



International Federation of
Physical Education, Fitness and
Sports Science Association



ISSN 0975-7732

ASIAN JOURNAL OF PHYSICAL EDUCATION & COMPUTER SCIENCE IN SPORTS

A Peer Reviewed (Refereed)
International Research Journal

Journal Impact Factor 4.171
Index Journal of



Volume 26 No. 1
HALF YEARLY
January 2022 to June 2022



Published by :
Indian Federation of Computer Science in Sports
www.ifcss.in



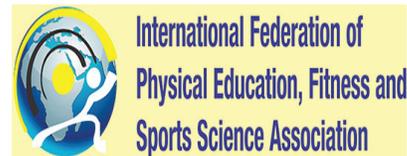
Asian Journal of Physical Education and Computer Science in Sports

ISSN 0975-7732

Volume 26; Issue 1

ISRA Journal Impact Factor 5.011

A Peer Reviewed (Refereed) International Research Journal



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Asian Journal of Physical Education and Computer Science in sports ISSN 0975-7732 (On-line and Print) ISRA Journal Impact factor is 5.011. Journal published Half Year for the months of June and December. Asian Journal of Physical Education and Computer Science in Sports is multidisciplinary peer reviewed journal, mainly publishes original research articles on Physical Education and Computer Science in Sports, including applied papers on sports sciences and sports engineering, computer and information, health managements, sports medicine etc. The Asian Journal of Physical Education and Computer Science in sports is an open access and print International journal devoted to the promotion of health, fitness, physical Education

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Indian Federation of Computer Science in sports,

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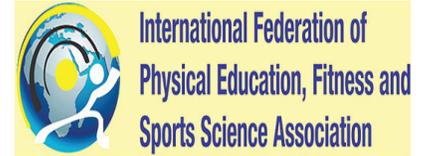
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Research Article

Effect of plyometric training on explosive leg power of athletes

Renu¹, L. B. Laxmikanth Rathod²

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ABSTRACT

The purpose of the study was to find out the effect of plyometric training on leg explosive power. To achieve this purpose of the study, 30 men students of IIT Bombay were selected as subjects. Their age ranged between 17 and 23 years. The selected subjects were divided into two equal groups of 15 each, namely, plyometric training group and controlled group. The experimental group did plyometric exercises such as hopping, bounding, hurdle jumps, box jumps, and tuck jumps for 3 days a week for 6 weeks, whereas the control group maintained their daily routine activities and no special training was given to them. The following variable, namely, explosive power was selected as criterion variable. To assess the explosive power, the pre-test and post-test were conducted in Standing Broad Jump. This study shows that, due to the plyometric exercise, there is a rapid improvement in explosive power of experimental group and controlled group has less improvement in explosive power due to general training. It is recommended that the plyometric exercises are excellent to improve the explosive power of legs.

Keywords: Plyometrics, Explosive power, Standing Broad Jumps

INTRODUCTION

The science of sports training is relevant not only in performance of sports but also gives equal importance to other areas such as physical fitness, leisure sports, and rehabilitation. Sports training aims at education and performance enhancement based on scientific principles through physical exercise. It is basic ground work of sportsman for elite performance. The development of physical fitness includes organic functions and increasing the strength and stability of muscular-skeletal system (Singh, 1991).

The term plyometrics has the origin in Greek. In Greek, it is “plio” which mean to increase and “metric” means more and measure, respectively. The term plyometric was coined in 1975 by one of America’s great track coaches, Fred Wilt (Kutz, 2003).

A popular type of training exercise is plyometric training. This type of training uses jumping exercises to involve the neuromuscular system in rapid force development, and the

ability to absorb force. A simple jumping exercise can be classified as a plyometric exercise if it involves an eccentric muscle action (lengthening of muscle tissue), amortization phase (phase between eccentric and concentric muscle action), and a concentric muscle action (shortening of muscle tissue). These three components allow athletes to utilize the musculoskeletal system to produce greater force following the eccentric muscle action. For example, a countermovement jump involves a quick lowering of the body to produce eccentric tension in the relevant musculature which is then followed by a transition from down to up, the amortization phase, and then, the athlete develops concentric or shortening tension in the relevant muscles as he/she performs the “up” phase of the jump (Chu and Panaciello, 2011).

Explosive power is the ability to release the maximum muscular force in an explosive manner, in the shortest possible time (Singh, 1991).

Statement of the Problem

Effect of plyometric training on explosive leg power of athletes.

Purpose of the Study

The purpose of the study was to find out the effect of plyometric training on explosive power of the legs of athletes.

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Table 1: Analysis of “t”-ratio for pre-test and post-test of experimental and control group on Standing Broad Jump

| Variables | Group | Mean | | SD | | “t” ratio |
|---------------------|--------------|----------|-----------|----------|-----------|-----------|
| | | Pre-test | Post-test | Pre-test | Post-test | |
| Standing Broad Jump | Control | 2.24 | 2.23 | 0.421 | 0.418 | 0.176 |
| | Experimental | 2.35 | 2.50 | 0.193 | 0.186 | 8.91 |

SD: Standard deviation

Hypothesis

There would be significant improvement on selected variable due to the effect of Plyometric Training.

MATERIALS AND METHODS

Selection of Subjects

The sample for present study consists of 30 athletes of IIT BOMBAY out of which 15 are experimental group and 15 are controlled group between the age group of 17 and 23 years those who are beginners in athletics.

Selection of Variable

- Dependent variable – Explosive power of legs.
- Independent variable – Plyometric training.

Training Program and Experimental Procedure

The following plyometric exercises were given for 6 weeks to the experimental group, while controlled was given general fitness training.

Bounding, Hopping, and Hurdle Jumps Squat Jumps on Stairs.

Collection of Data

To assess the explosive power of legs of athletes, the pre-test and post-test were conducted in Standing Broad Jump.

Administration of the Test

Equipment required: Tape measure, non-slip floor for takeoff, and landing pit.

The athlete stands behind a line marked on the ground with feet shoulder width apart. Athlete use both legs for take-off and landing, with swinging of the arms and bending of the knees provide forward drive. Athlete attempts to jump as far as possible. Maximum three attempts were given.

RESULTS AND DISCUSSION

This study shows that, due to the plyometric exercise, there is a rapid improvement of explosive power of legs of experimental group and controlled group has less improvement in explosive power due to the general fitness training.

Table 1 shows that the mean values of pre-test and post-test of control group of standing broad jump were 2.24 and 2.23, respectively. The obtain “t” value was less than the required table value of 1.75 for the significant at 0.05 level of confidence. The mean values of pre-test and post-test of experimental group of standing broad jump were 2.35 and 2.50, respectively. The obtain “t” value was 8.91. Since the obtained “t” value was greater than the required table value of 1.75 for the significant at 0.05 level of confidence, it was found statistically significant. The result of study showed that there was a significant difference between pre-test and post-test in standing broad jump of experimental group.

CONCLUSION

- It is concluded that due to plyometric training there is an improvement in the explosive power of legs of athletes.

RECOMMENDATIONS

- It is recommended that coaches must include the plyometric exercise in their training program to increase explosive power of legs of athletes. Similar studies can be on the athletes of other level also. Similar studies can be conducted in different age groups.
- This study is helpful to coaches to plan coaching program to improve motor abilities of athletes.

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Research Article

The effects of pandemic in the physical fitness and mental condition of student athletes

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ABSTRACT

This paper identified the effects of pandemic in physical fitness and mental condition of student-athlete including the plan of getting better and the possible changes on their performance. The research methods used were modified open-ended questionnaire through focus virtual interview. The findings revealed that the effects of pandemic in the physical fitness of student-athlete are mainly gained weight. The student-athlete is still having plan to maintain their usual performance and getting better through doing their indoor work out and jogging outside. The effects of pandemic in mental condition of student-athletes are they having an anxiety, negative thoughts, and stressed thinking when they can perform again and when the pandemic end. The student-athletes are facing challenges associated with negative changes in their performance. This is due to the fact that many facilities, where student-athletes can do proper training are closed. This is the primary reason why participants stopped their training, and it has had an impact upon their body movement and performance.

Keywords: Fitness, Mental health, Pandemic

INTRODUCTION

The COVID-19 pandemic affected all physical activities and events globally, including sports activities in different areas, including college campuses and universities, and housing. Student-athletes were uniquely affected, enduring the shutdown not only of their communities but also of their lifestyle, their training, and their performance. They experienced difficulty maintaining their training routine and locating an environment, in which they were comfortable training themselves.

The adopted home confinement measures and the uncertainty about the date of the normal situation for the return to activities can lead athletes to experience conditions that can affect their mental health, such as external sources of distress, financial problems, bad daily news, and internal sources of distress, like such as worry about their performance when they return to the

activities and tension due to the changes of routine. This period can lead to negative feelings such as anxiety, depression, and adverse behaviors, such as alcohol use and smoking, as well as eating and sleep disorders (Andreato, 2020). Due to the isolation period, staying at home for a long time negatively affected the mental health status of athletes as well (Denerel, 2020). COVID-19 had physical, nutritional, and psychological consequences that may have impacted the safe general health of athletes. The athlete's physique did not drop suddenly. With this in mind, several studies have shown that periods of inactivity will reduce the aerobic fitness, muscle strength, muscle power, speed performance, flexibility, and physical fitness of athletes participating in various sports (Lervasen, 2020). In this study, it is clear that the pandemic had an impact on student-athletes and affected their mental condition as a result of missed competitions and training.

In addition to having direct disruptive impacts from COVID-19 on the current competition season, the student-athletes were also exposed to the negative psychological consequences of COVID-19 such as frustration, anxiety, and depression which were found to be common during this stressful time.

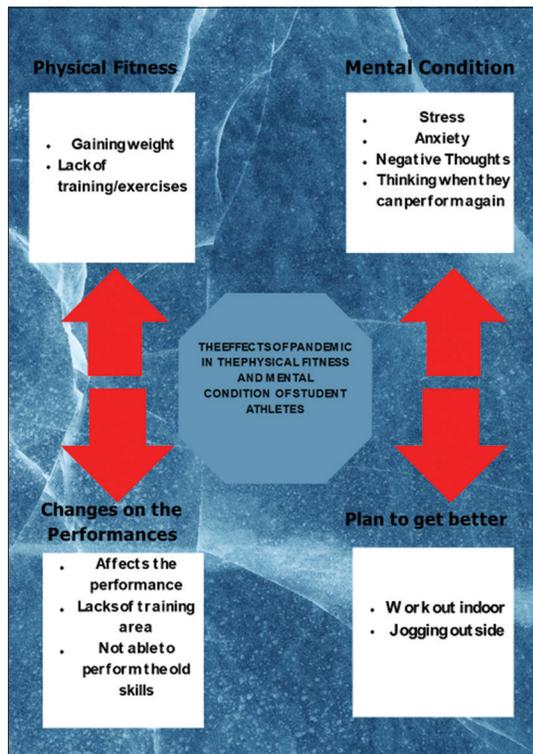
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A significant proportion of athletes reported feelings of isolation and of being disconnected.

METHODS

The study utilized a qualitative research design that aims to develop an in-depth understanding of the participant's narratives of their experiences as student-athletes during the pandemic. The in-depth understanding in the qualitative research occurs through the listening, interpreting, and retelling of participants' accounts in a manner that is meaningful.



RESULTS

Plan to Maintain the Usual Performance

This study revealed the plans of student-athletes to maintain their usual performance or get better. The participants are still confident they will get back their lost performance because of the pandemic. They have plans to maintain their performance through doing their training, workouts, or jogging outside. Participants are eager to get back their old performance.

Effects in Mental Condition

Mental conditioning is very important to student-athletes as it impacts the whole performance of student-athletes.

Participants feel stress, anxiety, and negative thoughts due to the pandemic, wondering when they can perform again and

when they can have their proper training. Participants' stress will be relieved when they can go back to normal training routines.

Possible Changes on Performance

The pandemic brought huge changes to participants' performance. As shown in tables, the participants are facing challenges associated with negative changes in their performance. This is due to the fact that many facilities where student-athletes can do proper training are closed. This is the primary reason why participants stopped their training, and it has had an impact upon their body movement and performance. As Delk (2021) said, if the athletes did not practice, they may have to relearn the skill they once possessed.

CONCLUSION

Based on the indicated research findings, the following conclusions were drawn:

1. The research findings revealed that the pandemic has had dramatic effects on the physical fitness of student athletes. The respondents gained weight as a result of staying at home without or exercise or training during this pandemic.
2. The research findings revealed that student athletes have developed plans to maintain their usual performance or get better after this pandemic. The participants plan to do their workouts inside and jogging outside to maintain their performance.
3. The research findings revealed that the pandemic has impacted mental conditioning. The participants are having anxiety, negative thoughts, and stress due to the pandemic, wondering when they can perform again and also how they can resume their previous fitness if there is a change to their performance.
4. The research finding revealed a significant impact on the performance of participants due to the pandemic. The pandemic has negatively affected the body, fitness, and training of student athletes.

