, 2013).

Plyometric training conditions the body with dynamic resistance exercises that rapidly stretch a muscle (eccentric phase) and then rapidly shorten it (concentric phase). Hopping and jumping exercises, for example, subject the quadriceps to a stretch-shortening cycle that can strengthen these muscles, increase vertical jump, and reduce the force of impact on the joints. By increasing the muscular power and explosiveness therefore the power output of the athletes is largely increase and this will makes them achieve a higher vertical jump.But plyometric training is also associated with some risks, including an increased risk of injury, especially in participants who don't have adequate strength to begin with. Both training also will improve the power output for the athletes to improve vertical jump performance but which one is better and can improve the vertical jumpmore (Eduardo, 2010).

Objective

1. To measure the vertical jump height before and after intervention.
2. To compare the significance difference on the vertical jump height on post-test between plyometric training group and weight training group

Method

Experimental method was applied in this research. Plyometric training and weight training program were designed to both experiment groups of total 20 subjects. Plyometric training and weight training program was conducted in a period of one month, three sessions per week and with a total of 12 sessions of plyometric training or weight training for both the experiment groups.

Subjects

The subjects for this research were the sedentary students at University of Malaya. A total of 20 individuals (N =20) were recruited based on purposive sampling to became the subjects for this research. The subjects were divided into two experimental groups (Plyometric Training Group and Weight Training Group. All the subjects were male with the mean age (M = 20.54 ± 1.43) years, mean height (M = 165.32 ± 9.62) cm and mean weight (M = 65.34 ± 6.54) kg.

Measurements

The vertecdevice was used as the instrument of this research to assess the vertical jump performance of the subjects. This test was conducted twice (pre-test and post-test) to compare the vertical jump performance between the experimental groups. The subjects were required to carry out a gentle warm up and light stretching exercises for 10 minutes before the test.After the warm-up, the subjects stand on the vertec device which facing the wall, and begin jumping when instructed.After the test, the subjects required to carry out a cool-down period included stretching activities as was done during the warm up routine.

Procedure

Thesubjectswere informed about the research on “Comparison of the effect between plyometric training and weight training on vertical jump performance”. They were informed about the potential risks and benefits of the study. Subjects were assured that individual data were going to be kept confidential. After the pre-test, the groups were assigned to train according to the methods of training. For the weight training group, they were required to take their 1RM (One Repetition Maximum) test for the lower body with Squat on Smith Machine, the 1RM test was used as bench mark for the intensity of their training program. According to Levinger(2009) the one-repetition maximum (1RM) test is considered the gold standard for assessing muscle strength in non-laboratory situations. 1RM is a reliable method of evaluating the maximal strength in untrained middle-aged individuals. For the plyometric training group they were not required to take the 1RM test because they were just using their own bodyweight for their training.

The frequency of the training, the intensity and the duration of the training were modified to make sure the subjects were able to carry out the training sessions. The program was based on FITT principle and shown in the Table 1. Plyometric training program and Table 2. Weight training program.

Table 1: Plyometric Training Programs.

Number	Type of exercise	Sets	Repetitions
1	Burpee	3	15
2	Box jump	3	15
3	Jumping lunges	3	15

Table 2: Weight Training Program.

Number	Type of exercise	Sets	Intensity	Repetitions
1	Squat	3	50% of 1 RM	15
2	Lunges	3	50% of 1 RM	15
3	Step up	3	50% of 1 RM	15

For both the experiment groups they were undergone 3 training sessions a week for 4 weeks as Table 3. The purpose of the weekly training schedule leaving a day of rest each training session is because to ensure that there is enough of rest given to the subjects to recovery from their training session so that the chances of getting injuries can be reduced. After completion of the 4 weeks of training, both groups (n = 20) were asked to do the post-test by using vertecdevice.

Table 3: Weekly Training Schedule for Both Experimental Groups.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Rest	Training	Rest	Training	Rest	Training	Rest

Results

Current study revealed that no significant differences of the vertical jump test for the Weight Training group between pre-test and post-test on the vertical jump performance ($t = -1.470$, $df = 9$, $p > .05$). There were significant differences of the vertical jump test for the Plyometric Training Group between pre-test and post-test on the vertical jump performance ($t = -11.921$, $df = 9$, $p < .05$).

Table 4: The Independent Samples t-test Between the Experimental Groups on Post-test.

Group	Independentsamplest-test				
	Mean Diff	S. E. Diff	t	df	Sig (2-tailed)
Weight training group vs	-5.100	3.778	-1.350	18	.194

The results from the post-test vertical jump performance for both experimental groups (Table 4) revealed no significant differences of the vertical jump test between the Weight Training Group and the Plyometric Training Group ($t = -1.350$, $df = 18$, $p > .05$).

Discussion

The purpose of this study was to find out the best training methods to improve vertical jump performance. This was the first study carried out in University of Malaya on Comparison of the effect of Plyometric Training and Weight Training on vertical jump performance. The main finding of the study was that after the plyometric training program, the subjects induced significant differences ($t = -11.921$, $df = 9$, $p < .05$) on their vertical jump performance. This had proven that plyometric training is able to improve the vertical jump performance after 12 sessions of training.

Based on the results, both weight training and plyometric training improved the vertical jump. However, the improvement of the weight training on vertical jump performance was not significant when compare to plyometric training. The results of this study supported previous study that plyometric training is an effective training method to improve the vertical jump. According toVacziet al.(2013)plyometric training consist of high impact unilateral and bilateral exercises induced remarkable improvements in lower extremity power and maximal knee extensor strength.

However, when compare the post results of weight training and plyometric training, the results were not significant ($t = -1.350$, $df = 18$, $p > .05$). Plyometric training may help to reduce the chances of getting injuries as well if it is done in a correct form. According to Struminger(2013) single leg sagittal plane hurdle hops may be the most effective exercise to activate the gluteal and hamstrings and may be important to include in anterior cruciate ligament injury prevention programs, given the importance of these muscles for limiting valgus loading of the knee, this may help to improve the vertical jump to achieved by the athletes.

CONCLUSION

In conclusion, from this study it is proven that both weight training and plyometric training can improve vertical jump performance, but plyometric shows significant improvement between pre and post-test on the vertical jump performance.

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A Study On Athletic Performance of University Level AthletesState of Telangana

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Abstract
The purpose of the study was to find out the athletic performance of university level athletes. The study was confined to the age group of 18-20 years, 25 boys and 25 girls from the Hyderabad District state of Telangana were selected for the purpose. The study was to compare the performance among the men athletes and among the women athletes of three consecutive years (2007, 08 and 09) and also the trend of performance. The criterion measure adopted in this study were speed (time taken to cover contain distance), strength of muscles (distance covered in jumping and throwing), explosive leg strength (height attained in high jumps). Mean and standard deviation were used as descriptive statistics in the present study. To obtain the mean difference between the variables of three years,'t' ratio was employed. The result of the study indicated that there is no significant difference of performance of boys and girls in three years in relation to running events and jumping events but in case of throwing events, the performance of girls were found better than the boys. One more note worthy points is that it was observed that the level of ability of the athletes were not same. Thus the quality of movement, level of coordination, speed of skill learning and stabilization of technique became different. Those factors have a direct effect on the performance.
Key Words: Athlete, University Level, Running, Jumping and Throwing.

Introduction

Participation in physical activities develops physical strength, speed of movement, endurance, flexibility and learning of proper movements and its repetition improves co-ordination of movements of the body parts by improving the quality of movements. Every day, somewhere, someone is practicing track and field events. This does not mean that it is the most popular sports in the world; with the greatest number of participants; this honour probably belongs to the majority of nations in the world. Track and field athletics is considered as number one of all the sports disciplines and it is being carried on all over the world.

Methodology

For the present study the performances of 25 boys and 25 girls were recorded. Data were collected from the record book of sub-division sports association of Telangana State. In this study the running events considered were 100 mts., 200 mts., 800 mts & 1500 mts. Run, the throwing events included were Shot Put & Javelin and the jumping events considered were Long Jump & High Jump. The performance timing, distance and height of the first three places as recorded in the competition of the year 2007, 2008 and 2009 were gathered for the present study.

Results

Table-1: The mean and S.D. of the variables of Boys and Girls were presented in this table.

Test Items		*2009*		*2010*		*2011*	
		Mean	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*
Running Events	*Boys*	*47.83*	*10.00*	*54.50*	*8.70*	*49.25*	*8.67*
	Girls	*46.22*	*7.94*	*49.67*	*6.02*	*54.44*	*9.64*
Throwing Events	*Boys*	*44.67*	*4.72*	*52.33*	*4.35*	*50.17*	*14.19*
	Girls	*46.33*	*6.58*	*56.00*	*4.89*	*45.11*	*10.41*
Jumping Events	*Boys*	*48.83*	*11.46*	*49.67*	*6.20*	*48.17*	*11.51*
	Girls	*45.17*	*13.45*	*50.33*	*8.29*	*50.83*	*7.33*

Table – 1 Indicates that boy's performers of 2010 were found superior to other years in running, jumping and throwing in case of girls performers of 2011 were found superior to other years in running and jumping, whereas in case of throwing performance of 2010 was found superior to others.

Table-2: Mean difference of variables between the performance of Boys and Girls in the years of 2009-2010.

EVENTS		*2009*	*2010*	*S.E.*	*'t' ratio*
		MEAN	*MEAN*		
RUNNING	*Boys*	*47.83*	*52.50*	*2.88*	*1.72*
	Girls	*46.22*	*49.67*	*2.79*	*1.44*
THROWING	*Boys*	*44.67*	*52.33*	*1.71*	*1.83**
	Girls	*46.33*	*56.00*	*2.20*	*2.02**
JUMPING	*Boys*	*48.83*	*49.67*	*4.18*	*0.16*
	Girls	*45.17*	*50.33*	*5.34*	*0.81*

From Table-2 it was found that in relation to throwing events the performance between 2009 and 2010 were significantly different in case of both boys and girls. In relation to running events and jumping events there was no significant difference.

Table-3: Mean difference of variables between the performance of Boys and Girls in the years of 2009-2010.

EVENTS		*2009*	*2010*	*S.E.*	*'t' ratio*
		MEAN	*MEAN*		
RUNNING	*Boys*	*47.83*	*49.25*	*3.23*	*0.81*
	Girls	*46.22*	*54.44*	*3.63*	*1.21**
THROWING	*Boys*	*44.67*	*50.17*	*5.63*	*0.83*
	Girls	*46.33*	*45.11*	*3.57*	*0.27*
JUMPING	*Boys*	*48.83*	*48.17*	*5.66*	*0.1*
	Girls	*45.17*	*50.83*	*5.11*	*0.93*

From Table-3 it was found that in relation to throwing events the performance of the girl athletes of 2009 and 2010 were significantly different and others event like throwing and jumping there were no significant difference of both boys and girls performance.

Table-4: Mean difference of variables between the performance of Boys and Girls in the years of 2008-2009.

EVENTS		*2008*	*2009*	*S.E.*	*'t' ratio*
		MEAN	*MEAN*		
RUNNING	*Boys*	*4.50*	*49.25*	*2.57*	*0.78*
	Girls	*49.67*	*54.44*	*3.25*	*1.12*
THROWING	*Boys*	*52.33*	*50.17*	*5.35*	*0.34*
	Girls	*56.00*	*45.11*	*3.28*	*1.54**
JUMPING	*Boys*	*49.67*	*48.17*	*4.89*	*0.25*
	Girls	*50.33*	*50.83*	*4.09*	*0.1*

From Table-4 it was found that the performance of the girl athletes of the year 2008 and 2009 were significantly different in throwing events. In case of running and jumping events there were no significant difference of both boys and girls performance.