RECOMMENDATION

Based on the findings of the study, the following recommendations were drawn:

1. University should provide equipment to student-athletes who want to pursue their career in sports and prevent gaining weight.
2. Student-athletes should attend webinars related to mental health so that they can better handle the situation they find themselves.
3. University coaches should create a training plan in which student-athletes can do indoor activities so that student-athletes maintain their performance and confidence for improvement.

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Research Article

Impact on speed and agility due to specific Kho-Kho training on different preparatory phase

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ABSTRACT

The purpose of the study is to find out impact on speed and agility due to specific Kho-Kho training on different preparatory phase. To achieve the purpose of the study, 30 university Kho-Kho players were selected from Osmania University. The age of the subjects were ranged from 17 to 23 years. The selected subjects were divided into two equal groups; each group consists of 15 subjects. Group – I underwent specific Kho-Kho training for 3 alternate days in a week for 12 weeks, the Group – II (control group) does not undergone any specific training other than the regular routine activities. The variables selected in the study were speed and agility and they were measured by standard test such as 50 mts run and shuttle run, respectively, before and after 12 weeks of training. The data were analyzed using analysis of covariance (ANCOVA). The level of significance was fixed at 0.05. The findings of the present study have strongly indicated that there were significant changes on speed and agility due to Kho-Kho specific training at different preparatory phase.

Keywords: Preparatory phase, Specific training, Speed, Agility

INTRODUCTION

Scientific tools and techniques have replaced the traditional mode of selection and training. Involvement in systematic program of training brings about desirable changes in the physical and physiological factors contributing to the development of functional ability that enhances the player's performances in the sport. For the physiological system of the body to be fit, it must function well enough to support the specific activity that the individual is performing. The structure of the training process in team sports during the annual macrocycle in the periodization of athletic training has received the most practical justification Bondarchuk (2002). The planning of the training process is based on the one-cycle system consisting of three periods such as preparatory, competitive, and transition Kanurov (2002) and the preparatory period plays the key roles as it shapes performance stability

Stasiuk (2014). The construction of the training process in the preparatory period depends on calendar events, as well as on the main tasks to be solved in the preparatory period according to the conceptual foundations of the theory of periodization of sport training Aytkulov (2005). Based on the objectives of the preparatory period, training should be concentrated on facilitating fitness shaping, creating a basic foundation of preparedness of the players, and a gradual adaptation to competitive activities Andreyev (2004). The pre-season training is the base creation for better performance in the competition Hardayal (1984). The preparatory period is characterized by increase of volume of load as compared to the intensity of the load.

Specific training package means a systematically and scientifically prepared program which consists of conditioning exercises, physical activities, drills and tactical maneuvers designed to improve the physical fitness, techniques, and playing ability of the players. At the present time, the idea of sport-specific training is touted as being able to duplicate or imitate a specific skill or aspect of one's sport or activity (Cittibabu, 2013). Specific training in its current concept

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is a means of simulating a movement or exercise with the intention of it transferring to the playing field, regardless of what that field is. Specificity training is closely examining the unique and specific biomechanical movements of the body while performing a given activity. In physical preparation, the quality of training can be improved by developing highly specific means of training (Muller *et al.*, 2000). Speed is the capacity to travel or move very quickly. Like all bio-motor abilities speed can be broken down into different types. It may mean the whole body moving at maximal running speed, as in the sprinter. It may involve optimal speed, such as the controlled speed in the approach run of the jumping events. Or, it may include the speed of a limb, such as the throwing arm in the shot or discus, or the take-off leg in the jumps. Speed training involves development of a skill so that the technique is performed at a faster rate. To develop speed, the skill must be practiced on a regular basis at a maximum or close to maximum rate of movement. Agility is the ability to change the body's position efficiently and requires the integration of isolated movement skills using a combination of balance, coordination, speed, reflexes, strength, endurance, and stamina. Sheppard and Young (2006) defined agility as "a rapid whole body movement with change of velocity or direction in response to a stimulus." In sports, agility is often defined in terms of an individual sport, due to it being an integration of many components each used differently specific to all of sorts of different sports.

METHODOLOGY

The purpose of the study is to find out impact on speed and agility due to specific Kho-Kho training on different preparatory phase. To achieve the purpose of the study, 30 university Kho-Kho players were selected from Osmania University. The age of the subjects was ranged from 17 to 23 years.

Training Procedure

The selected subjects were divided into two equal groups; each group consists of 15 subjects. Group – I underwent specific Kho-Kho training for 3 alternate days in a week for 12 weeks, the Group – II (control group) does not undergo any specific training other than the regular routine activities. The specific speed and agility training drills were selected from the book "Training for speed, agility, and quickness" (Brown *et al.*, 2000). The below training schedule was followed for each week. The description of the exercise is presented in Table 1.

Statistical Technique

All the subjects were tested before and immediately after the experimental periods on the selected dependent variables such as speed and agility were measured by 50 mts run and shuttle run, respectively. The data obtained from the experimental groups before and after the experimental period

were statistically analyzed with Analysis of Covariance (ANCOVA). The level of confidence was fixed at 0.05 levels for all the cases.

Analysis of the Data and Results

The results of analysis of covariance on data collected before and after the experimental period on the selected variables among the control group and specific Kho-Kho training group are presented in tables.

Speed

The table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20.

Table 2 shows that the pre-test means of speed of control group and specific Kho-Kho training group are 7.32 and 7.40, respectively. The obtained "F" ratio value of 0.67 for pre-test means on speed is lesser than the required table value of 4.20 which shows that there was no significant between the groups at pre-test period. The post-test means on speed of control group and specific Kho-Kho training group are 7.26 and 7.03, respectively. The obtained "F" ratio value of 13.66 for post-test data on speed is greater than the required table value of 4.20. The adjusted post-test means on speed of control group and specific Kho-Kho training group are 7.27 and 7.01, respectively. The obtained "F" ratio value of 40.73 of adjusted post-test data on speed is greater than the table value of 4.21. The results of the study showed that there was significant difference among the adjusted post-test means of control group

Table 1: Training schedule

| DAY | TRAINING EXERCISE | PHASE I | PHASE II | PHASE III |
|-----------|---------------------------|---|---|-----------|
| MONDAY | Post to post sprint | Vol: 3 set 6 Rep Rest 1:3 1 to 4 weeks | Vol: 3 set 8 Rep Rest 1:3 (5 to 8 weeks) | 4/8 |
| | Box Sit and run | | | |
| | Zig -Zag run | | | |
| | Chasing the partner | | | |
| | 10 pushups and 15mts run | | | |
| WEDNESDAY | Directional Foot Movement | Vol: 3 set 6 Rep Rest 1:3 1 to 4 weeks | Vol: 3 set 8 Rep Rest 1:3 (5 to 8 weeks) | 4/8 |
| | Directional Hand Movement | | | |
| | Star Drill | | | |
| | Side Shuffle | | | |
| | Card-Snatching | | | |
| FRIDAY | Cart Wheel | Vol: 3 set 6 Rep Rest 1:3 1 to 4 weeks | Vol: 3 set 8 Rep Rest 1:3 (5 to 8 weeks) | 4/8 |
| | Five-Cone Drill | | | |
| | V - Drill | | | |
| | Backward Roll over | | | |
| | Shoulder in out shuffle | | | |

Table 2: Analysis of covariance on speed of control group and training group

| | Control Group | Training Group | Source of Variance | Sum of Squares | Degrees of Freedom | Mean Squares | 'F' ratio |
|-------------------------|---------------|----------------|--------------------|----------------|--------------------|--------------|-----------|
| Pre-test mean | 7.32 | 7.40 | Between | .048 | 1 | .04 | .67 |
| Standard Deviation | .24 | .28 | Within | 1.979 | 28 | .07 | |
| Post-test mean | 7.26 | 7.03 | Between | .385 | 1 | .385 | 13.66 |
| Standard Deviation | .17 | .15 | Within | .789 | 28 | .028 | |
| Adjusted post-test mean | 7.27 | 7.01 | Between | .513 | 1 | .51 | 40.73 |
| | | | Within | .340 | 27 | .013 | |

Table 3: Analysis of covariance of agility of control group and training group

| | Control Group | Training Group | Source of Variance | Sum of Squares | Degrees of Freedom | Mean Squares | 'F' ratio |
|-------------------------|---------------|----------------|--------------------|----------------|--------------------|--------------|-----------|
| Pre-test mean | 10.14 | 10.04 | Between | .07 | 1 | .07 | 0.55 |
| Standard Deviation | .33 | .40 | Within | 3.81 | 28 | .13 | |
| Post-test mean | 9.87 | 9.46 | Between | 1.26 | 1 | 1.26 | 7.05 |
| Standard Deviation | .38 | .46 | Within | 5.03 | 28 | .18 | |
| Adjusted post-test mean | 9.82 | 9.51 | Between | .69 | 1 | .69 | 18.87 |
| | | | Within | .99 | 27 | .03 | |

and specific Kho-Kho training group. Since only two groups are involved, *post hoc* test is not required.

Agility

The table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20.

Table 3 shows that the pre-test means of agility of control group and specific Kho-Kho training group are 10.14 and 10.04, respectively. The obtained "F" ratio value of 0.55 for pre-test means on agility is lesser than the required table value of 4.20 which shows that there was no significant between the groups at pre-test period. The post-test means on agility of control group and specific Kho-Kho training group are 9.87 and 9.46, respectively. The obtained "F" ratio value of 7.05 for post-test data on agility is greater than the required table value of 4.20. The adjusted post-test means on agility of control group and specific Kho-Kho training group are 9.82 and 9.51, respectively. The obtained "F" ratio value of 18.87 of adjusted post-test data on agility is greater than the table value of 4.21 required for significance at 0.05 level of confidence with degree of freedom 1 and 27. The results of the study showed that there was significant difference among the adjusted post-test means of control group and specific Kho-Kho training group. Since only two groups are involved, *post hoc* test is not required.

DISCUSSION

Periodization is a way of alternating or cycling training leading up to peaking for a competition. Training programs in this period are to be designed to increase maximum capacities of the energy systems that are predominant when preparing for

an event Bomp (2009). The different phases or stages that an athlete cycles through as part of the training process to achieve the consistent performance levels necessary to win competitions Singh (1991). The construction of the training process in the preparatory period depends on calendar events, as well as on the main tasks to be solved in the preparatory period according to the conceptual foundations of the theory of periodization of sport training Babkin (2004). The specific preparation phase of the preparatory period included adaptation of players to competitive pressures, improving playing techniques under conditions close to competitive, perfecting technical, and tactical interactions of players increasing physical fitness that would make them effectively participating in competitive activities Stasiuk (2017). Patsy Neal (1989) stated that the pre-season training is the time to perfect skills, work on fundamentals and ponder strategy, and to strive for high level of conditioning for a specific sport. Thomas Reilly (1990) has considered the pre-season training as highly important as it includes programs of fitness training. Specific volleyball conditioning is necessary in pre-season for the development of the lower-body strength, agility, and speed performance in volleyball players Patrick (2008). The results of the present study was justified by the above supporting studies that specific Kho-Kho training with different phases of training shows significant improvement on speed and agility.

CONCLUSIONS

Based on the results of the study, it was concluded speed and agility showed significant improvement due to that of different preparatory phase specific Kho-Kho training.

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Research Article

Effect of interval training on development of speed and flexibility of tribal students of Telangana State

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ABSTRACT

Purpose: The purpose of this study was to find out the effect of interval training on speed and flexibility of tribal students of Telangana State. The research scholar has randomly selected 50 Tribal male students from Bhadrachalam, Telangana State, which were selected as subjects and their age ranged between 18 and 22 years. Moreover, the researcher took pre-test data and then gave an Interval training 3 days/week and each session consisted of 1 h for 12 weeks. The pre-test and post-test data were collected pre-training and immediately after the training. The speed and flexibility were measured by administering by standardized test items such as 50 m dash and sit and reach tests, respectively. These data were statistically recorded and examined by appropriate tests. The level of significance was fixed at 0.05 level. The analysis of the data concluded that there was a significant improvement in speed and flexibility of the tribal students of Telangana State.

Keywords: Interval training, Speed and flexibility

INTRODUCTION

Interval training is a type of training exercise that involves a series of high-intensity workouts interspersed with rest or relief periods. The high-intensity periods are typically at or close to anaerobic exercise, while the recovery periods involve activity of lower intensity. Interval training may benefit exercisers by allowing them to burn more calories in a shorter period, and by improving aerobic capability at a faster rate, when compared with continuous-intensity exercise. Speed is a key component of physical fitness. Speed defined as the quickness of movement of limb whether this is the leg of a runner or the arm of the short putter. Flexibility is the ability of a joint or series of joints to move through an unrestricted, pain free range of motion. Although flexibility varies widely from person to person, minimum ranges are necessary for maintaining joint and total body health.

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Significance of the Study

The study is to determine the effect of interval training on development of speed and flexibility of tribal students of Telangana State.

Objectives

The objectives of this study were as follows:

- To find out the effect of interval training on development of speed of tribal students of Telangana State.
- To find out the effect of interval training on development of flexibility of tribal students of Telangana State.

Hypothesis

It is hypothesized that there may be a significant effect of interval training on development of speed and flexibility of tribal students of Telangana State.

METHODOLOGY

For the purpose of this study, 50 Tribal male students were randomly selected as subjects from TTWR Degree College, Bhadrachalam, Telangana State. Moreover, their age ranged

Table 1: The pre-test and post-test values of tribal students related to speed and flexibility

| Variable | Test condition | Mean | SD | t-value |
|-------------|----------------|-------|-------|---------|
| Speed | Pre-test | 9.21 | 0.593 | 5.622 |
| | Post-test | 8.96 | 0.556 | |
| Flexibility | Pre-test | 12.97 | 5.974 | 7.061 |
| | Post-test | 17.59 | 5.620 | |

*Significant at 0.05 level

between 18 and 22 years. Moreover, the researcher will going to give an interval training 3 days/week and each session consisted of 1 h for 12 weeks. The pre-test and post-test data were collected pre-training and immediately after the training. The speed and flexibility were measured by administering by Standardized test items such as 50 m dash and sit and reach tests, respectively. These data were statistically recorded and examined by appropriate tests. The level of significance as fixed at 0.05 level of confidence which was considered as appropriate.

Analysis and interpretation of result Table 1 indicates that the pretest mean value of speed is 9.21 and post-test is 8.96. The mean value shows that the Tribal students have taken more time to complete the given task in pre-training, while less time is taken in post-training condition. The standard deviation of speed in pre- and post-test is 0.593 and 0.556, respectively, whereas the “t” = 5.622. The difference in mean score is significant at 0.05 level.

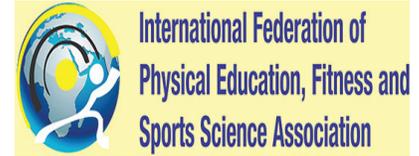
It is also evident that the pretest mean value of flexibility is 12.97 and post-test mean value is 17.59. It indicates that the tribal students flexibility is improved better after the post-training condition. The standard deviation of pre- and post-test is 5.974 and 5.620, respectively, Whereas the “t” value is 7.061 which is significant at 0.05 level.

CONCLUSION

Based on the results of this study, it is concluded that there is a significant difference in speed and flexibility. Interval training significantly improved the performance of the tribal students of Telangana state related to speed and flexibility.

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Review Article

Foundations of physical education – Biological aspect

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ABSTRACT

Biology is a science which deals with life and life processes, all living beings are naturally active. The major differences between the animate and inanimate things are that the former can generate their own power movement while the latter cannot. Biology tells us that even the plants having the lowest form of life move and grow. Such movements of the body by which development of the total body is precipitated are called developmental activities. Education and learning are aspect of growth. Acquisition of more knowledge and skills points toward better growth of an individual.

Keywords: Biology, Life processes, Living beings etc.

INTRODUCTION

Biology is a science which deals with life and life processes. This includes zoology (the study of animal life). Botany the study of (grass and vegetation-life), microbiology (small life science). Man is a biological entity and the human life has been considered as the most developed form of life. This science has revealed to us an irrefutable fact that man such as other animals has a long and natural evolution. It is long way that man has travelled from the primitive type of existence to the present highly complex life.

The name of Darwin the great naturalist and scientist is very closely associated with the science of biology especially in the interpretation of human evolution. He put forth certain hypotheses which are of utmost importance in understanding evolutionary processes in human life. He says that in the course of evolution man's ancestors lost certain characteristics either fully or in part a keen sense of smell the hairy covering on the body the majority of the dermal muscles the tall prehensile feet pointed ear lobes etc. In discussing the cause that led to the erect mode of locomotion Darwin assumed that a change of feeding was of great importance. This occurred when our

ancestors began to spend more and more time on the ground in search of food.

Biology has revealed to us quite clearly as to what changes took place in human physique in the long span of biological evolution. The changing environment on the earth forced the changes in human body which subsequently brought innumerable changes in his mode of walking, running, climbing, hitting, leaping, bouncing, thinking, and understanding his environment the evolution as not come to an end and it is gradually and imperceptibly going on. Perhaps none can predict what shall be the final outcome of such an unceasing process not only on the surface of the earth but also in human body as well.

ACTIVITY-AS THE BASIS LIFE

All living beings are naturally active. The major differences between the animate and inanimate things are that the former can generate their own power movement while the latter cannot. Biology tells us that even the plants having the lowest form of life move and grow. As and when the power of moving ceases, man ceases to live. Movement is born with living beings and life is characterized by movement. All functions of the organism-unicellular or multi cellular depend on movement. The movement starts in an individual right from the very moment of conception. These are two types of activities

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which form the basis of our life (a) Survival activities and (b) Developmental activities.

SURVIVAL ACTIVITIES

Such movements in the body without which the organism cannot survive are called survival activities. Beating of the heart, respiration, circulation, peristalsis etc. are some of the instances of these activities, heart never stops beating nor do lungs stop dilating and contracting, if they do even for a second, the organism is dead. Ordinarily, these activities are spontaneous, natural, and need no stimulation; these are involuntary and cannot be kept under conscious control. Often these are termed as biological reflexes. If at any stage one or the other of these activities stops, the existence of the organism is put into jeopardy. Ideal state of health cannot be ensured until and unless all these functions of the body are efficiently carried on. For this purpose, one shall have to depend on developmental activity.

DEVELOPMENTAL ACTIVITIES

Such movements of the body by which development of the total body is precipitated, are called developmental activities. These activities as supposed to survival activities are conscious and within voluntary control of the individual and are generally the result of the external stimulation. Due to the survival activity and hidden forces, an organism has to grow but it will not acquire any qualitative change or efficiency without indulging in developmental activities such as running, jumping, climbing, bouncing, and hitting. These activities are the legacy of our primitive life. Not only did they provide ancient human beings with an opportunity to procure food by running after and killing wild animals but also increased the effectiveness of body in combating the forces of nature aiming at this extinction. Muscles gain strength good reaction time etc. only through such activities which are vigorous and enhance the capability of the body to act react and even counter-act.

This has also to be borne in mind that the qualitative change in survival activities is only possible when there is sufficient and vigorous developmental activity especially in the modern age. He shall see later that the vital organs concerned with survival activities cannot be stimulated to bear heavier load unless limbs are desirably exercised.

GROWTH AND DEVELOPMENT- CONSEQUENCES OF PHYSICAL EXERCISE

Growth and development of the human organism are generally used interchangeably without being properly understood.

Ordinarily, the term growth refers to the increase caused by becoming larger and heavier as we generally talk of the enlargement of the muscles elongation of the skeleton and growth of the body in general. Growth denotes increase and enlargement of the limbs and organs. It can be measured quantitatively in points, pounds, and inches. The heart grows and becomes larger and heavier. The body grows in height, weight, and volume.

A person can develop even after his physical growth has topped and maturity attained. He can develop optimally by making fullest use of the capacities; he has biologically inherited. He can acquire many skills and habits. The development of the body from the physical point of view can easily be noticed in the trainees at a physical training institute or at place where exercise is a regular feature of the daily routine. Intellectually, he develops by becoming more broadminded and acquiring vast knowledge by rigorous study. Quantitative and qualitative changes in human organism at various levels of age can easily be visualized by comparing children with adults from the point of view of body structure, mental growth, and skills.

Moreover, it is imperative that the principles of growth and development may be widely known by the physical educator so that he could construct his curriculum accordingly.

PRINCIPLES OF GROWTH AND DEVELOPMENT

- Growth is a creative process in that it increases behavior-variability. As a child grows year by year, marked changes can be seen in his behavior. His natural behavior to instinctive behavior is canalized into variable type of behavior the one he acquires from society.
- Mental growth is dependent on changed structure and experience. A child a small organism is not capable of doing mental acrobatics like an adult who has fully grown and has accumulated rich
- Growth in some direction is inevitable. This denotes that a living organism has to grow come what may. The organism must become bigger though it might not have development due to lack of nutrients and other environmental factors.
- Characteristically, children are ego-entry and mature persons are socio-centric. In childhood, no individual can resist the inner drives but gradually with the growing in years, every one learns to be conscious of society around him and so behaves accordingly.
- Growth is the result of interaction of the organism with his environment. Leaving aside the germ-plasma all other factors which turn a speck into full grown adult come from environment.
- Patterns of behavior tend to follow an orderly sequence of appearance. Each child learns to sit before he can stand

draws a circle before he can draw a square etc. In each case, there is an orderly sequence of behavior which cannot be over-looked.

- Heredity sets limits for development in terms of potential even if environmental factors such as good food. Exercise etc. are sufficiently available; an organism cannot grow beyond the limits, heredity has already set in regard to various species. This also elaborates that a mouse can in no case gain enormity of an elephant. This factor is one of the most important factors in the choice in suitability of activities for individuals and groups.
- The effect of training varies with the stage of maturation, this is more important for a teacher of physical education due to various characteristics physical, mental, and social appearing at various levels of age the effect of an exercise and that of a skill invariably varies on each individual. Certain motor skills can only be learnt and others learnt at a particular period of time. At the same time, there are skills which involve a high degree of complexity and cannot be effectively learnt in the early year if the process is reversed the effect of the skill on the individual would be annoying rather satisfying.
- Growth proceeds most rapidly in the early years. With the advancing of organism in years, the speed of growth goes on slowing down. One of the psychologists tentatively calculated that if the rate of growth that a human embryo

has during the first 6 months continued as it is for 25 years without any impediment in the way the human organism would become as big as the whole solar system. Thus, nature has kept a system of checks and balances.

- Each individual has his own rate of growth. In some child, sex grow faster while others lag behind some mature earlier whereas others are still childish at age of eighteen and even after. That is, each individual is individuality in him and so is his pattern of growth.
- Growth is characterized by fluctuation. Many factors should be held responsible for fluctuation in growth. In general, the early childhood and puberty are the period of faster growth whereas later childhood and adulthood are periods of consolidation. Then, slowly the growth tapers off. Nutrition, happiness, and good environment are conducive to growth. If such factors are constant, there would probably be less fluctuation in growth
- Education and learning are aspect of growth. Acquisition of more knowledge and skills points toward better growth of an individual.

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Research Article

Physiology – fitness performance among Kho-Kho players

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ABSTRACT

The major objectives of the study have been made to examine the role of physical factors such as strength, speed, endurance, agility, and flexibility on the performance of the Kho-Kho players. It offers great movements in the body which are specifically measured on motor test such as speed, endurance, strength, agility, and flexibility by following available standard norms in the field of sports. A large sample was selected randomly on the whole physical factors and physiological factors. They were administered with tests of resting heart rate, peak heart rate, aerobic capacity, RBC, and hemoglobin. After scoring the required sample (200), as per sample design was selected thus an equal number of players were selected on the factor on whom the motor tests were conducted as per norms. The scores were subjected to statistical analysis.

INTRODUCTION

Kho-Kho is one of the most popular traditional sports in India each sportive game has its own targeted body parts, where the Kho-Kho game plays a significant role in physiology of muscular movement in the body as it exerts acute pressure on muscular part of the body.

Kho-kho player possess coordinative ability such as orientation ability, differentiation ability reaction ability, and rhythmic ability. This coordination abilities primarily depends on the motor control and regulation process of controlling nerves system Kho-Kho involves use of all such coordination abilities which helps in metabolic processes to perform physiology.

Muscular System

Muscular system and list of muscles of the human body.

The muscular system consists of all the muscles present in a single body. There are approximately 650 skeletal muscles

in the human body, but an exact number is difficult to define. The difficulty lies partly in the fact that different sources group the muscles differently and partly in that some muscles, such as palmaris longus are not always present.

METHODOLOGY

An attempt is made to find out the difference in performance between the sample sub groups. The sample sub-groups are made based on the criterion of each of the physiological factors test/scales. Accordingly, during the pre-test to access, the performance of chaser and defender is accessed. Among chaser male and female in the performance of pre-test of Kho-Kho game exhibited difference, specifically the mean score (SD) and t-values of physical test (speed, flexibility, endurance, agility, and strength) of chaser and defenders in classified groups of physiological factors are calculated for examining differences in Kho-Kho performances.