Conclusions : Boys athletes produced no significant difference in running events in three years.Girls athletes produced in running events consistent upward trend is observed in three years.Performance of throwing events, it is found that boys and girls athletes of 2008 are significantly superior to other years.In jumping events, boys and girls athletes are not significant.

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Stroke Type And Shot Outcome Analysis In World Elite And U-21 International Men Singles Table Tennis Players

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Abstract

The aim of this study was to investigate table tennis's game playing pattern among world Top Level Elite and U-21 International categories. A total of 28 matches included Semi-finals and Finals from Super Series matches were selected. Stroke type and shot outcome were chosen for performance indicators of playing pattern. Comparison of all variables between different categories was done using Independent Sample t-Test. There was a significant difference in mean percentage distribution of push backhand, block backhand, top-counter-top backhand, flick backhand, and block forehand between Top Level Elite and U-21 categories (p< .05). In shot outcomes, most of the strokes were ended as return shots. Topspin forehand was the most successful shot with the highest number of winners, while top-counter-top forehand had highest number of errors. This information can assist coaches in improving technical and tactical skills of the table tennis players up to the International standard.
Key words: stroke types, shot outcome, table tennis, top elite players, U-21 players

INTRODUCTION

Table tennis is one of the most popular and common sport in the world. But it can be considered a very complex sport and its development is still in progress. Many researchers have evaluated the play actions accomplished in different racket sports such as squash, badminton, or tennis (Pradas, Martinez, Rapun, Batellar, & Castellar, 2011). But not many data are available in the sport of table tennis. Changes made by the International Table Tennis Federation (ITTF) in 2001 in the match and game format further limited resource available for references.Hughes (1985)proposed the difference between winning and losing players can be defined by comparing the patterns of play in elite competition for tactical evaluation. Winners and errors are powerful indicators of technical competence to define technical strength and weaknesses in racket sports. O'Donoghue (2004)stated that analysis of movement or time-motion analysis is the investigation of the activity of players during competition and is not restricted to on the ball activity. This information can be reported as work time and work to rest ratio, indicating the activity levels achieved in each moment.

This study aims to find out the playing patterns of elite men's singles table tennis in major competitions. The effectiveness of strokes and the comparisons of techniques are investigated between winning and losing players. The strokes are compared in term of effectiveness and types of technique used among different categories of elite competitions as well.

STUDY BACKGROUND

The commercialization of racket sports in recent years has focused attention on improved performance and this has led to a more scientific approach to the study of all aspects of racket sports. This development, coupled with greater numbers of individuals with an interest in applying their scientific skills to racket sports, has seen a rapid growth in scientific effort, including movement analysis of elite level male serve and volley players in tennis (Hughes & Moore, 1998), playing patterns at different levels in squash for women (Hughes, Wells, & Matthews, 2000) and rally-ending situations in women's singles All England Open Badminton Championships Final (Evans, 1998).

A comparison of the game strategies employed by National and International squash players in competitive situation by notation analysis is the subject of researched by Hong, Chang, and Chan (1996). Ten male matches from the Perrier Hong Kong Closed Championship'94 were recorded. Strokes and where the ball landed were recorded, they were identified according to 13 well known types, namely as straight drive; cross court drive; boast; reverse boast, straight volley drive, cross court volley drive, straight volley drop, cross court volley drop, volley boast, straight lob, cross court lob, straight drop, and cross court drop. The quality of the return shot was depicted by four different categories: "effective", "ineffective", "winning" and "losing". The results obtained from this study coincide with that of Hughes (1995). In the front of the court for instance, the national players played significantly more percentage frequency both of all returns and "losing" shots than the international players. National players played both significantly higher percentage of "ineffective" shots and lower percentage of "effective" shots than their international counterparts. They also played significantly more shots from the front of the court and less from the back, played significantly more "ineffective" drive, drop and volley shots and less "effective" shots than the international players.

Using the 1998 ladies singles final of the All England Championship, Evans (1998)analysed rally-ending situations so as to provide tactical match plans for future training sessions. Within the study it was noted that a low winner to error ratio was apparent. The players also showed an increased amount of errors when playing the clear in comparison to other shots. This could have been due to the surrounding environment or increased pressure, it is usually expected that a clear will produce a low winner to error ratio. The smash though will usually have a winner to error ratio greater than one in men's singles the ratio is 2.2:1 (Evans, 1998). Within this study only one match was analysed therefore care must be taken when interpreting the data. Evans (1998) outlined that ideally a good player profile can be established by using a collection of five matches, with the more matches one can notate the more accurate an emerging pattern.

The conclusions drawn from this study have similarities to that of Hughes (1986) on his work concerning male subjects. The elite players employed an 'all-court' game, using more complex tactics creating more pressure, due to their higher levels of fitness, covering ability, speed and skill levels. County players showed a consistent attempt on hitting the ball into the back of the court and predominantly on the backhand side. Their shots were less accurate than of the elite players, but significantly more accurate than of the recreational player. Recreational players adopted a 'hit and run' game due to their inability displaying tactics. They were erratic with their distribution of shots, hitting a high percentage loose to the middle of the court. These studies by Hughes (1986) and Hughes et al. (2000) distinguish between playing patterns of both standards of genders; they are not representative of the junior game in any way. This is due to the differing physiological factors that exist between the two subject groups, for instance being able to retrieve the ball, and also other factors that might contribute to the variance in playing patterns, such as quality of coaching.

Study Objective

The study objective was to quantify and compare the playing pattern structure in World Top Level Elite and U-21 International men's singles table tennis players in terms of preferred strokes and winner to error ratio.

Methodology

Sample

The video recordings of the matches in ITTF International events were collected throughout the year of 2013-2014. Only Semi-finals and Finals from the Super Series matches were taken into consideration for further analysis. The matches involving players with defensive playing style were excluded from analysis in this study. Hence, video recordings of 28 matches were collected with 155 games eventually analysed.

The games included Top Level Elite category and U-21 category. The matches were played at the best of seven sets format, finishing 4-3 (n = 3 + 3), 4-2 (n = 4 + 5), 4-1 (n = 4 + 3), and 4-0 (n = 5 + 1) matches for Top Level Elite category and U-21 category respectively. The study was delimited to only male table tennis players. All matches were recorded on video at the official competitions, so all the subjects were aware of being video recorded and familiar to being observed; hence no written consent from the subjects was necessary. The research protocol was approved by UniversitiSains Malaysia human ethics reseach committee. The matches were analysed post-event using video recordings. This was due to the speed of live match play being too fast to gather all relevant details. The analyses were performed in slow motion, at half speed by the researcher (a table tennis player himself) and an experienced full-time table tennis coach.

Procedure

Analyses of all games were done using Elite Sport Analysis-FOCUS-X2 PRO software in the post-match mode. The software allows the user to view video of a performance and then enter the 'events' (actions) that they are interested in using the Category Set facility in Focus software.

After that the data of the actions were extracted from the matrix and exported to spreadsheet in Microsoft Excel. Eventually it was followed by the calculation of the stroke type variables for each game and match.

Stroke Type Variables

The following stroke type categories were considered (Molodzoff, 2008), distinguishing between forehand and backhand: Service,Push,Flick, Topspin,Block,Top-counter-top,Lob,Smash and Drive.

Shots Outcome Variables

Shot outcomes were divided into four categories: Winner: a rally-ending shot after which the ball bounces into the opponent's side of the table and is not hit or touched by the opponent;Return: a non-rally-ending shot after which the ball bounces into the opponent's side of the table and is hit or touched by the opponent;Error: a rally-ending shot after which the ball goes into the net or outside the table; Winner to error ratio: ratio of number of winner to number of error in a game.

Reliability

A match was randomly selected among matches available for analysis by a full-time table tennis coach. The video was viewed twice throughout a two month period by the coach and the researcher who collected the whole data of the matches. Krippendorff's alpha (α) was calculated to assess inter- and intra-operator reliability (α can range between - 1 and 1, where 1 indicates perfect agreement). For stroke type and shot outcome, alpha was 0.95 and 1.00 concerning both intra-operator reliability, and 0.82 and 0.99 concerning the inter-operator reliability. Variables with reliabilities above α = .80 can be trusted on (Krippendorff, 2004).

Statistical Analysis

Statistical Package for the Social Sciences (SPSS) version 21.0 statistical program was used to analyse the data collected in this study. The results of variables for each match and game were exported from the spreadsheet in Microsoft Excel to SPSS for further analysis.

Descriptive statistics were reported in mean and standard deviation for each variable for Top Level Elite (world ranked) and U-21 respectively. Comparison of variables between different groups was done using Independent Sample T-Test to determine if there were any significant differences between Top Level Elite and U-21 players. Relationships were determined using Pearson Product Moment correlation coefficient. A level of significance of $p < .05$ was used for all of the statistical analyses.

Results

Top Level Elite's and U-21 Shot Data

For Top Level Elite category, as presented in Table 1, the frequency distribution of stroke types was topspin forehand, n = 979 (15.5%); push forehand, n = 921 (14.6%); top-counter-top forehand, n = 860 (13.6%); top-counter-top backhand, n = 844 (13.4%); topspin backhand, n = 801 (12.7%); block backhand, n = 643 (10.2%); flick backhand, n = 475 (7.5%); push backhand, n = 410 (6.5%); block forehand, n = 208 (3.3%); and flick forehand, n = 168 (2.7%).

Table 1 Stroke Types Variables in Top Level Elite Table Tennis Matches

Variables	n	%	*M*	*SD*	Skewness	Kurtosis
Push Forehand	921	14.6	5.42	2.69	0.28	-0.18
Push Backhand	410	6.5	2.41	2.25	1.49	2.71
Flick Forehand	168	2.7	0.99	1.21	1.92	6.82
Flick Backhand	475	7.5	2.79	2.17	1.28	2.62
Topspin Forehand	979	15.5	5.76	3.39	0.69	1.20
Topspin Backhand	801	12.7	4.71	2.77	0.98	1.29
Block Forehand	208	3.3	1.22	1.41	1.76	3.64
Block Backhand	643	10.2	3.78	2.93	1.42	3.14
Top-counter-top Forehand	860	13.6	5.06	2.72	0.54	0.56
Top-counter-top Backhand	844	13.4	4.96	4.72	1.65	1.84

Figure 1 presents the stroke type distribution in a pie chart.

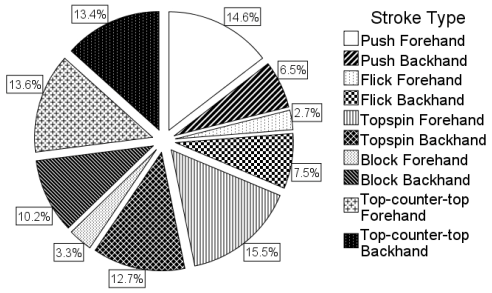

Figure 1. Top Level Elite Table Tennis Stroke Types Distribution

As of U-21 category, as presented in Table 2, the frequency distribution of stroke types was topspin forehand, n = 731 (17.5%); push forehand, n = 607 (14.6%); top-counter-top forehand, n = 582 (14.0%); topspin backhand, n = 550 (13.2%); top-counter-top backhand, n = 433 (10.4%); flick backhand, n = 383 (9.2%); block backhand, n = 354 (8.5%); push backhand, n = 209 (5.0%); block forehand, n = 181 (4.3%); and flick forehand, n = 136 (3.3%).