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Table with 4 columns: Kho-Kho players, Male, Female, Total. Rows: Chaser, Defender.

Table 1: The r-values between male and female in the performance of Kho-Kho game with respect to physical tests

| Variable | Gender (Chaser) | Strength | Speed | Endurance | Agility | |
|------------------------------|-----------------|----------|---------|-----------|---------|---------|
| Resting hear rate | Male | 0.533** | 0.542* | 0561** | 0.560** | 0.558** |
| | Female | 0.514* | 0.533** | 0.528* | 0.531** | 0.521** |
| Peak heart rate (bpm) | Male | 0.501** | 0.565** | 0.593** | 0.549** | 0.539** |
| | Female | 0.442* | 0.525* | 0.549** | 0.531** | 0.524** |
| Aerobic capacity (mL/kg/min) | Male | 0.538** | 0.625* | 0.570** | 0.529** | 0.530** |
| | Female | 0.518* | 0.5292* | 0.536** | 0.515** | 0.518** |
| Red blood cells | Male | 0.747** | 0.762** | 0.648** | 0.541** | 0.528** |
| | Female | 0.695** | 0.671** | 0.626** | 0.529** | 0.531** |
| Hemoglobin | Male | 0.762** | 0.736** | 0.767** | 0.629** | 0.518** |
| | Female | 0.714** | 0.660** | 0.736** | 0.617** | 0.519** |

**Significant at 0.01 level

Table 2: The r-values between male and female in the performance of Kho-Kho game with respect to physiological factors

| Variable | Gender (Chaser) | Strength | Speed | Endurance | Agility | |
|------------------------------|-----------------|----------|---------|-----------|---------|---------|
| Resting Hear rate | Male | 0.502* | 0.525* | 0.512* | 0.554** | 0.542** |
| | Female | 0.402* | 0.518* | 0.502* | 0.516* | 0.509* |
| Peak heart rate (bpm) | Male | 0.524** | 0.541** | 0574** | 0.538** | 0.521** |
| | Female | 0.514* | 0.505* | 0.512** | 0501* | 0.503* |
| Aerobic capacity (ml/kg/min) | Male | 0541** | 0.614** | 0.552** | 0.520** | 0.502* |
| | Female | 0.522** | 0.571** | 0.532** | 0.498* | 0.496* |
| Red blood cells | Male | 0.652** | 0.745** | 0.628** | 0.526** | 0.501* |
| | Female | 0.542** | 0.696** | 0.598** | 0.510* | 0.478* |
| Hemoglobin | Male | 0.641** | 0.712** | 0.742** | 0.619** | 0.502* |
| | Female | 0.620** | 0.642** | 0.703** | 0.598** | 0.496* |

**Significant at 0.01 level

RESULTS

Table 1 gives r-value between male and female in the physical test performance of Kho-Kho players. It shows that the Kho-Kho performance of players sample is correlated with gender (male/females). The r-value between male and female with respect to all physical tests is all significant, this clearly indicates that there is significant correlation between slight differences amongst male and female players in Kho-Kho game. These differences are seen at all the physical tests. Thus, male holds a little than female priority.

Table 2 gives r-values between male and female in the physiological test performance of Kho-Kho players. It shows that the Kho-Kho performance of players sample is correlated with gender (male/female). The r-values between male and female with respect to all physical tests are all significant, the clearly indicates that there is significant correlation between slight difference among male and female players in Kho-Kho game. These differences are seen at all the physiological tests. Thus, male holds a little priority than female.

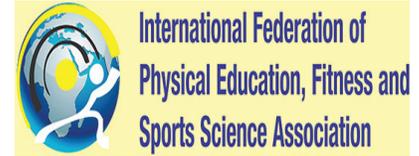
CONCLUSIONS

1. There is a significant different in players of Kho-Kho game being chaser and defender.
2. The players with low strength have displayed weaker performance in the entire physical test.
3. High strength and speed players showed better performance in the form of their counterpart.
4. There is a significant effect of physiological variable on anxiety.
5. There is a significant effect of physiological variable on flexibility.
6. Gender has slight effect on performance of players in all physical tests.
7. There is significant correlation between psychological factors and all physical tests.
8. There is significant correlation between chaser and defender and all physical test.
9. A person pre-test shows border line pulse heart rate, same layer exhibits par excellent pulse heart rate in post-test.
10. A person who plays Kho-Kho game can boost up his RBC

production which, in turn, fluctuates the value from lower to higher hemoglobin levels.

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Research Article

Fitness ability between handball and basketball players

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ABSTRACT

Speed and endurance are important components that require in every game for the improvement of performance. Endurance is one of the components for fitness, speed is also another components such muscle reaction with quick alteration of contraction and relaxation of muscles. Speed performance cannot be difference between speed and endurance of handball and basketball players of university level. The total 30 samples university level handball and basketball players were selected divided in two equal groups of 15 each.

Keywords: Speed, Endurance, Handball, Basket ball etc.

INTRODUCTION

Speed and endurance are important components for physical fitness in every game for improvement of performances. The game of handball is similar and it involves the speed and endurance to attempt the score. Many of these involving kicking a ball with the foot to score a goal. Where it requires the speed and endurance in handball game. Basketball similarly basketball in a quick reaction time to secure basketing within shortest possible time by maintaining speed and endurance.

Objectives

The objectives of the study are as follows: To assess the speed ability of the university level handball players. To assess the speed ability of the university level basketball players. To calculate the endurance for the university level handball players. To calculate the endurance for the university level basketball players. To compare the speed and endurance among the handball and basketball players separately.

Delimitation

The study was conducted on the student of Aurangabad University the age range of 21–25 and the male players only selected for this study.

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Limitation

The study could not control the underlying variables such as injuries, sickness, or tiredness, physical and social environment was considered as limitation.

Hypothesis

There is a significant difference in speed between handball and basketball players. There is a significant difference in endurance between handball and basketball players.

Significance of the Study

The study may help for the trainers in relation to motor components. –

METHODOLOGY

The purpose of the study was to see the comparison of speed and endurance among handball and basketball players. Those have participated at university level. The criterion measures speed 50 – and endurance 12 min run and walk.

Statistical Analysis

To obtain the mean performance of the samples is in descriptive method, to determine the significance difference between the group mean of the criterion measures t-test was employed.

RESULTS

The data collected from the two groups handball and basketball group of 30 players, the data were analyzed using t-test to game the mean difference of speed and endurance of two groups that is handball and basketball. The level of significance to the t-test ratio was at 0.05 level which is appropriate. Comparison of speed and endurance between handball and basketball players. Variables Speed Endurance Handball Basketball Handball Basketball Mean 6.61 8.41 2088.8 1982.32 SD 1.24 1.08 397.3 412.53 t-value 4.89 3.61 **Significant at 0.05 level.

Findings

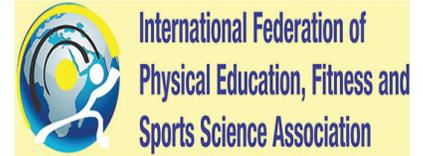
The findings of the data were observed that in speed, basketball players are better than the handball players in case of speed. It is observed that the handball players are having more endurance comparison to basketball players.

CONCLUSION

Within the limitation of the study concluded that the mean performance in speed of the university level basketball players is better than the handball players. The mean performance in endurance of the university level handball players was found significant than the basketball players.

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Research Article

Influence of socioeconomic status and achievement motivation among Kho-Kho players

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ABSTRACT

The socioeconomic status changes from one society to another as per the social qualities held by that society. The influence of inspiration on the accomplishment of athlete has a rich exploration custom that gives bits of knowledge. The study the influence of socioeconomic status and achievement motivation among Kho-Kho players at different levels. There is huge distinction in both avoiding and Kho-Kho performance between the two samples groups of SES: High SES player have displayed significantly higher Kho-Kho performance than their counterparts.

Keywords: Socio economic status, Achievement motivation, Kho-Kho players etc.

INTRODUCTION

The socioeconomic status changes from one society to another as per the social qualities held by that society. What is more, thus, the meaning of socioeconomic status is explicit to a general public. Socioeconomic status incorporates the twin idea of social class and economic foundation. Social class in an agricultural nation like India is a restrictive idea and deciding element of socioeconomic status. Once on a time in India, when the caste system was the prevailing order the society, social status was largely determined by the caste or sub-caste to which one belonged to but now that the caste barriers are losing their significance and caste is not playing as dominant role as it once did. Social class as a caste becomes indistinguishable. However, the other concept, the economic status, is more definable in terms of certain definite material aspects that could easily be measured by forgettable means.

Achievement Motivation

The influence of inspiration on the accomplishment of athlete has a rich exploration custom that gives bits of knowledge. The use of sports rivalry is perhaps the most widely recognized achievement scenario in sport, but achievement also occurs in non-serious

situations when people compare their performance to individual criteria. For example, a sprinter may define time objective for acquiring runs or a tennis player may lay out the objective of getting 80% of the main serves. As a component of human brain research, inspiration determines a person's effort, drive, and achievement in his profession. Not only can the mechanics of sports activity inspire an individual to attempt genuinely, but they also give an abstract individual importance to his interest. Competitors with comparable power are regulated differentially. This is because the differences in their motivation cause individuals to perceive the significance on their work differently.

METHODOLOGY

Statement of the Problem

The study the "Influence of socioeconomic status and achievement motivation among Kho-Kho players at different levels."

Objectives

The objectives of the study are as follows:

1. To survey the influence of SES on the performance of Kho-Kho players.
2. To review the influence of accomplishment inspiration on the performance of Karnataka State Kho-Kho players.

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Hypothesis

1. There is an importance influence of accomplishment inspiration on the performance of Karnataka State Kho-Kho players.
2. There is a huge influence of SES on performance of Kho-Kho players.
3. There would be significant differences in Kho-Kho performance of three age groups.

RESULTS

Table 2 presents mean, SD, and t-upsides of Kho-Kho performance in two degrees of SES. It tends to be seen that the mean score of high SES players is 8.18 in avoiding and the mean score of low SES bunch is 5.43. This plainly uncovers that the performance of high SES uncovers that the performance of high SES bunch is higher than that of low SES. The t-worth of 8.90 is huge at 0.01 level which shows that there are huge contrasts in evading, between two gatherings of SES. Therefore, the Kho-Kho performance is significantly influenced by the SES the player belongs to. It is the higher SES level that produces significantly different performance by way of providing more avenues to players that makes more skillful and achieveistic. On the contrary, a player with low SES is deprived of all amenities and hence performs significantly low in the given Kho-Kho play.

Table 3 gives mean, SDs, and t-value of Kho-Kho performance in two categories of achievement motivation. It can be observed that players with high motivation have higher mean score (8.20)

Table 1: Sample's distribution

| SES | Seniors | | Juniors | | Sub-juniors | | Total |
|-------|---------|--------|---------|--------|-------------|--------|-------|
| | Male | Female | Male | Female | Male | Female | |
| High | 25 | 25 | 25 | 25 | 25 | 25 | 150 |
| Low | 25 | 25 | 25 | 25 | 25 | 25 | 150 |
| Total | 50 | 50 | 50 | 50 | 50 | 50 | 300 |

Table 2: Mean, SD and t-values of Kho-Kho Performance in two levels of SES (N=300)

| SES | Dodging | Score |
|---------|---------|--------|
| High | | |
| M | 8.18 | 7.02 |
| SD | 2.51 | 1.60 |
| N | 150 | 150 |
| Low | | |
| M | 5.43 | 5.43 |
| SD | 1.6 | 3.02 |
| N | 150 | 150 |
| t-value | 8.90** | 4.07** |

**Significant at 0.01 level

than those of low achievement motivation (1.88) in dodging. This reveals that high achievers have higher performance than the low achievers. The t-values of 19.13 are significant at 0.01 level that indicates significant differences between the two sample subgroups in dodging. Thus, achievement motivation is a strong factor in increasing the Kho-Kho performance. Similarly high achieving players have scored significantly higher points (7.02) than their counterparts (1.90). The t-value of 13.47 is significant beyond 0.01 level. Therefore, the results highlight the fact that achievement motivation is a key factor in attaining higher goals in the competitive tasks. The highly motivated players are always goal oriented, have more clarity, commitment, and persistence. As a result of this, they generally surpass their counterparts in any sports activity.