Table 2 Stroke Types Variables in U21 Table Tennis Matches

Variables	n	%	*M*	*SD*	Skewness	Kurtosis
Push Forehand	607	14.6	4.34	2.00	0.51	0.53
Push Backhand	209	5.0	1.49	1.33	0.74	-0.08
Flick Forehand	136	3.3	0.97	1.23	1.33	1.55
Flick Backhand	383	9.2	2.74	2.05	0.94	0.26
Topspin Forehand	731	17.5	5.22	3.37	1.52	4.53
Topspin Backhand	550	13.2	3.93	2.00	0.56	0.15
Block Forehand	181	4.3	1.29	1.28	1.20	2.23
Block Backhand	354	8.5	2.53	1.94	0.54	-0.49
Top-counter-top Forehand	582	14.0	4.16	2.73	1.45	3.74
Top-counter-top Backhand	433	10.4	3.09	2.17	1.03	1.26

Figure 2 presents the stroke type distribution in a pie chart.

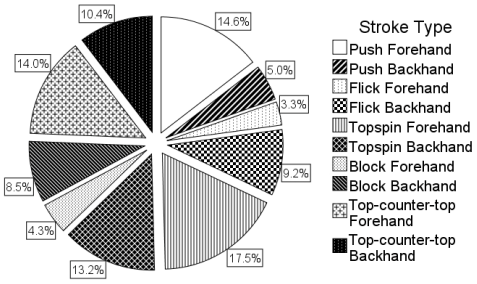

Figure 2. U-21 Table Tennis Stroke Types Distribution

Comparison of Shot Data between Top Level Elite and U-21 Categories

The results presented in Table 3 show the mean and standard deviation for stroke types in Top Level Elite and U-21 categories respectively. There was a significant difference in mean of pushes forehand and backhand, topspin backhand, block backhand, and top-counter-top forehand and backhand between Top Level Elite and U-21 categories ($p < .05$). The means for these variables were significantly higher in Top Level Elite category than in U-21 category.

Table 3 Comparison of Table Tennis Stroke Types Variables between the Categories

	Top Level Elite		U-21		Mean Difference		
Variables	*M*	*SD*	*M*	*SD*	(95% CI)	*t* (*df*)	*p*
Push Forehand	5.42	2.69	4.34	2.00	1.08 (0.56, 1.61)	4.06 (305)	< .001***
Push Backhand	2.41	2.25	1.49	1.33	0.92 (0.51, 1.32)	4.47 (281.22)	< .001***
Flick Forehand	0.99	1.21	0.97	1.23	0.02 (-0.30, 0.22)	0.12 (308)	.904
Flick Backhand	2.79	2.17	2.74	2.05	0.06 (-0.42, 0.53)	0.24 (308)	.809
Topspin Forehand	5.76	3.39	5.22	3.37	0.54 (-0.22, 1.30)	1.39 (308)	.165
Topspin Backhand	4.71	2.77	3.93	2.00	0.78 (0.25, 1.32)	2.89 (302.97)	.004**
Block Forehand	1.22	1.41	1.29	1.28	- 0.07 (-0.37, 0.23)	- 0.45 (308)	.653
Block Backhand	3.78	2.93	2.53	1.94	1.25 (0.71, 1.80)	4.504 (295.31)	< .001***

Top-counter-top Forehand	5.06	2.72	4.16	2.73	0.90 (0.29, 1.51)	2.90 (308)	.004**
Top-counter-top Backhand	4.96	4.72	3.09	2.17	1.87 (1.07, 2.67)	4.61 (247.04)	< .001***

Note. ** p< .01, *** p< .001

Analysis of Shot Outcome

The results in Table 4 show Top Level Elite players won more winner points than U-21 players, but no significant difference between these two categories, t (*308*) = 0.47, p = .641, 95% CI [- 0.22, 0.36]. Top Level Elite players significantly performed more successful return shots than U-21 players, t (307.47) = 5.82, p< .001, 95% CI [3.65, 7.51]. Also, Top Level Elite players did more error shots than U-21 players, but no significant difference between both categories, t (*308*) = 0.47, p = .637, 95% CI [- 0.46, 0.75]. Overall, there was no statistically mean difference in winner to error ratio between Top Level Elite and U-21 categories, t (308) = 0.29, p = .773, 95% CI [- 0.07, 0.09].

Table 4 Comparison of Shot Outcome Variables between the Categories

	Top Level Elite		U-21		Mean Difference		
Variables	*M*	*SD*	*M*	*SD*	(95% CI)	*t* (*df*)	*p*
Winner	1.68	1.29	1.61	1.26	0.07 [- 0.22, 0.36]	0.47 (308)	.641
Return	36.22	9.43	30.64	7.44	5.58 [3.65, 7.51]	5.82 (307.47)	< .001***
Error	7.62	2.63	7.48	2.76	0.15 [- 0.46, 0.75]	0.47 (308)	.637
Winner to Error Ratio	0.30	0.39	0.29	0.33	0.01 [- 0.07, 0.09]	0.29 (308)	.773

Note. *** p< .001.

Discussion

Interpretation of Stroke Type

Despite people might argue that table tennis players used certain strokes after being forced by opponents, most of shots were in control by players and there were some points during the rally in which the player has to make a decision either be aggressive or just play safe when using strokes.

In the matches analysed, the most used strokes were topspin forehand, push forehand, top-counter-top forehand and top backhand. Compared to a similar study done by Malagoli-Lanzoni et al. (2013), the most used strokes were topspin forehand, top-counter-top forehand, block backhand, and top backhand. These showed that in technical point of view, the top strokes are important in table tennis. This kind of playing style have resulted the contemporary table tennis becomes more aggressive, fast and energetic play.

Majority of strokes were performed by using forehand. Only block and flick strokes were largely used as backhand strokes. Block backhand was considered as passive stroke as it was mostly used to just return when chances to counter attack were not available.

The significant difference between this study and Malagoli-Lanzoni et al. (2013)'s study was top-counter-top backhand and block backhand, which were 13.4% vs 3.3% and 9.5% vs 14.9%. The possible explanation was the observer for this study perceived more aggressive shots in games.

Table tennis players tend to attack when the ball is at the forehand side. Thus, both studies agreed that block forehand was perceived as negative stroke, which mean it was only used in tricky or difficult situation.

When comparing between Top Level Elite and U-21 players, there were few strokes such as push forehand, push backhand, topspin backhand, block backhand, top-counter-top forehand, and top-counter-top backhand were statistically significant. However, considering the number of shots per rally was significantly different among categories, the percentage of shot distribution was compared instead.

The comparison of shot distribution in percentagewise between categories showed Top Level Elite category had significantly more shots in using push backhand, block backhand, and top-counter-top backhand when compared with U-21 category. Presumably, Top Level Elite players targeted more backhand side of the table so that the opponents could not return more aggressive shots since backhand strokes are more difficult to be executed compared to forehand strokes. U-21 players significantly used more flick backhand and block forehand in their overall game compared to Top Level Elite category. U-21 players preferred using flick backhand rather than push backhand might explain they were impatient to play more push strokes and choose to launch attack by flicking the ball. It was interesting to see U-21 players were forced into using block forehand instead of other attacking strokes. Block forehand gives little threats to opponents and may result disadvantage situation when receiving the ball again.

Interpretation of Shot Outcomes

The majority of shots were returns when analysing the shot outcomes. Push forehand was commonly used by table tennis players despite it had low number of winners. It was probably because it was mostly used for returning the services.

Top forehand and top-counter-top forehand were linked to winners more than other strokes. But top-counter-top forehand was also led to errors more than other strokes and considered as a high risk stroke. Same interpretation were reached and stated by Malagoli-Lanzoni et al. (2013).

Comparison of winner and error strokes among categories were not performed because of violation of normality and the true values gave little indication of the situation. When comparing Top Level Elite and U-21 categories, the number of winners and the number of errors are not significant in terms of statistical analysis. Eventually, the winner to error ratio is not statistically significant as well.

Since rallies per game were not significantly different between categories, we assumed that both categories were compared in same conditions and were not affected by the number of shots. The Top Level Elite players were perceived as having greater willingness to take risks in any situation. As the result, they had higher number of both winners and errors if compared with U-21 players. Ellen and Katharine (1996)demonstrated the high possibility of committing errors due to the lack of strength or power. Thus, I take into account that U-21 players might have less endurance strength and this can lead to an increased number of errors.

Conclusions

This study also has provided some insight on the shots distribution which can serve a reference by comparing own data with opponents' data while coming up with a game plan or strategy. From there, we can predict the technical and tactical array used by opponents and counter attack them by deploying other strategies. The number of winners and errors can be obtained from analysing own and opponents' data as well.

Specific training can also be provided by identifying which strokes contribute more winners or errors. From there, focusing their strength and correcting their weakness. Coach and players can get adequately prepared for their competitions in both technical and tactical aspects.

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Impact of Rehabilitation on Rotator Cuff Injury among Disabled Volley Ball Players

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Introduction

The essential parts of physical instruction and game training and intend to accomplish physical and mental soundness of the youthful era and military training foundations in charge of instructing youngsters and understudies.On February 9, 1895, in Holyoke, Massachusetts (USA), William G Morgan, a YMCA physical instruction chief, made another amusement called Mintonette as a side interest to be played ideally inside and by any number of players. The diversion took some of its qualities from tennis and handball. An alternate indoor game, ball, was getting on in the region, having been created only ten milesThe vision of the Paralympic Games, as per the International Paralympic Committee (IPC), is to empower Paralympic competitors to accomplish wearing brilliance and rouse and energize the world. This applied vision is fortified by the authority proverb: Spirit in Motion. "Paralympic" was initially proposed to consolidate the words "paraplegic" and "Olympic" yet it is currently thought to speak to the expression "parallel" (from the Greek relational word para), in acknowledgment of the joining together of numerous impaired gatherings close by the Olympic Movement. While rugby association players endured the most wounds, AFL wounds were by and large more extreme and thusly the aggregate time missed through damage by players in these two codes was fundamentally the same. Rugby union had a significantly lower injury prevalence at the élite club competition level than rugby league or Australian Rules football. Injury rates in the élite football competitions are high, warranting ongoing analysis and further study in particular areas.

METHODS:

Twenty-nine patients, who had recalcitrant arthrofibrosis following either an arthroscopic (62%), open (28%), or mini-open (10%) rotator cuff repair were included in study. The average age at the time of index cuff repair surgery was 49.8 years (range 24−70 years). Sixteen patients (55%) were involved in worker's compensation claims.

IMAGING TESTS:

Other tests which may help your doctor confirm your diagnosis include:

X-rays. The first imaging tests performed are usually x-rays. Because x-rays do not show the soft tissues of your shoulder like the rotator cuff, plain x-rays of a shoulder with rotator cuff pain are usually normal or may show a small bone spur.

Magnetic resonance imaging (MRI) or ultrasound. These studies can better show soft tissues like the rotator cuff tendons. They can show the rotator cuff tear, as well as where the tear is located within the tendon and the size of the tear. An MRI can also give your doctor a better idea of how "old" or "new" a tear is because it can show the quality of the rotator cuff muscles.

ROTATOR CUFF SURGERY:

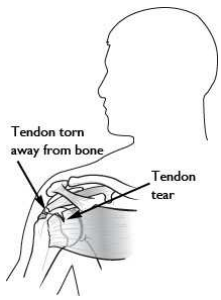

Figure Rotator cuff surgery

There are a few options for repairing rotator cuff tears. Advancements in surgical techniques for rotator cuff repair include less invasive procedures. While each of the methods available has its own advantages and disadvantages, all have the same goal: getting the tendon to heal.The type of repair performed depends on several factors, including your surgeon's experience and familiarity with a particular procedure, the size of your tear, your anatomy, and the quality of the tendon tissue and bone.Many surgical repairs can be done on an outpatient basis and do not require you to stay overnight in the hospital. Your orthopaedic surgeon will discuss with you the best procedure to meet your individual health needs.You may have other shoulder problems in addition to a rotator cuff tear, such as osteoarthritis, bone spurs, or other soft tissue tears. During the operation, your surgeon may be able to take care of these problems, as well.