Table 4 presents mean, SD, and t-values of Kho-Kho performance in three levels of age groups. It can be observed that the mean score of sub junior (below – 14 years) players is 4.81 in dodging and the mean score of Junior (n-18 years) players is 4.59 in dodging and the mean score of Senior (above 18 years) players is 8.02. This clearly reveals that players belonging to Group-II have higher mean scores in dodging followed by Group-I. The acquired t-upsides of 1.40 and 1.26 are huge at 0.01 level which show that there are critical contrasts in avoiding among II and III, and I and III, age gatherings. Therefore, the Kho-Kho performance is significantly influenced by the age group the players belonging to.

Therefore, age of players is an important factor in determining higher performance in Kho-Kho. It is believed that players belonging to age group of 14–18 years have relatively more energy, zeal, and enthusiasm comparatively than those of other two groups of age. The determination, commitment, and concentration appears to be more in the age group of 14–18 and hence, there is more sports skill and efficiency in the players of this age group.

Table 3: Means, SDs, and t-values of Kho-Kho performance in two categories of achievement motivation (N=300)

| Achievement Motivation | Dodging | Score |
|------------------------|---------|---------|
| High | | |
| M | 8.20 | 7.02 |
| SD | 2.52 | 1.59 |
| N | 150 | 150 |
| Low | | |
| M | 1.88 | 1.90 |
| SD | 0.855 | 3.03 |
| N | 150 | 150 |
| t-value | 19.13** | 13.47** |

**Significant at 0.01 level

Table 4: Means, SD's and t-values of Kho-Kho performance in three categories of age

| Age | Dodging | Score |
|------------------------------------|---------|-------|
| Below-14 (Group-I) (Sub Juniors) | | |
| M | 4.81 | 4.59 |
| SD | 3.53 | 3.95 |
| N | 100 | 100 |
| t=values (1 and 2) | 0.16 | 0.57 |
| 14-18 (Group-II) (Juniors) | | |
| M | 4.92 | 4.22 |
| SD | 3.73 | 3.05 |
| N | 100 | 100 |
| T=values (2 & 3) | 1.40** | 0.82 |
| 18 and above (Group-III) (Seniors) | | |
| M | 4.01 | 3.74 |
| SD | 2.70 | 2.76 |
| N | 100 | 100 |
| t=values (1 & 3) | 1.26* | 1.25* |

*Significant at 0.05 level. **Significant at 0.01 level

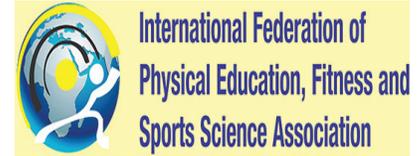
Similarly the performance of age Group I is significantly higher than those of 18 plus years of age. The age Group I has relatively higher energy and enthusiasm than the age Group III. Thus, the results highlight the fact that lower age group players have displayed higher Kho-Kho performance.

CONCLUSIONS

1. There is huge distinction in both avoiding and Kho-Kho performance between the two samples groups of SES: High SES player has displayed significantly higher Kho-Kho performance than their counterparts.
2. The lower age group players have performed significantly higher in both dodging and scoring.
3. The psychological factors such as achievement motivation and self-confidence are found to produce significant differences in both dodging and scoring, despite the effect of SES is held constant.
4. The psychological factors such as achievement motivation and self-confidence have produced significant differences in dodging and scoring when the effect of gender is held constant.

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Research Article

Effect of functional stability training on core strength and explosive power among intercollegiate Kabaddi players

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ABSTRACT

The purpose of the study was to find out the effect functional stability training on core strength and explosive power among inter collegiate Kabaddi players. Twenty-four inter collegiate Kabaddi players studying from GCPE College of Physical Education, Hyderabad were selected randomly as subjects. The age of the subjects ranged from 21 to 28 years. The selected subjects were divided into two groups. Group I underwent functional stability training and Group II acted as control. The experimental group (functional stability training) was subjected to the functional stability training for alternative 3 days for up to 4 weeks. It was found that there was a significant improvement and significant different exist due to the effect of functional stability training on core strength and explosive power.

Keywords: Core strength, Explosive power, Functional stability etc.

INTRODUCTION

Functional stability training is a new program to an integrated rehabilitation and performance training system. To function properly, our body needs to be strong and mobile, but control and stabilization of this mobility is often less than optimal. Unfortunately, stabilization is often overlooked in the design of rehabilitation and performance programs. Traditional program design relies too much on stretching what is tight and strengthening what is weak. We are missing the boat on stabilization and its effect on enhancing optimal movement patterns.

Functional training prepares an athletes for his or her sport. It does not use one sport train an athlete for another sport. Many collegiate strength programs are based on this premise. Functional training uses many concepts developed to improve speed, strength, and power to improve sport performance and reduce incidence of injury. The reason behind the functional training revolution can be found in the preceding definition of functional training. Functional training makes sense – not only to coaches but also to athletes.

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In its simplest form, functional training teaches athletes how to handle their own body weight. The coach uses body weight resistance and attempts to employ positions to make sense to the participant. Functional training intentionally incorporates balance and proprioception (body awareness) into training.

Gambetta and Gray (2002) state, “Functional training program needs to introduce controlled amounts of instability. So that the athlete must react to regain their own stability. “By design, functional training progresses to single – leg movements that require balance and to these movements performed with gradually increasing instability. Surfaces such as grass, artificial turf, or ice do not provide a consistent, stable platform on which to perform. The ability to display strength in conditions of instability is actually the highest expression of strength.

Functional training is a system that encourages the training of balance and the balancing of training. It is characterized by actions such as squatting and lunging or the pushing and pulling. Functional training is best described as continuum of exercises that teach athletes to handle their own body weight in all planes of movement. Experts emphasize that functional

Table 1: Mean and dependent “t” test of experimental and control groups on selected variables

| Variables | Mean | Functional stability training | Control group |
|-----------------|----------------|-------------------------------|---------------|
| Core strength | Pre-test mean | 94.17 | 93.5 |
| | Post-test mean | 95.50 | 93.5 |
| | “t” test | 9.38* | 1.00 |
| Explosive power | Pre-test mean | 84.08 | 84.8 |
| | Post-test mean | 85.17 | 84.8 |
| | “t” test | 7.29* | 1.00 |

*Significant at 0.05 level of confidence (11) = 2.201

Table 2: Analysis of covariance of experimental and control groups on selected variables

| Variables | Adjusted post-test means | | Source of variance | SS | df | Mean squares | ‘F’-ratio |
|-----------------|-------------------------------|---------------|--------------------|------|----|--------------|-----------|
| | Functional stability training | Control group | | | | | |
| Core Strength | 95.13 | 93.9 | Between | 9.22 | 1 | 9.22 | 54.16* |
| | | | Within | 3.57 | 21 | 0.170 | |
| Explosive Power | 85.42 | 84.49 | Between | 5.13 | 1 | 5.13 | 129.36* |
| | | | Within | 0.83 | 21 | 0.040 | |

*Significant at 0.05 level of confidence, df (1,21) = 4.32

training trains movement no muscle. There is no emphasis on overdeveloping strength in a particular movement; instead, emphasis is on attaining a balance between pushing and pulling strength and between knee dominant hip extension (quadriceps and gluteus) and hip – dominant hip extension (hamstring and gluteus).

METHODOLOGY

To achieve the purpose, 24 inter collegiate Kabaddi players studying from GCPE College of Physical Education, Hyderabad were selected randomly as subjects. The age of the subjects ranged from 21 to 28 years. They were assigned randomly into two groups (Group I) underwent functional stability training and (Group II) acted as control of 12 subjects each. The experimental group was subjected to the functional stability training during morning hours for 3 days and Group II acted as control. The functional stability training was selected as independent variable and the criterion variables core strength and explosive power were selected as dependent variables and the selected dependent variable were assessed by the standardized test items. Core strength was assessed by core stability strength test and the unit of measurement in seconds, and explosive power was assessed by vertical jump test and the unit of measurement in meters. The experimental design selected for this study was pre- and post-test randomized design. The data were collected from each subject before and after the training period and statistically analyzed using dependent “t” test and analysis of covariance (ANCOVA).

RESULTS AND DISCUSSIONS

The data pertaining to the variables in this study were examined using dependent “t” test to find out the significant improvement and analysis of covariance (ANCOVA) for each variables separately to determine the difference and tested at 0.05 level of significance. The analysis of dependent “t” test on data obtained for core strength, and explosive power of the pre-test and post-test means of experimental and control group have been analyzed and presented in Table 1.

The obtained “t” ratio value on core strength and explosive power of experimental group is higher than the table value, it is understood that the functional stability training has made significant improvement on core strength and explosive power. However, the control group has not made significant improvement as the obtained “t” value is less than the table value; because it was not subjected to any specific training. The analysis of covariance on the data obtained on agility and balance due to the effect of functional stability training and control groups has been analyzed and presented in Table 2.

Table 2 shows that the obtained “F” ratio value is 54.16 and 129.36 which are higher than the table value 4.32 with df 1 and 21 required to be significant at 0.05 level. Since the obtained value of “F” ratio is higher than the table value, it indicates that there is significant difference has made among the adjusted post-test means of functional stability training group and control group on core strength and explosive power. The functional stability training may influence the significant difference on core strength and explosive power.

CONCLUSIONS

- The functional stability training had significantly improved the core strength and explosive power. There was significant difference among the adjusted post-test means of functional stability training and control group on core strength and explosive power.

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Research Article

International sports events coverage, social media, Facebook, TikTok, Instagram, Twitter, and differences in official sports events as well as athletics website including other sports events

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ABSTRACT

In this present era, the social media is very active in all aspects of life as well as in all sports events held every year in different continents in the word such as Facebook, Instagram, Twitter, and TikTok. we cannot denied the role of social media not even in International Sports events but also can be seen in local events too nowadays. Since the implementation of Title IX, there have been significant gains in the area of equity between men's and women's sports events Instituted in 1972, Title IX has leveled the playing field by offering the same amount of opportunity for women as men. Deficient media coverage in female sports is a less examined and recognized issue among various types of Title IX violations in collegiate sports. The study examined if there was equal coverage between men's and women's basketball, cricket, as well as football programs on the athletic department's webpages and social media websites. The collected data included traffics for the athletic website, Facebook, and Twitter pages of South-eastern Conference institutions. The findings indicated that there was slightly more men's coverage than women's (53% vs. 47%). Among those 14 schools, eight schools had more content coverage for their men's team. Only six women's programs received more official website coverage than their male counterparts. The exact tendency also occurred regarding the number of total Twitter posts. The analysis of Facebook posts displayed an unexpected result, as 13 schools had more posts related to women's teams than men's teams. The results tended to support the vital promotional role that social media may play to increase the awareness and popularity of women's sports. In general, the schools' official website still maintained an accepted coverage proportion toward both genders without heavily gravitated toward men's teams. Practical implications are addressed for better utilizing social media to promote women's sports and maintain gender equity in media coverage.

Keywords: Social media, Facebook, Twitter, TikTok, Whatsapp

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INTRODUCTION

Since the enactment of Title IX in 1972, this legislation has empowered and inspired many women and young ladies

to pursue and embrace higher education, often including athletic participation.^[4,11,21] However, until today, the gender equity concern and lack of support toward female collegiate athletic sports are still ongoing and hard-pressed issues. Conventionally, the issues associated with gender inequity in collegiate athletics are often related to discrepancies in budget, support, and available facilities for both men's and women's programs.^[1,13,14,20,21] While the institutions are trying to achieve gender equity for their programs, the traditional social gender stereotypes, glorification of men's sports by media, and ill-interpretation of the Title IX legislation have all become part of the stumbling blocks.^[20]

Unbalanced Media Perspective and Coverage on Female Sports Events

Title IX may be put in place to ensure that institutions provide financial equality for both genders' programs, but it does not have any authority or jurisdiction to control people's perception of how to view both gender sports more fairly. There has always been differentiation in the way male and female athletes are depicted in mass media. Mass media is shape our perceptions and cultural values through sport.^[21] Past research has documented that popular media coverage of sport contributes to and reinforces gender's stereotypes that perpetuate male superiority and female inferiority in sport.^[13] Under the lens of media, female athletes are more likely to show their feminine attributes and beautiful appearance.^[2,5] The image of strong and powerful female athletes and tom girl expression is often suppressed.^[5]

Female athletes are not only feminized, but their athletic achievements are also trivialized. Many studies clearly indicate that female sports received significantly far less television broadcasting hours, radio air time, and newspaper coverage space as compared to men's sports.^[2,13,26] An examination of the cover photographs of college sports media guides revealed their two sets of data, in a 7-year time frame, the percentage of female athletes on covers had increased from 47% (n = 144) to 51% (n = 160).^[5] While their findings might suggest that gender equity within coverage has to improved, this improvement occurs at a superficial level. The total amount of female athletes' images at the courtside had decreased from 51% to 41%, as did their images in an action pose. More than 61% of the cover pictures featured female athletes dressed like fashion models, rather than an athletes.

Examination of past media coverage of the National Collegiate Athletic Association basketball tournament shows that the men's tournament garners far more coverage time than the women's tournament.^[2] In 2006, USA Today dedicated 21,069 square inches to covering the men's and women's 2005–06 NCAA basketball tournaments. The news coverage focused on three areas: (1) Completed bracket release, (2) information on Sweet 16/Elite Eight teams, and (3) final four/Championship

coverage. The percentage of total coverage space of the women's tournament in all three areas was 24.4%, 14.6%, and 25.2%, respectively (7). A content analysis of covered stories in sport magazines (i.e., Sports Illustrated) revealed that a ratio of the total amount of male and female coverage was about 12:1 (9). Even if female athletes do receive a feature article, it is substantially shorter than those about their male counterparts and the pictures often contain a strong sexual appeal (9). The analysis of college baseball and softball team websites showed that the baseball team has been given more written coverage than softball (9). It also received more timely coverage in updated scores and statistical information. While the extent of inequities has varied, the underlying trend in the past content analysis clearly shows that female sports are significantly underrepresented and emphasized.^[18]

In general, an explanation for the large discrepancy in coverage between the two gender's sports team is that the media must cater to the needs of the public. This means that it must provide more coverage of the men's sports favored by the audiences.^[12] By trivializing and marginalizing female sports, the media may unintentionally reinforce the notion that women's sport is the lesser version of men's sport.^[5] The shortcoming of this lack of media coverage may discourage females from participating in sport. Young women oftentimes may not be able to identify the necessary role models to inspire them in achieving sport excellence.^[9]

Social Media and Collegiate Athletics

Many athletic administrators may worry about the issue of student-athletes' inappropriate use of social media, which potentially can stir up controversies, scandals, and risk for potential violations.^[6] Nevertheless, the benefits of social media in marketing, brand building, and instant community have outweighed any of the concerns and problems that social media may impose. Due to the constant urgency of increasing department revenue, intercollegiate athletic programs have actively utilized social media to sell tickets and engage fan participation.^[3] One click away, social media is considered to be the most economical and fastest interactive tool to communicate with and reach massive college sport fans and grasp their cultural values and interest. University of Utah, North Dakota, Duke University, Boston College, and Louisiana State University all experienced great success in using Facebook, Twitter, and YouTube to disseminate promotional information, blogs, game statistics, and featured stories.^[3,22] University of Utah has boasted to selling more than 500 tickets within 2 h through its athletic Facebook page; and North Dakota was able to increase its average student attendance six-fold (from 144 to 960) by crediting the use of social media.^[22] Many schools also sought support from Public Relations firm to develop apps and social media strategies for teams.^[10] Ohio State University is the clear frontrunner in the Big Ten Conference, when it comes to "Likes" on Facebook.^[23] More than one million responses that were

posted on the university's official Facebook page in 2011 alone. It was noted that those schools in the Power Six conferences are all using social media to combat the "disappeared rivalries" that are caused by the conference realignment.^[3]

Purpose

Past literature clearly indicated that gender equity was lagging behind in the coverage of both genders' sports. Conventionally, men's sports often receive far more attention and dominate much of the coverage time and space. With the rise and development of social media, these tools seem to be an ideal solution to combat gender inequity in sport media coverage, because they could pervasively reach out to the targeted spectators more economically and effectively. This study examined the equity of social media coverage (more specifically Twitter and Facebook posts) of men's and women's basketball on the official school websites and official social media sites of all South-eastern Conference (SEC) affiliated institutions. The authors attempted to address the following research concerns. First, are the institutions' websites in the powerful SEC conference heavily lopsided in covering male sports. Second, will the social media posts and articles affiliated with the official athletic websites show a similar tendency? And finally, how did the number and trend of social media posts reflect the marketing and promotional strategies of each current SEC affiliated institution? The results would not only determine if the women's teams receive an adequate amount of media attention and coverage, they may also provide the necessary and practical information to help all institutions effectively promote their women's sport programs.

METHODS

The authors decided to analyze the official athletic social media sites of all South Eastern Conference (SEC) affiliated institutions, because it is one of the most successful conferences in the NCAA with highly reputable and decorated programs in both football and basketball. The analyses specifically focused on the posts on the athletic department's official webpage, Facebook page, and Twitter page of both men's and women's basketball teams. Both genders' basketball programs had a strong basketball tradition, with a couple of schools that had won the National title multiple times (i.e., University of Kentucky and University of Tennessee). Furthermore, both men's and women's basketball are the most popularly attended collegiate sporting event behind football. There should be a substantial amount of followers of social media sites that are denoted to men's and women's basketball, thus making the analysis more relevant and meaningful. As for the records, the SEC had seven men's team who finished with 20 wins or more and eight teams were invited to a post-season tournament (three in the NCAA, 4 in the National Invitational Tournament, and 1 in the College Basketball Invitation), in 2014. The women's teams were even more impressive with seven teams with 20

wins or more and 11 teams made the post season play (eight in the NCAA and three in the National Invitational Tournament).

Procedure

All featured articles and posts written about each of the men's and women's teams were counted and recorded at the end of the month from October 1, 2013, to April 30, 2014, which covered the basketball season. The authors recorded all of those articles and posts from three sources that are found on each institution's official athletic website: (1) The official webpages of the basketball team, (2) the team's official Facebook page, and (3) the team's official Twitter page. Facebook posts were particularly large in volume. The total number of recorded articles and posts for both the men's and women's teams were further compared for the gender equity concern.

RESULTS

Among all 14 SEC institutions, about 53% of the total articles ($n = 2518$) on the official athletic websites were related to men's basketball, while only 47% ($n = 2331$) were written for the women's teams. Four schools had more featured articles for the women's team than their male counterparts. However, the two schools, Florida (312 for men's vs. 142 for women's) and Missouri (201 for men's vs. 153 for women's) with excessively more articles for their men's basketball teams tended to skew the equity quotient. Although there are more featured articles on the official athletics website for men's team are more, this difference did not reach the significant level ($P > 0.05$).

When data were collected, Vanderbilt University and University of Missouri did not have a team specific Facebook webpage for the men's team, and University of South Carolina did not have Facebook page for either gender. In terms of results from the Facebook pages and Twitter pages, every men's team had more followers than women's teams on both accounts. However, the total number of posts for women's programs ($n = 1369$) were more than those for men's programs ($n = 916$). There are significantly more Facebook posts for women's teams than the men's teams ($t = 2.160$, $P < 0.05$). Thirteen universities' women's Facebook pages had more posts than the men's pages. University of Arkansas was the only program that had more posts on the men's Facebook page than the women's page. Interestingly, the powerful University of Kentucky men's team had 77 times more subscribers than the women's program, yet, only had half of the amount of posts for the women's.

In terms of the post volume, Twitter undoubtedly had become a more popular form of social media than the Facebook in this case. Although there were men's teams that had more monthly tweets than women's teams, the total of among of tweets for all women's programs ($n = 31,279$) were greater than those for the men's programs ($n = 28,091$), despite that the men's programs had 3.7 times more Twitter followers. However, no

significant gender difference was found in the total number of tweets. Successful women's teams are particularly impressive in receiving social media attention. University of South Carolina women's team had 3728 more tweets than their men's team. Tables 1 and 2 illustrate the summaries of total feature articles and posts from the official websites and social media pages. Readers can find the further monthly break down of social media posts of each institution in

DISCUSSION AND CONCLUSION

According to an anonymous unpublished article, certain schools with a strong basketball tradition, such as North Carolina, clearly had far more featured stories on its official athletic website. Small regional public universities' athletic websites seem to abide to the gender equity rule better by providing very similar amount of articles for both genders. With the exceptions of Florida and Missouri, most of the SEC schools did not show gross disproportion of men's coverage. Surprisingly, the authors originally anticipated a greater number of tweets and Facebook posts for men's teams due to their popularity and greater amount of subscribers and followers. The findings were completely opposite, with more tweets and posts for the women's teams.

The total amount of Facebook posts proved to be in favor of the women's teams with large discrepancies in the number in each month. The total tweets for women's teams were also slightly more than those for the men's teams. These two findings suggest a strong implication regarding how social media can market and promote female college sports and reshape their underprivileged brand image. There are still college sport fans who are interested in women's sports and care to share more news and information about their beloved female athletes. In light of this data, more women's sport fans would attend sport events as social and family gathering.^[4] Fans of female athletes preferred to read featured stories about athletes' personal lives more than the statistical information about athletic performance. Social media is a great means to connect a large audience, share great stories, and send invitational messages with great efficiency and low cost. Collegiate athletic departments should consider having full-time staff or recruiting enthusiastic individuals to manage their social media pages. In addition, the marketing team must work to brand the women's sporting events as entertaining family and social gathering events for students and community members. Failure in promoting women's sports and targeting potential fans of women's sports is certainly an unnecessary financial loss of the institution's program, and marketing myopia of the athletic marketing administrators.^[8,24]

Applications in Sports

Obviously, both the men's and women's programs can benefit from social media tremendously in terms of boosting sales

and sharing game related information. According to the results of the present study, a few schools (i.e., both schools in Mississippi, Vanderbilt, and South Carolina) are still at the infancy stage in utilizing social media to market athletic events. The number of followers and engaged traffic were clearly far lower for these schools than other SEC institutions. These schools should be the ideal candidates to adopt Public Relations strategies or hire partners to help increase the awareness of their programs via social media.^[17]

In today's society, the media has the power to showcase female athletes and bring them to the spotlight in prime time. Female athletes have remarkable accomplishments that really deserve mainstream media to show their respect. Although the true gender equity in broadcasting coverage has not been achieved in mainstream media (TV and radios), it seems that social media is the ideal means to balance that inequity by giving women's sports more channels and space to disseminate and deliver news, information, and actions.

It is important to note the limitations within this study to guide future research on this topic. Since this study only examined one NCAA conference's social media activities, applying the generalized findings to all other major NCAA Conferences should be cautious. Future research may focus on comparing the social media activities and featured posts on the official athletic websites among other NCAA Division-I Conferences or other divisions. Further studies may also cover a longer period of time or examine data of another sport that both cater men's and women's teams.

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Research Article

A study on muscular endurance comparison between handball and basketball players

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ABSTRACT

The purpose of this study was to compare Handball with Basketball players in terms of muscle endurance. A total of 60 ($n = 60$) subjects were selected for data collection from Handball and Basketball. Age ranges from 16 to 28 years old. Two tests, namely, the YMCA push up, and curl up, were conducted to collect data. Following data collection, the data were subjected to statistical analysis using advance Microsoft Excel. According to the findings, there is no significant difference in muscle endurance among the subjects studied. The results are displayed using appropriate figures.

Keywords: Basketball, Handball, Muscular endurance, YMCA push up

INTRODUCTION

Handball and basketball are the indoor games. It is played all over the country. The game Handball and basketball are very simple in nature, easy to organize, and little expensive. There seems immense potentiality to cater to the needs of health, fitness, and recreation of people of all walks of life in the society, with minimum cost, time, and equipment. Performing the game comprises a combination of task components, which should be taken care of. It is the lack of facilities and lack of research in the field of sports performance that most often deter the Indian athlete to come close to the world-class level of performance. Performance is being influenced by a number of factors.

Muscular endurance is the ability to continue contracting a muscle, or group of muscles, against resistance, such as weights or body weight, over a period of time (medical news today, 2021).

In a way, muscle endurance is a combination of strength and endurance. It describes how long you can maintain a high level of muscle activation and still perform without fatigue.

Therefore, muscular endurance training has little effect on the strength or size of the muscle. Both handball and basketball place severe demands on their bodies, therefore, it is essential for players to have muscular endurance support from the start to the finish of the match.

METHODOLOGY

Selection of Subjects

For the present study, a total of 60 ($n = 60$) subjects were selected from both handball and basketball. The selected subject's ages ranged between 16 and 28 years and participated in state, national, south zone, and all India interuniversity competitions. The study is restricted to the male category and Dakshinakannada district only.

Selection of Test Items

The muscular endurance was evaluated using two test, namely, the YMCA push up, and curl up.

YMCA push up

For push up, test has no time limit. It is performed in a continuous fashion and requires the subject to maintain a straight back at all the times. This test is stopped when proper technique connate be maintained for two consecutive repetitions. The total number of repetitions is then used to tabulate the score.

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Curl up

Whereas, this curl up test which assesses abdominal muscular endurance is commonly conducted in the exercise physiology laboratory. It has time limit of 60 s where the subjects should perform maximum repetitions within a given time where require cadence. The total number of repetitions is then used to tabulate the score.

Statistical Analysis

The selected data were analyzed by calculating mean, standard deviation, and *t*-test using advance Microsoft Excel.