The three techniques most commonly used for rotator cuff repair include traditional open repair, arthroscopic repair, and mini-open repair. In the end, patients rate all three repair methods the same for pain relief, strength improvement, and overall satisfaction.

REHABILITATION

Rehabilitation plays a vital role in getting you back to your daily activities. A physical therapy program will help you regain shoulder strength and motion.

ImmobilizationAfter surgery, therapy progresses in stages. At first, the repair needs to be protected while the tendon heals. To keep your arm from moving, you will most likely use a sling and avoid using your arm for the first 4 to 6 weeks. How long you require a sling depends upon the severity of your injury.

Passive ExerciseEven though your tear has been repaired, the muscles around your arm remain weak. Once your surgeon decides it is safe for you to move your arm and shoulder, a therapist will help you with passive exercises to improve range of motion in your shoulder. With passive exercise, your therapist supports your arm and moves it in different positions. In most cases, passive exercise is begun within the first 4 to 6 weeks after surgery.

Active Exercise:After 4 to 6 weeks, you will progress to doing active exercises without the help of your therapist. Moving your muscles on your own will gradually increase your strength and improve your arm control. At 8 to 12 weeks, your therapist will start you on a strengthening exercise program.Expect a complete recovery to take several months. Most patients have a functional range of motion and adequate strength by 4 to 6 months after surgery. Although it is a slow process, your commitment to rehabilitation is key to a successful outcome.

CONCLUSION

Arthroscopic capsular release has been shown to be a safe and reliable method for restoring shoulder motion for treatment of idiopathic, surgical, or post-traumatic stiffness.19,20 The principal results of this study demonstrate that forward elevation and external rotation of the shoulder at the side can be significantly improved—although with varied results—in patients with recalcitrant postoperative stiffness after RCR following arthroscopic capsular release, lysis of adhesions, manipulation under anesthesia, and aggressive physical therapy. Previous studies have largely included small subsets of patients in each of these etiologic categories.19 To the best of our knowledge, our study represents one of the largest cohort of patients treated with arthroscopic capsular release for shoulder stiffness following a rotator-cuff repair.

In our clinical experience with shoulder stiffness, we have found that loss of shoulder motion, when compared to the contralateral, shoulder, occasionally occurs following RCR, particularly in patients less compliant with post-operative rehabilitation. If identified early in the post-operative period, treatment with aggressive PROM can be successful in restoring satisfactory motion. This form of treatment, however, is less likely to be beneficial when the patient is 12 weeks or more out from surgery; thus, we believe that persistent post-operative stiffness refractory to conservative management for 3 months would be an indication for an arthroscopic capsular release and manipulation under anesthesia.

Arthroscopic capsular release may have the advantage of decreased morbidity and uncomplicated rehabilitation. Patients can safely be accelerated in an aggressive active and PROM therapy protocols. Further study is necessary to elicit the risk factors associated with failed non-operative treatment and the timing of surgery to optimize treatment of this problem.Warner et al. in 1997 previously published a series of 18 patients with postoperative shoulder stiffness that was treated with arthroscopic release in 16 of the 18 patients.17This series included patients that had been treated with several different surgical procedures but only four patients had undergone a RCR. He reported an increase in CM scores and a significant increase in all directions of motion and concluded that arthroscopic capsular release is a reliable method for restoring motion with minimal morbidity. He also noted that nonoperative treatment of post-operative stiffness, including manipulation under anesthesia, is generally ineffective.

Several studies have reported the results of arthroscopic capsular release for treatment of shoulder stiffness based on multiple different etiologies (idiopathic, post-injury, and post-surgical).15,18–20 These results were similar to those found by Warner in that these patients did have significant increases in motion and function following arthroscopic capsular release. However, when the groups were further analyzed, the patients with

idiopathic stiffness did better than those with postoperative stiffness. Each study, however, had relatively few patients who had postoperative stiffness after RCR.One unique aspect of this study is the relatively large percentage of worker's compensation patients. Historically, it has been suggested that this patient population is less likely to have a good outcome and return to a pre-injury level of function.Previous studies reporting the outcome of RCR in patients involved with worker's compensation claims have shown significantly worse outcome in those patients involved in worker's compensation claims.8,25 It has also been suggested that the worker's compensation patients have certain demographic characteristics such as lower education level, smoking, and heavy manual labor that places them at risk for failure.26 In our study, we did not find a significant difference in post-operative motion for those patients involved in worker's compensation claims. We did, however, find a significant difference in the shoulder scores that consisted solely of subjective reports, the VAS, ASES, and SANE.

RECOMMENDATIONS:

This suggests that although increasing the functional ROM, the primary goal of the operation, was similar to patients not involved with a worker's compensation claim, those in the worker's compensation group did complain of more pain and perceived their outcome worse than the nonworker's compensation group. These differences reflect many challenges; one is faced with treating a patient with a work-related injury, and suggests that an arthroscopic capsular release in this group can be successful in restoring a functional ROM. Nonetheless, one should be cautious when counseling the patient preoperatively as their perceived outcome may not be as good as those not involved in a worker's compensation claim.There are several weaknesses of our study. First, this is a retrospective case series with no control group and only 13 patients available for independent examination at a follow-up examination. We believe that this was lower than expected rate of final follow-up and was related to the fact that 55% of our patients had worker's compensation injuries and were either unable to be contacted or refused followup interviews due to ongoing legal issues. Additionally, as a large referral center, 13 of the patients in this study were referred in for treatment and many returned to their home physician for postoperative followup. In fact, five of the eight patients lost to followup were originally treated at an outside institution. Although we examined the clinical outcomes of patients based on technique of the index procedure, there were only three patients in the mini-open group and eight patients in the open group leaving these groups underpowered. Moreover, the sample group involved patients who had undergone arthroscopic, mini-open, and open cuff repair procedures.

Given the relatively low incidence of postoperative arthrofibrosis requiring surgical release, to achieve a suitably sized cohort it was necessary to group both open and arthroscopic cuff repair patients as well as along with workers compensation patients. Lastly, limited ROM measurements were collected. Internal rotation is often notably decreased with postoperative stiffness and future studies—ideally performed at multiple centers—should have more comprehensive ROM measurements.

In this study, we report the results of patients treated with an arthroscopic capsular release, lysis of adhesions, and manipulation under anesthesia for the treatment of shoulder stiffness following RCR. This combination of procedures represents a safe and reliable means to regain shoulder motion, specifically FE and ERS, after the onset of post-operative shoulder arthrofibrosis that is recalcitrant to conservative measures.

Furthermore, no significant differences in outcome existed based on whether the index surgery was performed open, mini-open, or arthroscopic. Worker's compensation status resulted in lower validated outcome measures, but no difference in ROM.This review describes a rotator cuff rehabilitation protocol that incorporates currently available scientific literature guiding rehabilitation. To this end, expert experience remains a large facet of rehabilitation protocols.Postoperative rehabilitation following RC repair begins with close communication between the surgeon, his or her medical staff, the patient, and the physical therapy team. A review of surgical findings is mandatory to establish rehabilitation guidelines. This communication continues throughout the recovery process and is an essential component in ensuring a successful outcome. Once the post-operative restrictions have been established, either a conservative or moderate rehabilitation protocol is selected and customized based on surgical findings. The conservative protocol is characterized by either a delay in the initiation of and/or restriction of passive range of motion. It is common for restrictions to last for 2–4 weeks. The aim is to minimize stress placed on the repaired tissues to facilitate early tissue healing. The moderate protocol is characterized by initiating passive range of motion on postoperative day 1 while maintaining tolerable pain levels.Rehabilitation protocols have traditionally varied considerably between providers with respect to timing of progression and appropriate therapeutic exercise. Rehabilitation protocols are frequently based on clinical experience and expert opinion rather than scientific rationale. Future research could be focused on more detailed timing and quality of progression through rehabilitation.

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Effect Of Circuit Training On Shooting Skill Among Junior Handball Players In Hyderabad

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Introduction:

Handball (also known as a team handball Olympic handball European team handball, European handball, or Borden ball) is a team sport in which two teams of seven players each six outfield players and a goalkeeper pass a ball to throw it into the goal of the other team. standard match consists of two periods of 30 minutes and the team that scores more goals wins.

Modern handball is played on a court 40 by 20 meters (131 by 66 ft), with a goal in the center of each end. Goals are surrounded by a 6-meter zone where only the defending goalkeeper is allowed the goals must be scored by throwing the ball from outside the zone or while "diving" into it. Sport is usually played indoors but outdoor variants exist in the forms of field handball and Czech handball which were more common in the past and beach handball (also called sand ball

Circuit training is an excellent way to improve mobility strength and stamina. Circuit training comprises of 6 to 10 strength exercises that are completed one exercise after another. Each exercise is performed for a specified number of repetitions or for a set time before moving on to the next exercise. Exercises within each circuit are separated by a short rest period and each circuit is separated by a longer rest period. Total number of circuits performed during a training session may vary from two to six depending on your training level beginner intermediate or advanced your period of training preparation or competition and your training objective .

Warm up with 10 to 15 minutes of easy jogging swimming or cycling, and then perform the following exercises in order. Move quickly from exercise to exercise but do not perform the exercises themselves too quickly do not sacrifice good form just to get them done in a hurry.

Methodology:

A total of 20 male Hyderabad Junior Handball players were considered as the sample of the study. The 20 Hyderabad Junior Handball players, under the age group of 19 years old. All these subjects are receiving regular and systematic training from qualified Indian team coach and proper nutritional diet. The Hand Ball Players given the Circuit Training weekly Twice for six Weeks and Pre Test and Post Test is conducted in Jump shoot, Feint Shoot and Performance.

Results:

The Results of the Study shows that there is a impact of circuit training on Zinn Test Score of Jump Shoot and Feint Shoot individually of the 20 Subjects or statically significant in Pre Handball Test.It was concluded that Post Handball Test after Six Weeks of Strength Endurance Test (Circuit Training) weekly twice. A greater impact of circuit training was found in Handball it appears in the form of Strength Endurance it influences factor on Handball performance individually by the r value. The much influence of Strength Endurance of 20 Subjects as shown Post Test Results in Zinn Scores individually. It is concluded that the Regular Circuit Training plays major role in the selecting Handball Players for achieving the higher level of Performance”

Table No. 1 Showing The Descriptive Statistics showing the Pre Test and Post Results

	N	Range	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
PRE-TEST	20	1	4	5	4.60	.112
POST -TEST	20	3	6	9	7.80	.186
Valid N (list wise)	20					

Conclusions :

A perusal of entire presentation with special references to the chapter convincing the results and discussions held in arriving at the results in brief with unable in drawing general conclusions which are briefly in the following paragraphs.

Physical Education and Sports are comparatively virgin fields of inquiring and investigation. Handball, in fact has taken a new term in the form of Sports species. Coaches and Physical Educationalists have become interested to study the Circuit Training and its relationship for the development of Handball skills. The present study under report emphasizes the need for. Handball Players for played higher level Tournaments. Its ana aerobic and anaerobic sports which is playing all over the world. Keeping in view the importance of Handball Game an attempt was made by the investigator to find out the levels of specific motor qualities (Strength Endurance) among junior Hyderabad district Handball Players.

It was concluded that, the impact of circuit training Zinn Test Score of Jump Shoot and Feint Shoot individually of the 20 Subjects or statically significant in Pre Handball Test.

It was concluded that Post Handball Test after Six Weeks of Strength Endurance Test (Circuit Training) weekly twice. A greater impact of circuit training was found in Handball it appears in the form of Strength Endurance it influences factor on Handball performance individually by the r value. The much influence of Strength Endurance of 20 Subjects as shown Post Test Results in Zinn Scores individually. It is concluded that the Regular Circuit Training plays major role in the selecting Handball Players in the Higher Level.

It was concluded that Strength Endurance and circuit training have shown greater impact in Handball during the major tournaments.

Recommendations :

Now a day's Games & Sports have a become more competitive than before the standard of the fitness are needed to server in the competition one needs better fitness which comes through better practicing of specific motor qualities among handball players.

The present research study recommended the following:

While selecting the Handball Players it is recommended that and the findings of the research regarding the specific circuit training should be considered.

From the findings of the study the Coaches and Sports Administrators must take advantage discovers the facts regarding the circuit training and their relation with Sports & Games.

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Hand Ball, Wikipaedia

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Impact Of Rehabilitation Program On Tennis Elbow Injury Of Disabled Tennis Players

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Introduction:

Tennis is among the most popular sports in the world. It is played by amateurs and professionals, children and adults, women and men. It can be played for sheer enjoyment or in fiercely competitive tournaments, such as the famous Davis Cup, Wightman Cup and the Wimbledon tournament. Like badminton, it required agility, speed and almost continuous motion on the part of the player. It is often recommended as a good means of aerobic exercise.Tennis is a racquet sport that can be played separately against a solitary adversary (singles) or between two groups of two players every (copies). Every player utilizes a racquet that is hung with string to strike an empty elastic ball secured with felt over or around a net and into the adversary's court. The object of the amusement is to play the ball in such a route, to the point that the adversary is not ready to play a decent return. The adversary why should not able return the ball won't pick up a point, while the inverse rival will.

Tennis is an Olympic game and is played at all levels of society and at all ages. The game can be played by any individual who can hold a racquet, including wheelchair clients. The cutting edge round of tennis began in Birmingham, England, in the late 19th century as "garden tennis". It had close associations both to different field ("garden") amusements, for example, croquet and bowls and to the more established racquet game of genuine tennis.

Tennis Elbow

The major injury found out about is "tennis elbow," which is an abuse of the muscles that develop the wrist or curve it in reverse. It is likewise the muscle most utilized when the tennis ball affects the racquet. Fitting fortifying of this muscle and different muscles around it, alongside a customary warm-up schedule, will help diminish the probability of encountering tennis elbow. Paying consideration on specialized parts, for example, grasp size and fitting strategy can likewise help keep this condition .

Figure 1.: Human Elbow

Symptoms:

The manifestations of tennis elbow incorporate torment and delicacy in the hard handle on the outside of your elbow. This handle is the place the harmed tendons interface with the bone. The agony might likewise emanate into the upper or lower arm. In spite of the fact that the harm is in the elbow, you're prone to hurt while doing things with your hands. Tennis elbow may bring about the most agony when you: Lift something
Make a clench hand or grasp an item, for example, a tennis racket Open an entryway or shake hands Raise your hand or straighten your wrist Tennis elbow is like another condition called golfer's elbow, which influences the tendons within the elbow. To diagnose your tennis elbow, your specialist will do an intensive exam. He or she will need you to flex your arm, wrist, and elbow to see where it harms. You might likewise need imaging tests, for example, a X-beam or MRI (attractive reverberation imaging) to diagnose tennis elbow or discount different issues.

Methodology

The sample for the study consists of 10 Tennis Players who are having the Tennis elbow Pain.
5 Players were given the treatment by the medical doctors with the Injections and Tablets and 5
Participants were given the physiotherapy eight treatments of 30 minutes over six weeks, consisting of a previously described programme of elbow manipulation and therapeutic exercise. Participants were taught home exercises and self manipulation, which were checked by the treating therapist at each session and progressed as appropriate. They also received home exercise equipment (resistant exercise band) and an exercise instruction booklet. Six postgraduate qualified physiotherapists administered the treatment; they were trained in the treatment protocol to standardize the intervention. We gave all participants an information booklet outlining the disease process and providing practical advice on self management and ergonomics on entering the study.

Results:

The results of the study shows that the Physiotherapy group Lawn tennis Players got faster recovery compare to treatment given by Medical doctors.

Conclusion and Recommendations

The high recurrence rates, general delay in recovery, and poor overall performance with corticosteroid injections should be taken under consideration by tennis players and their doctors in the management of tennis elbow. An approach combining elbow manipulation and exercise has a superior benefit to wait and see in the first six weeks and to steroid injections in the long term and may be recommended over corticosteroid injections. However, patients with tennis elbow can be reassured that most cases will improve in the long term when given information and ergonomic advice about their condition.
We recommend for more efficient methods to analyze the exact values. As the research results in slightly inaccurate results.
More exercises and treatment process implementation study results in good results.

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Wikiapedia, Lawn Tennis

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Comparative Study of Explosive Strength among Boxers and Wrestlers of Osmania University, Hyderabad in India

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Abstract:
Boxing in the combat sport were the two boxers – box each other with their both hand knuckles that is firsts, the boxers were 10 ounce gloves in a ring square that is 24 feet, height 3-4 feet, inside rope to rope is 20 feet inside with 4 ropes. The boxing punch consists of synchronization between arm, leg and trunk actions. Wrestling is a sport in which two opponents try to pin (hold) each other`s shoulders to a mat on the floor.The Significance of the present study to find out the Explosive Strength among Boxers and Wrestlers of Osmania University. The objective of this study to determine the Explosive Strength in the legs of Boxers and Wrestlers. The sample for the present study consists of 30 Male Boxers and 30 Male Wrestlers of Osmania University. To assess the Explosive Strength Standing Broad Jump Test Were conducted among Boxers and Wrestlers. It was found that Boxers are having good explosive Strength in legs compare to Wrestlers.Boxing punch consists of synchronization between arm, leg and trunk actions. The punching movement of a boxer consists of leg extension, trunk rotation and arm extension, in succession. The more effective the coordination between arms, legs and trunk movements are the greatest and the impact force of a punch. The leg muscles and explosive strength in legs play a vital role in the power developed in this sequence. Increasing leg force development and coordinating it with trunk and arm action is probably the most effective way to increase punching power. Explosive Strength plays major role in producing the punch power among the Boxers. This Study is helpful to Coaches to prepare the Boxers to increase the explosive power ability among the legs and to increasing the punching speed.
Key Words:Boxers,Wrestlers, Explosive Strength etc.

Introduction:
Boxing in the combat sport were the two boxers – box each other with their both hand knuckles that is firsts, the boxers were 10 ounce gloves in a ring square that is 24 feet, height 3-4 feet, inside rope to rope is 20 feet inside with 4 ropes. The both boxers-box when a referee is fully control, without any infringements. One bout 3 consist of rounds, 3 minutes one round and 1 minute interval between the three rounds. The boxers throws powerful, legitimate punches on target that is from face to wrest belt above the shash. A good bout between two well matched boxers is a violent is a vast, skillful, speed with good foot work, The three or five Judges score in electronic gadgets that is computers scoring. The best boxer should be very strong quick, highly skillful with a good foot work and with excellent physical condition with coverage in spite of pain and exhaustion. The punching movement of a boxer consists of leg extension, trunk rotation and arm extension, in succession. The more effective the coordination between arms, legs and trunk movements are the greatest and the impact force of a punch. The leg muscles play a vital role in the power developed in this sequence. Increasing leg force development and coordinating it with trunk and arm action is probably the most effective way to increase punching power.

Attacking boxing skills – each boxer develops an attacking style, for example some boxers rely on speed and others on strength. One the basic stance second the straight right punch third the uppercut. Four left jab, and five is left hook.

Defence boxing skills – In defence boxing a boxer use number of techniques to avoid his opponents punches or make them ineffective,

One clinching, two ducking, third slipping, four parrying and the five blocking

Wrestling

Wrestling is a sport in which two opponents try to pin (hold) each other`s shoulders to a mat on the floor. Wrestlers use manoeuvres called holds to grasp their opponents and control their movements. Successful wrestling demands strength, speed, coordination, balance, physical conditioning, and knowledge of body leverage. A clever wrestler can often defeat a stronger and heavier opponent. There are more than 50 kinds of wrestling.

The two most popular forms of wrestling in the world are Greco-Roman and freestyle. Freestyle is the older of the two forms. It resembles the style practiced by the ancient Greeks. The Greco-Roman style developed after the Romans conquered Greece and modified the Greeks style. Greco-roman is the more popular form throughout Europe

Boxers in action

Wrestlers in action

Significance of the Study:

The significance of this study is to find out the explosive Strength among Boxers and Wrestlers of Osmania University in India. This Study will bring true facts of explosive Strength motor quality exists between Boxers and Wrestlers.

Objectives of the Study:

The objective of the study is to determine the Explosive Strength among Boxers and Wrestlers of Osmania University. This Study will be help to coaches to improve the better Explosive Strength among Boxers and Wrestlers.

Explosive Strength plays major role in producing the punch power among the Boxers. This Study is helpful to Coaches to prepare the Boxers to increase the explosive power ability among the legs and to increasing the punching speed.

Methodology:

The sample for the present study consists of 30 Male Boxers and 30 Male Wrestlers between the age group of 20-22 Years those who have participated in the O.U.Inter College Wrestling and Boxing Championships for the year 2014-2015..To assess the Explosive Strength the Standing Broad jump test were conducted on Boxers and Wrestlers.

Standing 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. The table below gives a rating scale for the standing long jump test for adults, based on personal experiences. See some athlete results for the long jump test. You can also use this calculator to convert cm to feet and inches.
Results :
This study shows that Boxers are having better Explosive Strength compare to the Wrestlers
Table-I
Table I Showing the Mean values and Independent Samples Test
of Standing Broad Jump between Boxers and Wrestlers

Variables	Group	Mean	SD	t	P - Value
Standing Broad Jump	Boxers	2.64	0.406	1.35	0.000
	Wrestlers	2.56	0.418		

*Significant at 0.05 level

In Table –I the Mean Values of Standing Broad Jump of Boxers is 2.64 and Wrestlers is 2.56 The Standard Deviation of Boxers is 0.406 and Wrestlers is 0.418 and t is 1.35 and P-Value is 0.000. The Results of the Study shows that the Boxers are having better Explosive Strength compare to Wrestlers.

Discussion:
Boxing is a highly individual sport. Fighters possess unique styles that create specific physical demands. Some rely on explosive strength for others it's starting strength and for most a combination of the two speed Strenght. True champions change their style in a way that will make them more able to attack the weaknesses of any given opponent. Improvements in specific capacities can be made, but they are only helpful if integrated into the fighter's style.Boxing is a sport that requires explosive and powerful movements for an athlete to succeed. Plyometrics mimics the physical demands of a fight and will train your body to move more quickly and explosively. It's advisable to start your program with a trainer familiar with plyometrics before continuing on your own.
Perform plyometric exercises no more than two times a week, in short bursts at the highest intensity possible, then take a brief rest before moving to the next set or exercise. Plyometric Training and Weight Training must be given to the boxers to improve the Explosive Strength in legs.
Conclusion:
1.It is concluded that Boxers are having better Explosive Strength than wrestlers
2.It is concluded that boxers requires more Explosive Strength to hit the opponents fast.
3.Strength exercises plays a major role for improvement of Explosive Strength among boxers and Wrestlers.
4. It is concluded that Explosive Strength is very important for both boxers and Wrestlers to excel in the performance.
Recommendations:
1. Similar studies can be conducted on other Events and among females.
2.This study also helps the physical educators and coaches to improve their training regime to excel in Boxing and Wrestling
Acknowledgements:
I am thankful to Mr. K.R.Steven, Boxing Coach, Mr.A.N.K.Gokul, Wrestling Coach and Mr. A.Xavier, Athletics Coach for their help in Accomplishment of the Study.