RESULTS AND DISCUSSION

Figure 1 shows the mean, standard deviation, and *t*-value of the push up test. The mean values of handball and basketball are 53.105 and 69.421, respectively. The standard deviation is 18.764 and 22.867, it indicates that values are generally far from the mean distribution. The *t*-value is 2.012, which is lower than the *t*-critical value. Hence, the researchers conclude that there is no significant difference in the upper body muscular endurance between selected games (Figure 2).

The mean, standard deviation, and *t*-value of the curl-up test are shown in the graph. Players of handball and basketball have mean values of 45.475 and 61.947, respectively. The standard deviations are 9.13 and 13.607, accordingly. It indicates that values are far from the mean distribution. The *t*-value is 5.122, which is greater than the *t*-critical value. Hence, the researchers conclude that there is a significant difference in upper body muscular endurance between selected games.

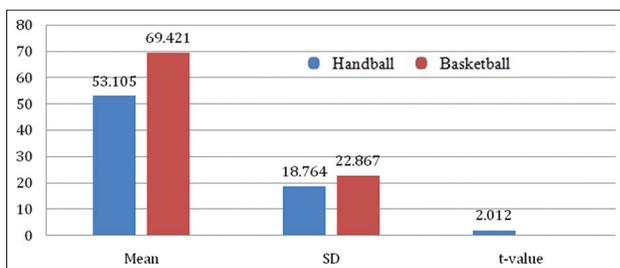


Figure 1: Comparison of the upper body muscular endurance between handball and basketball players

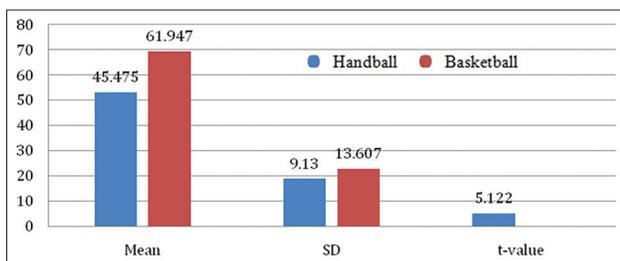


Figure 2: Comparison of the abdominal muscular endurance between handball and basketball players

DISCUSSION ON FINDINGS

The purpose of this study was to compare handball and basketball players muscular endurance. We discovered that there is no difference in the upper body muscular endurance based on the findings above. The reason for this could be that both games are combat sports. Maintaining upper body strength is necessary for competitive success, and the training strategy for developing muscular endurance is the same. However, there is a considerable variation in abdominal muscle endurance among the selected subjects. To improve their performance, handball players must maintain strong balance, equilibrium, and stability, so they always train the abdominal region as well as core muscles.

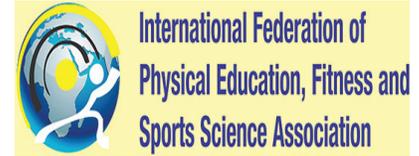
CONCLUSION

Researchers conclude that there is no significant difference in the upper body muscular endurance based on the findings. Although both game participants have the same level of upper-body muscular endurance, there is a difference in abdominal muscular endurance. Compared to handball players, basketball players have more abdominal muscular endurance.

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Research Article

Effect of fartlek training on the performance of long-distance runners of Gulbarga district

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ABSTRACT

The objective of this study is to study the effect of Fartlek training on the performance of long-distance runners of Gulbarga District which will be helpful to coaches and trainers to enhance the performance. The sample for the present study consists of experimental Group I N = 15 and controlled Group II N-15 of Gulbarga District. Fartlek training was given to experimental group on alternate days for 8 weeks along with general training to control group. Pre-test and post-test were conducted on Cooper test run to assess the performance of both the groups. This study shows that the experimental group has got rapid improvement due to Fartlek training compare to control group. It is concluded that due to fartlek training, there is an improvement in performance.

Keywords: Athletes, Endurance ability, Fartlek training, Long distance runners, Performance ability

INTRODUCTION

Long-distance running or endurance running is a form of continuous running over distances of at least 3 km (1.9 miles). Physiologically, it is largely aerobic in nature and requires stamina as well as mental strength. Among mammals, humans are well adapted for running significant distances, and particularly so among primates. In modern human society, long-distance running has multiple purposes: People may engage in it for physical exercise, for recreation, as a means of travel, for economic reasons, or for cultural reasons. Long-distance running can also be used as a means to improve cardiovascular health. Running improves aerobic fitness by increasing the activity of enzymes and hormones that stimulate the muscles and the heart to work more efficiently. Endurance running is often a component of physical military training and has been so historically. Professional running is most commonly found in the field of sports, although in pre-industrial times foot messengers would run to deliver information to distant locations. Distance running can also

serve as a bonding exercise for family, friends, colleagues, and has even been associated with nation-building. The social element of distance running has been linked with improved performance. In the sport of athletics, long-distance events are defined as races covering 3 km (1.9 miles) and above. The three most common types are track running, road running, and cross country running, all of which are defined by their terrain – all-weather tracks, roads and natural terrain, respectively. Typical long-distance track races range from 3000 m (1.87 miles) to 10,000 m (6.2 miles), cross country races usually cover 5–12 km (3–7½ miles), while road races can be significantly longer, reaching 100 km (62 miles) and beyond. In collegiate cross-country races in the United States, men race 8,000 or 10,000 meters, depending on their division, whereas women race 6,000 m. The Summer Olympics features four long-distance running events: The 3000 m steeplechase (which also involves jumping over barriers and water), the 5000 m, 10,000 m and marathon (42.195 km, or 26 miles and 385 yards). Since the late 1980 s, Kenyans, Moroccans, and Ethiopians have dominated in major international long-distance competitions. The high altitude of these countries has been proven to help these runners achieve more success. High altitude, combined with endurance training, can lead to an increase in red blood cells, allowing increased oxygen delivery through arteries. The majority of these East African

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successful runners come from three mountain districts that run along the Great Rift Valley.

Fartlek, which means “speed play” in Swedish, is continuous training with interval training. Fartlek runs are a very simple form of a long-distance run. Fartlek training “is simply defined as periods of fast running intermixed with periods of slower running. “For some people, this could be a mix of jogging and sprinting, but for beginners, it could be walking with jogging sections added in when possible. A simple example of what a runner would do during a fartlek run is “sprint all out from one light pole to the next, jog to the corner, give a medium effort for a couple of blocks, jog between four light poles and sprint to a stop sign, and so on, for a set total time or distance.” The variable intensity and continuous nature of the exercise places stress on both the aerobic and anaerobic systems. It differs from traditional interval training in that it is unstructured; intensity, and/or speed varies, as the athlete wishes. Fartlek training is generally associated with running, where it is also called “wind sprints,” but can include almost any kind of exercise.

Pardeep Kumar Assistant Professor, Department of Physical Education, Jet College, Rohtak, Haryana, India (2015) study was to effect of fartlek training for developing endurance ability among athletes. Thirty athletes between the age group of 18–24 years (15 experimental group and 15 control group) were selected for the study. The 6 weeks endurance training program for experimental group was specific to experimental group which contains more sand training on alternate days and controlled group was given general training of athletics. The pre-test and post-test were proficient through Cooper test for both group to estimation the effects of sand running. This study explains that the sand training has increased the endurance between the experimental groups along with physiological capacity of the athletes. It is optional that sand training is fine for the endurance development of athletes.

Objectives of the Study

The objective of the study is to find out the effect of Fartlek training on the performance of long-distance runners of Gulbarga district.

Hypothesis

It was hypothesized that there would be significant difference in Fartlek training on the performance of long-distance runners of Gulbarga district.

MATERIALS AND METHODS

The subject for this study is N = 30, college level athletes of Gulbarga District between the age group of 18–23 years (N = 15 experimental group and N = 15 control group) were chosen for the study. Cooper’s 12 min test is used for collection of data.

Tool

Cooper 12 min/run test.

Purpose

To find the endurance ability.

RESULTS AND DISCUSSION

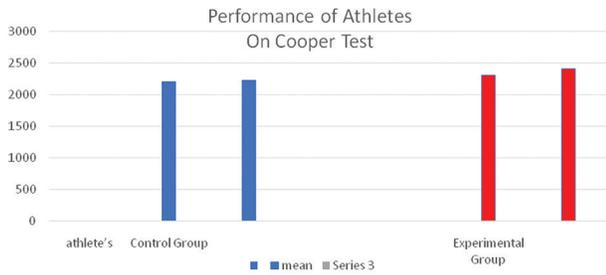
The experimental group and the controlled group were given pre- and post-tests to see if there was an improvement in endurance after 8 weeks of Fartlek training, while the controlled group received general training.

t-test

The analysis of the data reveals that the subjects with the Fartlek training have shown improvement in the performance of Cooper test from pre- to post-test mean standard deviation experimental group pre-test result shown (2313.2000) and controlled group (2200.7331) after 8 weeks of specific of Fartlek training there is an improvement in the subject’s experimental group (2410.1333) Fartlek training, and controlled group (2224.9333).

The above graph clearly shows the performance of athlete’s pre-test and post-tests, The Blue bar represents the control group shown the no improvement in the Cooper test in other side red bar shown the significance improvement in the Cooper test after the fartlek training for 6 weeks.

| Paired samples statistics | | | | |
|---------------------------|-----------|----|--------------------|---------------------|
| Cooper test athlete’s | Mean | N | Standard deviation | Standard error mean |
| Control group | | | | |
| Pre-test | 2200.7331 | 15 | 102.13893 | 26.63030 |
| Post-test | 2224.9333 | 15 | 102.67933 | 25.51172 |
| Experimental group | | | | |
| Pre-test | 2313.2000 | 15 | 54.45602 | 14.06448 |
| Post-test | 2410.1333 | 15 | 76.96044 | 20.13931 |



CONCLUSION AND RECOMMENDATION

As for the practicality of this study which may applied when designing the effective fartlek training programmed for young athlete, I clearly mention that the fartlek training has shown excellent effect in the improvement endurance. Coaches will be able to analyzed the results and be able to enhance the future performances. At such feedback is very crucial for the improvement in performance athlete. I concluded the assessment process can be conducted every 3 months and 6 months to update the progress of players performance

and to ensure that it is up to date with the players training needs requirements. It is recommended that coaches assess their player’s performance on a regular basis to ensure better compliance with the training program. The aim of formulating the effect of fartlek training exercise to betterment and enhance their performance as well as guide line for athlete coaches at various level in preparing and designing quality and effective training program.

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Research Article

Effect of resistant band training on lower limb muscular strength of basketball players of Gulbarga University

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ABSTRACT

Demand for the time of basketball match increasing due to the highness of the prodigious sports training inventions. Acclimatize to the demand of the competitions needs training modifications to tolerate high level pressure and fatigue during the match. The objective of this study was to find out the effect of resistant band training on the lower limb muscular strength of basketball players. To achieve the purpose 30 (N = 30). Basketball players were selected from Gulbarga University Karnataka and their age was ranged between 18 and 24 years. The subjects were divided at random into two groups of 15 each, Group I underwent resistant band training (n = 15, 50–60 min/day/4 days/week over the period of 8 weeks), and Group II acted as control group (n = 15) Muscular strength was assessed by Half Squad test. Data were collected on Half Squad before and after the training period and were subjected to statistical treatment using analysis of 't' ratio for dependent group. In all the cases 0.05 level of confidence was fixed to test the significance. Within the limitations set for this study, it was concluded, that the experimental group was significantly improved lower limb muscular strength than the control. Resistant band training shows better effect (F = 3.88*) than the control group. Hence, it was recommended that includes of resistant band training during medium and long duration match may supports to the players to improve physiological status, ability to tolerate different positional demand, and reduce monotonous.

Keywords: Resistance band, Muscular strength.

INTRODUCTION

Basketball is a team sport in which two teams, most commonly of five players each, opposing one another on a rectangular court, compete with the primary objective of shooting a basketball (approximately 9.4 inches (24 cm) in diameter) through the defender's hoop (a basket 18 inches (46 cm) in diameter mounted 10 feet (3.048 m) high to a backboard at each end of the court, while preventing the opposing team from shooting through their own hoop. A field goal is worth two points, unless made from behind the three-point line, when it is worth three. After a foul, timed play stops and the player fouled or designated to shoot a technical foul is given one, two or three 1-point free throws. The team with the most points at the end of the game wins, but if regulation play expires with the score tied, an additional period of play

(overtime) is mandated. Players advance the ball by bouncing it while walking or running (dribbling) or by passing it to a teammate, both of which require considerable skill. On offense, players may use a variety of shots – the layup, the jump shot, or a dunk; on defense, they may steal the ball from a dribbler, intercept passes, or block shots; either offense or defense may collect a rebound, that is, a missed shot that bounces from rim or backboard. It is a violation to lift or drag one's pivot foot without dribbling the ball, to carry it, or to hold the ball with both hands then resume dribbling.