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Effect of Hill Running for Development of Aerobic Endurance among Sepak Takraw Players of Hyderabad District in Telangana

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Abstract
Sepak" is the Malay word for kick and "takraw" is the Thai word for a woven ball, therefore sepak takraw quite literally means to kick ball. The choosing of this name for the sport was a compromise between Malaysia and Thailand, the two powerhouse countries of the sport. Endurance means the ability to sustain or with stand prolonged exercise for minutes to hours. There are different types of endurance, which include; aerobic endurance, anaerobic endurance, speed endurance and strength endurance. Endurance training is the act of exercising to increase endurance. The term endurance training generally refers to training the aerobic system as opposed to anaerobic. The need for endurance in sports is often predicated as the need of cardiovascular and simple muscular endurance, but the issue of endurance is far more complex. Hill Running increases leg muscle power, improves fitness, and uses the muscles of the legs, arms and core in ways that are different than running on flat surfaces. The significance of this study is to find out effect of hill running for development of aerobic endurance among Sepak Takraw players of Hyderabad District which will be helpful to Coaches and Trainers to develop the endurance ability. The objective of the study is to determine the effects of the hill running for development of endurance ability among sepak takraw players.The sample for the present study consists of 20Male male sepak takraw players out of which 10 are experimental group and 10 are controlled group. Hill running training such as short hills, medium hills, long hills, mixed hills running were given to experimental group on alternate days for eight weeks along with general training of sepak takraw and control group were given the general training of sepak takraw. Pre Test and Post Test were conducted for 12 Min Cooper Test to assess the aerobic endurance of both the groups. This Study shows that the experimental group has got rapid improvement due to Hill running compare to control group. It is concluded that due to Hill running there is a improvement of Aerobic Endurance. It is recommended that the coaches must include the Hill running programs to athletes for development of endurance.
Key words: Hill running, Aerobic Endurance etc.

Introduction:

"Sepak" is the Malay word for kick and "takraw" is the Thai word for a woven ball, therefore sepak takraw quite literally means to kick ball. The choosing of this name for the sport was essentially a compromise between Malaysia and Thailand, the two powerhouse countries of the sport."Sepak" is the Malay word for kick and "takraw" is the Thai word for a woven ball, therefore sepak takraw quite literally means to kick ball. The choosing of this name for the sport was essentially a compromise between Malaysia and Thailand, the two powerhouse countries of the sport.

Endurance is the important motor ability for sepak takraw players. The basic elements of speed, mobility and strength are all functions of explosive power and agility. Sepak Takraw is Playing Volleyball with the Feet.Sepak takraw is a skill ball game originated from Asia. It combines the teamwork of volleyball, the dexterity of soccer and the finesse of badminton. In Thailand it is called takraw, but the official name of this internationally recognized game is sepak takraw. Without a doubt it is one of the world's most exciting sports, both to play and to watch, yet it is relatively unknown outside of Southeast Asia. Playing the sport requires little in the way of equipment or preparation but it does require quick reflexes, coordination, agility and, above all, technique.

The game is played by two opposing Regus, a team of three players each, on a court separated by a net similar to badminton. It begins with the service, executed by a ball toss from one player to the Server. Then, the players try to beat their opponents using their legs and head, except their hands, inside three kicks. The highlight is the "spike".This is the most dramatic and explosive move in the game for spectators to watch as players go mid-air, twisting and turning to power the ball down into the opponent's court. To play takraw, players can use either a net, a hoop, or simply stand around in a circle formation. Whatever the style, the object is to kick the ball to another player without the ball touching the ground. Sepak takraw combines ball skills (kicking and juggling) with the agility and acrobatic moves of gymnasts and the instinctive reflexes of competitive badminton players This sport seems to have its origins in ancient Thailand and was invented about 500 years ago. There is a strong martial arts tradition in Thailand with Muay Thai Boxing originating from and still being widely practiced there today. Because of this strong tradition of martial arts which relies on powerful kicks, the sport may have come about as a side project of a few Muay Thai boxers. The kicking aspect of Muay Thai and the kicking aspect of Sepak Takraw are fairly similar and agility and dexterity in kicking very high objects and flexibility all play a part in both sports

Endurance is a conditional ability. It is primarily determined by energy liberation process.Endurance is directly or indirectly of high importance in all sports. Endurance is the ability to do sports movements, with the desired quality and speed, under conditions of fatigue. Endurance is a very important ability in sports. In sports endurance ensures optimum speed of motor actions. Good endurance also ensures high quality or skill of movement execution which finds expression in accuracy, precision, rhythm, consistency etc. Endurance training results in the improvement of functioning of various organs and systems of the human body. This in turn improves the ability to recover quickly from training and competition load. The importance of endurance for recovery assumes much more relevance during completion i.e. in between heats, rounds, matches on successive days. Endurance performances are of different nature indifferent sports. Endurance activities have been found to be of high value for maintenance of good organic health, for increasing the general resistance against infection and for cure and treatment of various diseases and metabolic disorder.

Significance of the Study:

The significance of this study is to find out effect of hill running for development of aerobic endurance among Sepak Takraw players of Hyderabad District which will be helpful to Coaches and Trainers to develop the endurance ability. This Study will bring true facts of sports training to develop the endurance ability among the sepak takraw players.

Objectives of the Study:

The objective of the study is to determine the effects of the hill running for development of endurance ability among sepak takraw players.

Running on Hills is a form of Strength training that can improve the endurance on the track and road. Hill Running increase the intensity of training and builds strength because of the resistance they offer when running. Hill Running has a strengthening effect as well as boosting the athletes power and is ideal for athletes who depend on high running speeds. To reduce the possibility of injury hill training should be conducted once the athlete has a good solid base of strength and endurance.

Hill Training offers the following benefits.

a. Helps develop power and muscle elasticity.

b. Improves stride frequency and length.

c. Develops co-ordination, encouraging the proper use of arm action during the driving phase and feet in support phase.

d. Develops control and stabilization as well as improved speed (down hill running)

e.promotes strength endurance.

f.develop maximum speed and strength (short hills)

g.Improves lactate tolerance (Mixed hills)

The benefits of short, medium and long hills are quite different, and can be used at different times of the year.

Short hills

A short hill is one which takes no more that 30 seconds to run up and has an inclination between 5 and 15 degrees gradient. The athlete's energy source on short hills is entirely anaerobic. The athlete should focus on a running technique which has vigorous arm drive and high knee lift, with the hips kept high, so that they are 'running tall', not leaning forwards.

The session is anaerobic so the recovery time can be long, a walk back down the hill, or a slow jog of 60 to 90 seconds. The total volume will depend on the fitness of the athlete and the reason for doing it. A sprinter looking for strength might do 10 repetitions of 15 second duration up a steep slope with a long recovery where as a distance runner who is trying to improve sprinting speed might do 30 repetitions of 15 seconds duration.Short hills of 5 to 10 second duration will help improve the Adenosine Triphosphate and Phosphate-creatine (ATP+PC) energy system and hills of 15 to 30 second duration will help develop the ATP+PC+muscle glycogen energy system. Example of short hill sessions:

8 to 10 repetitions over 150 metres (middle distance athletes)

8 to 10 repetitions over 200 metres (long distance athletes)

Long hills

A long hill is one which takes from 90 seconds to three minutes plus. Here most of the energy comes from aerobic sources, but if parts of the hill are steep and they are running them hard, there will still be an accumulation of blood lactate. There will be local muscular fatigue in the leg muscles, and possibly in the abdominal muscles too, but the main limiting factor will be the athlete's cardiovascular system.

These hills can be used in two ways:

as a hard aerobic training session during the pre-competition season

as a hard time-trial session in the early part of the competition period

As these hill sessions are aerobic, the athlete will not use as much power per stride as the shorter hills, and so perhaps would not be used by middle-distance runners, except for one or two time-trial runs. They are particularly good for the cross country or road runner who is running distances of 10,000m and upwards. A session of, say eight three minutes, with a run back of four or five minutes will make a good hard workout.

Mixed hill running

The attraction of mixed hill training is that it can be fitted in with the terrain the athlete is running on and can, therefore, be interesting and full of variety. If they do a fartlek session round a hilly course, they will be able to fit in a number of different runs. Two advantages can come from this type of hill training:

Race simulation. It is a good principle to rehearse in training the situations they are likely to meet in a race, such as trying to break open a gap by running hard over the top of a hill and keeping the pace going instead of easing up, as many runners do.

Downhill running. This is something that often causes jarring and strains. I do not advise doing repeated fast downhill runs, but I would suggest that they practice to find the most relaxed way of running downhill without strain.

Mixed hill running can also be used to improve running economy and boost an athlete's VO_2 max. To do this identify a six or seven mile undulating hilly course, commence the session jogging at a modest pace and gradually pick up the intensity as they move through the hills. The key is not just to run up and down a few hills in their workout but to find a place where they can run up and down hills nearly constantly. If they cannot find a six or seven mile course with constant undulations, use a shorter course and run back and forth on it. The key is not to let the flat ground running total more than 25% of the workout.

During most of the run, the athlete's heart rate should be close to 85% of maximum (85% of maximum heart rate matches up with 76% VO_2 max). Do not let them blast up hills in the early part of the workout, this can stop them working though subsequent miles. The idea is to run constantly at a hard but not super fast speed.

Methodology:

Aim: To find out the effects of Hill Running for development of Aerobic Endurance among Sepak Takraw players of Hyderabad District of Telangana State in India.

The sample for present study is 20 Male Sepak Takraw Players of Hyderabad District in Telangana.The Experimental Group consists of 10 Sepak Takraw Players and Controlled Group consists of 10 Male Sepak Takraw players. Hill running training such as short hills, medium hills, long hills, mixed hills running were given to experimental group on alternate days for eight weeks along with general training of sepak takraw and control group were given the general training of sepak takraw. Pre Test and Post Test were conducted for 12 Min Cooper Test to assess the aerobic endurance of both the groups.

Tools: Cooper 12-minute Run Test

Results

The results of the study shows that the Experimental Group Sepak Takraw Players has improved from Pre Test to Post Test due to the Hill Running.

T-Test

Table No 1 showing the Paired Samples Statistics of Experimental Group and Control Group of Sepak Takraw Players In Pre Test and Post Test in 12 Min Run Cooper Test

12 Min Run Cooper Test		Mean	Std. Deviation	Std. Error Mean	N
Experimental	Pre Test	2658.00	90.468	28.608	10
	Post Test	2730.40	93.223	29.480	10
Control Group	Pre Test	2647.50	74.470	23.550	10
	Post Test	2640.00	76.992	24.347	10

The Experimental Group Pre Test Mean is 2658.00 and Post Test Mean is 2730.40 There is a improvement of Mean from Pre Test to Post Test is 72.40 . That Means due the Hill Running the Control Group has improved a lot.The Control Group Pre Test Mean is 2647.50 and Post Test Mean is 2640.00 There is a decreasement of Mean from Pre Test to Post Test is 7.50 due to the general Training of Sepak Takraw.

The Result of the Study shows that the Experimental Group has improved a lot compare to the Control Group.

Table No. 2 showing the Paired Samples Correlations of Experimental Group and Control Group of Sepak Takraw Players In Pre Test and Post Test in 12 Min Run Cooper Test

12 Min Run Cooper Test		N	Correlation	Sig.
Experimental	Pre Test & Post Test	10	.972	.000
Control	Pre Test & Post Test	10	.976	.000

The Correlations of the Experimental Group of sepak takraw players from Pre Test to Post Test is .972 and Correlations of the control Group of sepak takraw players from Pre Test to Post Test is .976

Paired Samples Test of Experimental Group and Control Group of Sepak Takraw Players In Pre Test and Post Test in 12 Min Run Cooper Test

12 Min Run Cooper Test		Paired Differences Mean	t	df	Sig. (2-tailed)
Experimental	Pre Test - Post Test	-72.400	-10.404	9	.000
Control	Pre Test - Post Test	7.500	1.406	9	.193

The Mean differences of the Experimental Group of sepak takraw players from Pre Test to Post Test is -72.400 and Mean differences of the Control Group of sepak takraw players from Pre Test to Post Test is 7.500.

It is concluded that the due to the Hill Running develops the strength and power in the legs. It also improve the co-ordination in the arms and legs and promotes in developing the Aerobic Endurance.In this Study it is concluded that Due to the Hill Running the Aerobic Endurance develops a lot in the Sepak Takraw players.

Recommendations:

Similar Studies can be conducted among females and in other Sports and games. This study is useful to the Coaches to prepare the conditioning program to improve the motor abilities of the Sepak Takraw players.

Acknowlegements:

I am very thankful to Mr.Kapil, Sepak Takraw Coach for his help for the Study.

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Compartive Analysis Of Motor Fitness Components Among various Sports Persons

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Abstract:
This study aim to compare the motor fitness components among different sports person, In today's scenario where the sports has become highly competitive motor fitness components plays key role in winning. For this study the investigator selected thirty eight (N=38), Male subjects between the age group of 18-28 years (Mean ± SD: age 20.31±1.82 years, Body Height 160.62±7.61 m, Body Mass 55.07±8.13kg). The Statistical Package for the Social Sciences (SPSS) version 14.0 was used for all analyses. In all the analyses, the 5% critical level ($p<0.05$) was considered to indicate statistical significance, the differences in the mean of each group for selected variable were tested for the significance of difference by One-way Analysis of Variance (ANOVA) In a nutshell it can be said that from the findings that insignificant differences were found among Inter-varsity level basketball, handball and volley ball players on the sub-variables of Motor Fitness Components i.e., Flexibility, Balance, Agility and Speed.

Introduction

Today, every player is sound in technically as well astactically. The playing abilities are leveled today. Many factors such as level of physical fitness, physiological and psychological abilities, technique, tactics, physique, body size, body composition and application ofbio-mechanical principles are becoming more and more advanced. Ortega et al. (2008). The relationship of sports performance with the physical, psychological and physiological abilities has been the thrust area for researchers from decades. There have been thousands of attempts by the researchers to develop a consistent Physical and psychological and physiological profile of athletes, to be reliably used to differentiate athletes and to predict the sports performance Ketelaar .et al. (2009), Lena et al. (2010), James et al. (2011). Scientists and physiologists have been of the view that body composition and physical components of an athletehave a lot todo with his Performance. More than the technique and tactics of a player or a team physical and physiological characteristic helps him for better performance. The results of various studies show that motor fitness components of athletes differ from game to game position to position, male to female athletes and they affect the sports performance. Johnson Johnson and Buskfrk (1974) found in his study the successful wrestlers had better balance than the unsuccessful wrestlers. Maihotra and Subramaniam (1982) have claimed that a high level of general fitness with motor abilities like strength, aerobic endurance, speed of moment, jumping ability, agility flexibility etc. are the essential qualities required to be developed by the Basket ballers

Selection of Subjects

The researcher collected the data on Thirty eight (N=38), Male subjects between the age group of 18-28 years (Mean ± SD: age 20.31±1.82 years. Body Height 160.62±7.61 m. Body Mass 55.07±8.13kg) were selected. The subjects were purposively assigned into three groups:

- Group-A: Basketball (n1=12)
- Group-B.-Handball (n2=11)
- Group-C: Volleyball (n3=15)

Selection of test

The various tests were implemented on the selected sports persons to check their motor ability. These tests are following

Flexibility- Sit and Reach Test
Balance-Standing Stork Test
Agility –Illinois Agility Test
Speed -30 Meter Sprint

Statistical Techniques Employed

The Statistical Package for the Social Sciences (SPSS) version 14.0 was used for all analyses. In all the analyses, the 5% critical level ($p<0.05$) was considered to indicate statistical significance. The differences in the mean of each group for selected variable were tested for the significance of difference by One-way Analysis of Variance (ANOVA).

Results

Table 1 Analysis of Variance (ANOVA) results with regard to Motor Fitness Components among basketball, Handball and Volleyball Players on the sub-variable Flexibility.

Source of variation	Sum of square	Degree of freedom	Mean square	F-value	P-value (sig.)
Between group	66.026	2	33.013	2.200	.126
Within group	525.112	35	15.003		
Total	591.138	37			

It is evident from table-1 that the results of Analysis of Variance (ANOVA) with regard to Motor Fitness Components among Inter-varsity level basketball, handball and volleyball players on the sub-variable Flexibility were found statistically insignificant (P>.05).

Table-2: Analysis of Variance (ANOVA) results with regard to Motor Fitness Components among Basketball, Handball and Volleyball Players on the sub-variable Balance.

Source of variation	Sum of square	Degree of freedom	Mean square	F-value	P-value (sig.)
Between group	10.604	2	5.302	.115	.891
Within group	1608.370	35	45.953		
Total	1618.974	37			

It is evident from table-2 that the results of Analysis of Variance (ANOVA) with regard to Motor Fitness Components among Inter-varsity level basketball, handball and volleyball players on the sub-variable balance were found statistically insignificant (P>.05).

Table-3: Analysis of Variance (ANOVA) results with regard to Motor Fitness Components among Basketball, Handball and Volleyball Players on the sub-variable agility.

Source of variation	Sum of square	Degree of freedom	Mean square	F-value	P-value (sig.)
Between group	3.435	2	1.717	1.570	.222
Within group	38.290	35	1.094		
Total	41.725	37			

It is evident from table-3 that the results of Analysis of Variance (ANOVA) with regard to Motor Fitness Components among Inter-varsity level basketball, handball and volleyball players on the sub-variable agility were found statistically insignificant (P>.05).

Table-4: Analysis of Variance (ANOVA) results with regard to Motor Fitness Components among Basketball, Handball and Volleyball Players on the sub-variable speed

Source of variation	Sum of square	Degree of freedom	Mean square	F-value	P-value (sig.)
Between group	.011	2	.005	.033	.967
Within group	5.574	35	.159		
Total	5.585	37			

It is evident from table-4 that the results of Analysis of Variance (ANOVA) with regard to Motor Fitness Components among Inter-varsity level basketball, handball and volleyball players on the sub-variable speed were found statistically insignificant (P>.05).

Conclusion

In a nutshell it can be said that from the findings that insignificant differences were found among inter-varsity level basketball, handball and volleyball players on the sub-variables of Motor Fitness Components i.e. Flexibility, Balance, Agility and Speed.

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Effect of sports specific endurance circuit training on sprinting performance and leg explosive power of high school Male Basketball players during competitive Season

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Abstract
The purpose of the study was to evaluate the effectiveness of a basketball specific endurance circuit training on sprinting performance and leg explosive power on high school male basketball players were selected from Bhaysam high school kandukur. These subjects were randomly distributed into two groups namely sports specific endurance circuit training group (N=12) and control group (N=12). The sprinting performance and leg explosive power was selected as dependent variables. The sprinting performance was measured through 30 meters dash and leg explosive power was measured throng vertical jump test. The result of the study showed that sprinting performance (t=4.187, p=0.002) and leg explosive power (t=2.345, p=0.039) improved significantly in sports specific endurance circuit training group. However, control group showed no changes in sprinting performance and leg explosive power. It is concluded that sports specific endurance circuit training group significantly improved sprinting performance and leg explosive power of adolescent male basketball players during competitive season.

Introduction

Just over a century ago in Springfield, Massachusetts, a physical education instructor named Dr.James Naismith was looking for a game that could be played in indoors during cold winter months. He fastened two peach baskets to the gymnasium balcony and instructed students to throw a soccer ball into the baskets. This is how the game basketball was born. Initially there were no backboards, dribbling and seven parsons played on ateam.During the game a person had to sit on a ladder to pull the ball out of the basket and toss it back down to the players. Gradually changes and refinements were made until the game evolved into the one which played today.

Basketball is an aerobic-based anaerobic sport(Delextrat and Cohen,2009) which requires high intensity activities such as jumping (for rebounds blocks and shots),turns,dribbles,sprints,screens and low intensity activities such as walking, stopping and jogging. Frequent stoppages in games allow players to recover between bouts of activity, thus allowing repeated high-intensity spells of play(Drinkwater,2008).Explosive strength, take-off power, speed, and agility are abilities that make an important contribution to efficient movement with and without the ball, thus play an important role in basketball technique and tactics. The importance of developing good conditioning programs based on the specific physiological demands of each sport is considered a key factor to success(Gillam,1985;Taylor,2003;2004).Basketball requires tremendous endurance, speed, agility, and power(Siegler, et al.,2003).The focus of training for many years has been to enhance performance and gain advantages over other competitors.

The purpose of the study was to evaluate the effectiveness of a basketball specific endurance circuit training on sprinting performance and leg explosive power on high school male basketball players during competitive season.

Methodology

Subjects

A total of twenty four (24) male high school basketball players were selected from Bhasyam higher Secondary School, in kandukur.These subjects were randomly distributed into two groups namely sports specific endurance circuit training group (N=12) and control group (N=12).The mean age of selected players was 16.85+_0.67.The selected players had 3.8+_3.1 years of playing experience and regularly participate in training prior to the commencement of this study.All subjects were subjected to medical examination by a general medical practitioner before participation in the study to ensure that there was of sufficient standard to be able to take part in fitness testing and trading.

Variables

The sprinting performance and leg explosive power was selected as dependent variables. The sprinting performance was measured through 30 meters dash and leg explosive power was measured through vehicle jump test. The independent variable selected in the present study was sports specific endurance circuit training for 6 weeks. The sports specific endurance circuit training group underwent sports specific endurance circuit training and CG underwent regular basketball training.

Statistical technique

The collected data was evaluated using paired t test. The proposed hypothesis was tested at 0.05 level of confidence. Beside this mean and standard deviation were also calculated.SPSS statistic software package(SPSS,vertion 17.0)was used. The value of 0.05 was set for statistical significance.

Results

The result of the study showed that sprinting performance(t=4.187,p=0.002) and leg explosive power(t=2.345,p=0.039) improved significantly in sports specific endurance circuit training group.However,control group showed no changes in sprinting performance(t=0.635,p=0.654) and leg explosive power(t=0.557,p=0.589).

Discussion:In the present study sprinting performance and leg explosive power of sports specific endurance circuit training group improved significantly. Previous research suggests that aerobic endurance training can interfere with the development of strength and this could potentially limit improvements in speed and explosive power(Bentley, Zhou and Davic,1998;Dudley and Djamil,1985;Glowacki et al.,2004).In the present study sports specific endurance circuit training did not affect power related performance. This observation of no interference and improvement effects parallel the results of similar aerobic endurance training studies involving in soccer players(Helgerud,et al.2001;,McMillan,et al.,2005).

Conclusion

It is concluded that sports specific endurance circuit training group significantly improved sprinting performance and leg explosive power of adolescent male basketball players during competitive season.

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Imitation Of Mirror Strength Training Programme Following Observational Learning And Strength

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Abstract

The purpose of this study was to investigate the potential of the imitation effect in mirror training programme based on observational learning via activated mirror neuron system that influence the changes in brain areas which lead to the effect in strength gains prior to strength training and the effectiveness of mirror training design on strength gains in biceps muscle. In total, twenty healthy male volunteers were volunteered to participate in this study. All subject were right handed, physically active engaged in non-competitive recreational activities and did not engaged in any resistance training for at least past 6 month prior to the study. Subject were randomly assigned to two groups (n=10 each group) namely the control group and experiment (mirror) group. Baseline information were collected during pre-test for 1RM biceps curl test and the anthropometric measurement of biceps muscle girth. Subjects assigned to the experiment group, performed strength training programme (80% of their baseline 1RM) of the right elbow flexor with observational learning via mirror, three times per week for four week (12 sessions in total). Aone way analysis of covariance (ANCOVA) with a 0.05 significant level was conducted to compare the right 1RM strength training in the mirror and control groups. Results indicated a significant main effect for 1RM biceps curl test was a significant difference, [F (1, 16) =40.17, $p<0.05$]. As hypothesized, who involved for mirror strength training programme (mirror group) showed a strength gain (M=13.03, SD=1.79) compare who had not involved (control group) with the mirror training programme (M= 11.13, SD=1.17).These result suggest that mirror training programme really do have an effect on strength gains. However, the study found that there not a significant difference in the right bicep girth in the mirror (M=26.55, SD=1.67) and control (M=26.1, SD=2.95) groups after four weeks of training [F (1, 16) =3.67, $p>0.05$]. Specifically, our results suggest that imitation effect through observational learning by mirror may activated the mirror neuron system lead to the brain changes in the neural adaptation which resulted strength gain in short term training without overload the training programme. These findings provide and insight to the effect of four week mirror strength training programme by reducing the training times, provide the new effective method strength training program to coaches and athlete and also to be useful for rehabilitation programme.

Keywords: Imitation, observational learning, mirror neuron system,unilateral strength training

INTRODUCTION

In recent years, there has been a development in proof that imitation from observation can occur even without physical practice by viewing one observes motor learning (Fadiga, Fogassi, Pavesi, &Rizzolatti, 1995; Griffiths &Tipper 2009; Salama, Turner, & Edwards, 2011). The imitation effect is thought to enhance from a coupling effect between the action observation and action execution. The different effect between action observation and action execution had been term as ideomotor-compatibility, with data showing increases in ideomotor-compatibility have shown increased imitation effects (Brass &Heyes, 2005).

An example of research covering imitation from observation is that from Edwards et al. (2003). The study was conducted with 16 subjects using the tracking motion analysis to examine the executed action. Subjects

performed reach and grasps action after observing the task. Subjects used to perform the task were divided into two groups, the congruent groups (viewed the same size object) and the incongruent group (viewed the different size object) and performed the task. The result showed that the congruent group had a significant increase in speed velocity compared to the incongruent group in the reach and grasp action. Edwards et al., (2003) had suggested that the effect may have been caused by the observation condition imitation the motor learning process, which results to faster initial execution of the planned action response (the congruent group react faster compare to the incongruent group in time to peak velocity).

In the above example, the imitation happened for the reach and grasp action. Recently, the study of Bernardi et al. (2013), subject had assigned into two group which is force field observed in the video recording (watch clockwise force in the video and experience force field task) and a scramble- video control (watch counterclockwise force field and perform the force field task). Subjects had observed the video in the clockwise or counterclockwise force field and practice in actual force field task in counterclockwise. The study found that subject who watch force field observed in the video recording performed the force field task had greater change compare to only observational learning scramble- video control. He suggested that somatosensory function was involved in observational learning, both in direction and magnitude, similar to that which occurs in motor learning.

Moreover, Stefan et al. (2005), used TMS to show that observation of another individual performing simple repetitive thumbs movements gives rise to a kinematically specific memory motion in primary motor cortex. The result of this study found that mirror neuron system affects memory formation and possibly human motor learning. Furthermore, Fadiga et al. (1995) in the study of TMS on the primary motor cortex areas found that significance increased in the observation of action. He had suggested that activity from the human mirror neuron results in the increase primary motor cortex excitability. In addition, Grezes et al. (2004) had applied FMRI to test whether the neural circuits in action observation and execution had located in the same as a macaque or in different sides. Thus, the finding of this research supported the mirror neuron concept that observation and execution activity share areas of the human brain.

Based on the previous studies, until now no other research in the literature has so far considered whether imitation can execute the strength gain in muscle. Researcher decided examined strength gain results using a 1RM bicep curl test in order to analysis the effect of action force observation on the subsequent force responses. The guideline purpose of the study was to explore whether the subjects force execution response at (80% intensity unilateral bicep curl exercise) after the observation of baseline (mirror activity) in caused bicep muscle strength gain. Specifically, researcher was occupied with whether the force observed could bring strength gain reactions as a component of enhancing the strength gain in observed action.In this paper, it is hypothesized that observation of the mirror groupwould showed a more enhance imitation effect on observational learning via activated mirror neuron system and thusly affect an increase in the increment in the subjects 1RM bicep curl strength gain. Indeed, even along these lines, observing one owns activities overrode the training to impact strength gain, proposing that imitation may impact the programme. This can be important to enhance strength gain over a short period, new training method in sport or rehabilitation programme and minimize sport injury.

Methodology

This investigation was an experimental research design which involved the measurement of 1RM biceps curl test. 20 students who studied in SekolahMenengahKebangsaan Labuan (SMKL) were selectedas participants for the study. The participants were randomly assigned into two groups namely the control group, experimental (mirror) group. Each group consisted of 10 participants.

Procedure

All participants were right handed, as assessed by the Edinburgh Handedness Inventory (Oldfield, 1969), to determine their preferred hand to perform their daily activity and beingphysically active and healthy in non-competitive recreational activities, none of the subjects were involved with any resistance training for at least 6 month prior to the start of the study. All subjects' consented to participate by signing a form approved by University Malaya Research Ethics Committee (Non-Clinical) for conducting the study. After that, participants were underwent a familiarization session prior to baseline assessment. The 1RM test was performed following the anthropometric measurements (biceps muscles girth) on the first day. After 48 hours, the 1RM test was repeated to determine test-retest reliability. The heaviest load achieved on either of the test days was considering the pre-training 1RM (baseline). No exercise was allowed in the next 48 hours between the 1RM tests, to avoid interference in reliability results.

Instrument

The participants were pre-tested on 1RM bicep curl test on the trained (right) arm. Experimental (mirror) group were exposed to the strength training programme (80% of their 1RM baseline) of the right elbow flexor, three times per week for four week (12 sessions in total). Participants performed by looking at the mirror for each set. Two minutes rest interval for each set. At the end of four weeks training, the researcher investigated whether there was a significant difference in the performance of 1RM bicep curl test. The design of this study focused upon individual performances in the 1RM bicep curl pre-test, providing training for four weeks and to determine if participants improved their performance in 1RM bicep curl test as a result of experimental treatments.

Results

To determine whether there was a significant difference in the strength gains of the two groups in 1RM biceps curl test after following a four week unilateral strength training programme, a one way analysis of covariance (ANCOVA) with a 0.05 significant level was conducted.Table 1 below provides descriptive statistics for the two groups in pre-test means, post-test means (M), the standard deviation (SD) and number (N) of participants in each group.

Table 1:Comparison of Pre-Test and Post-Test Means and Standard Deviation of Two Groups in 1RM Right (Trained) Biceps Curl Test

Pre-Test	N	M	SD
Control Group	10	10.95	1.05
Experimental Group (Mirror)	10	11.05	1.05
Total	20	11.00	1.02
Post-Test	**N**	**M**	**SD**
Control Group	10	11.13	1.17
Experimental Group(Mirror)	10	13.03	1.79
Total	20	12.08	1.77

The pre-test results showed no significance difference at the $p<0.05$ level in 1RM right trained bicep curl test between the means and the standard deviations among the two groups: control group (M=10.95, SD = 1.05, N=10) and experimental group (mirror)(M=11.05, SD=1.05, N=10. The direction of effect showed the same statistical features for all of the participants in thetwo groups: total groups (M=11.00,SD=1.02, N=20). The descriptive statistical features for the two groups in post-test indicated control group (M=11.13, SD=1.17, N=10) and experimental group (mirror)(M=13.03, SD=1.79, N=10), total groups (M=12.08, SD=1.77, N=20).The direction of effect in post-test indicated that the performance of experimental group (mirror) in 1RM bicep curl was better the control group.

Figure1: Comparison of 1RM Strength of Right Trained Arm Pre-Test and Post-Test by Groups

Figure 1 shows the pre-test means for the two groups are clustered closely (control group mean 10.95 and experimental (mirror) group mean 11.05) indicating there was no significant difference in 1RM bicep curl test among the two groups.The post-test means of two groups for 1RM bicep curl test indicated the control group mean showed a slight increase from 10.95 to 11.13 indicating an increase of 0.18. The experimental (mirror) group mean increased from 10.95 to 13.03 in the post-test. The difference in means indicated an increase of 2.08. To determine further whether the different training programmes significantly contributed to the results, a one way analysis of covariance (ANCOVA) was run on the tests, the results of which appear in Table 2.
Table 2 and 3 provides the descriptive statistics for the two groups.

Table 2: ANCOVA Analysis of Co-Variance for 1RM Biceps Curl Pre Test

Source	Sum of Squares	df	Mean Square	F	Sig
1RM Biceps Curl Pre Test	16.71	1	16.71	104.14	0.00
Groups	0.46	1	0.46	0.86	0.11
Error	2.57	16	0.16		
Total	2439.88	20			

In Table 2 results indicated that there was no significant difference between the two groups in 1RM bicep curl pretest [F (1, 16) =0.86, p>0.05] before treatment was administered.

Table 3: ANCOVA Analysis of Co-Variance for 1RM Biceps Curl Post Test

Source	Sum of Squares	df	Mean Square	F	Sig
1RM Biceps Curl Post Test	33.99	1	33.99	87.48	0.00
Groups	15.61	1	15.61	40.17	0.00
Error	6.22	16	0.39		
Total	2439.88	20			

Table 3 showed that after undergoing a four week training programme in mirror, the post-test results indicated that there was a significant difference among the two groups in the performance of 1RM bicep curl test [F (1, 16) =40.17, p<0.05]. Experimental group showed that the effect of imitation via mirror can enhance the strength.In addition, the study showed no significance difference in arm circumference after four week training programme between control and experimental (mirror) groups [F (1, 16) =3.67, p>0.05].

Discussion

In this study, researcher investigated that the imitation effect combined with observational learning (mirror strength training programme) can enhance strength gain. This is because the mirror training indirectly activated the mirror neuron system which lead to some changes in brain areas resulted to the strength gain.

Based on the study findings, unilateral mirror strength training programme showed significant increase in 1RM bicep curl muscle without muscle hypertrophy. In this study, we also found that the mirror group 1RM right bicep curl muscle test increased 15% from the baseline after short term training. It showed that imitation through observational learning can facilitate the strength gain through changes in brain activity and neural adaptation to enhance the strength gain without any changes of the muscle hypertrophy. Previously, the strength training programme studies (Farthing et al., 2007; 2011; Hortobaygi et al., 2011; Kidgell& Pearce, 2010; Kidgell, Stokes, & Pearce, 2011; Pearce, Hendy, Bowen, &Kidgell, 2013) concluded the progressive overload principle during the four week strength training programme to investigate the mirror neural system, brain activity and neural adaptation in strength training effect. However, in this study showed that the imitation effect through the observational learning (mirror) without overload progressive the strength training programme also contributed to the strength gain in within four week. It proved that when we were performed the activity and observing our own movement which may highly activated our brain activities which leads to maximize motor unit recruitment even with a same intensity strength training programme.Previous study of Howatson et al. (2013), proposed using a mirror in unilateral strength training might enhance strength gain. So, Howatson et al. (2013) study, proved that imitation in observational learning (mirror) can enhanced strength gain. Based on our study focus results, the imitation effect may not only for strength gain but also may be possible to enhance the skill and power performance activity.

Conclusion

In conclusion, this study confirmed that the effect of imitation through observational learning (mirror) enhance the 1RM bicep muscle curl test in a short term strength training programme. The imitation effect through observational learning via mirror play a vital role to promote as a new method training programme for rehabilitation and sport performance.

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