The five players on each side fall into five playing positions. The tallest player is usually the center, the second-tallest and strongest is the power forward, a slightly shorter but more agile player is the small forward, and the shortest players or the best ball handlers are the shooting guard and the point guard, who implements the coach's game plan by managing the execution of offensive and defensive plays (player positioning). Informally, players may play three-on-three, two-on-two, and one-on-one.

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Resistant Training

Resistance training is any type of physical activity in which is use the muscles against resistance. Which can be use different type of resistance training, such as resistance bands and tubes, free weight such as dumbbells, machines (or) even the own body weight and can even do some exercise in the pool (www.besthealthnag.com).

Muscular Strength

Muscular strength is the ability of a muscle the most or muscle resistance group to in exert one force effort to overcome (www.readfiningsregth.com). Resistance band training: Resistance band training is a form of muscular strength exercise. Usually, resistant band training sessions may vary from 8–10 exercises. These short and intense workouts provide improved athletic capacity and strength condition, improved glucose metabolism, and improved fat burning. Hence the purpose of the -study was to find out the effect of soccer specific high intensity and low intensity aerobic training on lower limb of muscular strength.

METHODS

To achieve the purpose 30 (N = 30) basketball players were selected from university of Gulbarga, and their age was ranged between 18 and 24 years. The subjects were divided at random in to two groups of 15 each, Group I underwent resistant band training (n = 15, 50–60 min/day/3 days/week over the period of 8 weeks), and Group II acted as control. Exercise starts from 12 repetition and three sets of the maximum ratio of respective training. Four, five, and six repetitions rules were implemented in every 2 weeks and one set was also implemented after 4 weeks. Lower limb muscular strength was assessed using Half squad test. Data were collected on lower limb muscular strength before and after the training period and were subjected to statistical treatment using analysis of 't' ratio for dependent group. In all the cases, 0.05 level of confidence was fixed to test the significance. When the obtain 'F' ratio was significant.

Justification for Selection of Training Method

Speed, power, agility, and muscular strength are essential to the positive and quality participation of an athlete in the sport. These are improved upon and enhanced through the use of this resistance training program. Muscular strength is improved upon through the use of muscles, lateral walk, knee extension, and hip external rotation. This will benefit the athlete to be trained and able to perform those high intensity and explosive movements that are required during the game. Such as jumping for the ball, kicking the ball, passing the ball, and challenging for the ball with an opponent on the field. All of this exercise will improve an athlete's muscular strength through hypertrophy, and the reduce repetitive tearing and fast repairing of muscle cell and tissues. It will also improve the capacity of a muscle to work at its maximum capacity for the duration of the game and be able to compete physically in the game. If the athlete wants to see improvements, they should train with a 4-min

break between their sets and they must remain hydrated for the duration of the session and the time that is after the session. The program must be completed to at least two sets of each at a minimum requirement. If the athlete wants to push their body, they could add one more set to the number but no more because it can cause unwanted fatigue and exhaustion in the muscles. This can lead to an increased risk of injury because form can disappear and the potential for injury from this can increase.

RESULTS

Table 1 showing descriptive statistics and obtained "t" results.

Table 2 showing description statistics and obtained "t" results.

The results presented in Table 2 showed that the pre-test mean value of the lower limb muscular strength (M: 61.1332) was improved to 70.1000, respectively. After 8 weeks resistant band training mean difference of 9.0666. The obtained 't' value of 3.882 was greater than the required 't' value of 2.28. Hence, it was proved that there was significant improvement in the lower limb muscular strength of university level basketball players due to resistant band training.

DISCUSSION

The common conclusion of the research findings is that as number of low number of repetitions and sets are decrease the muscular strength during the periods. However, the muscular endurance also partially influences in muscular strength. In the present study, resistant band training improves muscular strength. A variety of variety of resistant band training and traditional resistance training have been designed to train metabolic systems essential to basketball players. These mainly target on the development of the muscular strength. Many athletes attribute their success to resistance training. With the spacing of exercise and rest periods, a tremendous amount of work can be accomplished that would not normally be completed in a workout in which the exercise was performed continuously. Repeated exercise bouts can vary from a few seconds to several minutes or more depending on the desired

Table 1: Value on control group of basketball players

| Test | Mean | MD | SD | 't' |
|-----------|---------|--------|--------|-------|
| Pre-test | 61.0 | 3.8666 | 0.2582 | 2.171 |
| Post-test | 65.0663 | | | |

*Significant at 0.05 level of confidence

Table 2: Value on lower limb muscular strength of basketball players due to resistance band training

| Test | Mean | MD | SD | 't' |
|-----------|---------|--------|--------|-------|
| Pre-test | 61.1332 | 9.0666 | 1.3019 | 3.882 |
| Post-test | 70.1000 | | | |

outcome. The resistance training prescription can be modified in terms of resistance and duration of the exercise interval, the length and type of relief interval, the number of work intervals, and the number of repetition blocks or set per workout. It was concluded that every individual has different level of fitness, which may change from time to time, and it may change with work or situation also. Physical fitness variables are very important to basketball player and form a condition for higher performance. Mal stated that the components of physical fitness such as strength, speed, endurance, flexibility, and the various coordinative abilities are essential for a high technique and tactical efficiency. Depending on the demand of the game, each factor of physical fitness should be optimally developed. The present study reveals that there was a significant difference on the lower limb muscular strength between the resistance band training group and control group, due to the effect of 8 weeks of resistance band training.

CONCLUSION

Hence, it was concluded that resistance band training is essential to improve lower limb muscular strength as well as ability to tolerate muscular fatigue.

RECOMMENDATION

Resistance band training may support to the players to improve physical and physiological status, ability to tolerate different positional demand and reduce monotonous.

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Research Article

Influence of genes on sports

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ABSTRACT

Gene is the basic structural and functional unit in fact it is a vehicle to carry hereditary traits. Sports and genes are like heart and beat. When genes express the sports like activities such as all bodily movements are regulated. Everybody possess a large verties of genes. A single gene express single protein which in fact causes activation for specific activity. Hence, it can be said gene express single character. There are some specific genes which works together in group in a healthy sportive body. Such genes are further transferred to their off spiring. Thus, a volleyball champion's son has those specific genes which were produced in father once on a time and transferred to son as a lovely legacy.

INTRODUCTION

The present paper is focused on two concepts of genes; one is the presence of specific genes in body which favors the body to develop into a sportive body.

Another is the importance of sports in making genes to switch on and off according to a sportsman's wish. This shows that gene can be tamed, replaced, and exchanged in a sportive body as some genes are confined to sports activities.

MATERIALS AND METHODS

Materials

Variety of sports related genes such as:

- Gene responsible for muscle builds up and quick movement ath is ACTN3.
- The protein alpha acitin 3 of ACTN3.
- Mutated RS 77 \times gene from ACTN3.
- APOE gene and its protein produced.
- Myostation growth factor.
- Insulin like growth factor 1 (IGF-1).
- Enzyme phopphoenol pyruvate carboxyl kinase (9 pepck-c).
- Erythropoietin.

Methodology

The first concept means human body harbors already special genes for special activities in sports such as elite athletic, sprinters, and gymnasts, several evidence shows that there are large number of special sports genes in body by birth but as time passes they express proteins that cause the body to exhibit it in board ways, once such example is Mac Arthur's coauthor professor Kathryn North was studying people with neuromuscular disease in the hope of finding a cause if not a cure. Later, he focused on a gene caved ACTN3, which is already found in small organisms to human beings, ACTN3 controls the production of protein in muscles. This gene producers alpha actinin - 3 found in which muscles, the type that are predominantly used to make powerful movements such as sprinting and jumping.

Everyone has to copies of ACTN3 but some people have a variation which is known as RS 77 \times . This variant stops muscle cells from reading the entire code of ACTN3; therefore, if a person has two copies of R5 77 \times , it means that they cannot produce the protein alpha actin - 3 at all yet 18% of people cannot make this protein another gene called ACTN2 helps compensate for the deficiency.

When more than 100 elite athlete's DNA is sequenced who were involved in swimming, skiing and compared here champion's DNA with the normal person, the maximum genes were similar but sports seated genes were opposite to each other, endurance athletes generally had a deficient version of both the above genes.

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- It shown that lacking functioning copies of ACTN3 actually benefit slow, efficient muscle performance but power and sprint athletes have two fully functioning copies of ACTN3, thus, ACTN3 becomes speed gene.
- Genetics has reached upper hand in sport to such an extent that the forth coming champion can be well screened before he/she become champion through gene sequencing. The rare individuals need to have a near perfect set of genes to have a chance of winning an Olympic medal. The ACTN3 gene appears to have a particularly strong effect on sprinters.
- Sprinters need to have a chance of competing at an Olympic level. Hence, now a day, gene napping will help in assessing the speed gene, if speed gene is not present in a sportive body, could never become an Olympic sprinter no matter how hard the person many be trained.
- In the same way, soccer gene is found in soccer player by birth and as the time passes, it switch on and express its potency. The gene identification through sequencing of ACTN3 is done by collecting the saliva sample with a mouth swab. Another gene APOE is well expressed in boxers than anyone which is also connected to nervous system activities.
- The day is not so far champions are selected before Olympics being as they have the winner genes in the body, just need to activate by touch of training.

Myostatin

Myostatin is the growth factor that acts as a brake on muscle development. High ratio of Myostatin secreted will make less muscle development; hence, when a such gene is mutated (Manipulated) then there would not be limit development. Thus, it is helpful in body builders.

Insulin

IGF-1 is the hormone most responsible for regulating cell growth and development. An athlete with abundant IGD-1 and related hormones and regulates will be tall; useful for basketball players.

Over expression of a gene for the enzyme phosphoenol pyruvate carboxyl kinases (pepck-C) is modified as result less lactic acid and fat burning will be more as a result an sportsman can run 6 h treadmill non-stop at high speed.

Erythropoietin

Erythropoietin is an hormone regulates the member of red blood cells. When such gene is altered the EPO receptor enables blood cell to carry higher levels of oxygen, similar to blood doping. It helps in increase of cardiovascular stamina.

A variant of the bradykinin beta 2 receptor gene (BUKBR2) has recently been linked to the ability to run long distance in Olympic standard athletes.

Quantitative genetics is one such branch were in genes are evaluated at higher level for their potency. Sports activities are innate and acquired, innate is one brought in legacy by forefathers and acquired one is by training. The innate behavior toward sports. When begged by training may produce innumerable Olympic athletes in the future so the screening of such genes is mandatory. Genes account typically for half of the variation in performance between individual. Heredity determines at least half the variation in the response to training. It said that always good leaning is half done so, the genes with specific ability toward sports are seen by birth and when trained a bit may makes a miracle in sports. Thus, heredity (genes) may be even more important in athletes, because an athlete's ability to sustain high training loads without over training is probably inherited.

Easy to Listen, Hard to Digest

Failure to win is not necessarily failure to train right, you can always blame genes, amongst other things.

Genotyping of prospective athletes will become an option when performance or injury genes have identified, but many regard the practice as unethical.

If you want your kids to be great, athletes marry a great athlete.

There is always evidence that genes make a contribution to performance. The exact contribution is well known using technology that is coming on track through the human genome project.

Unethical refers to the abuse of drugs or other forms of cheating. However, cheating with the use of DNA markers to identify an elite athlete is not where concern as its just searching own ability in own body. When DNA marker are used in medicine, life-saving programs to identify diseases, causes, and treatment then why not DNA markets to find a best champion among. However, a coaching career well not last long if the coach select athletes only on the bases of DNA, but a coaching career might flouriest if the coach gets ahead of rivals by adding DNA information to other selection criteria and good tracing.

Role of Diagnostics in Sports

- Some people are born to play football, genetically screening for potential football stars are in practice now. Sports performance gene test helps in selection that normally specialties in paternity testing and genetic technologies.
- With the help of recombinant technology and molecular biology the term gene therapy is denoted, which seems to be a boon for sportsman in increasing longitivity of organs even after continuous it is employed as follows.
- A sportsman developing rarely arthritis and commonly muscular dystrophy can be well treated by gene therapy

at any time as the non-functioning gene is replaced by functional active gene.

- Steaming endurance, power, and speed can be increased and maintained by cloning a gene or inducing a gene to young budding sportsman.
- Any disease putting barrier for the most favorite wanted sportsman can be treated through gene therapy.
- Efficiency of protein secretion of hit the target in indoor is outdoors gamer are made by gene therapy.

Role of Sports on Vital Genes

Apart from heredity matters even if the sports are brought in normal life of a layman, it activates almost all genes in body and show the benefits.

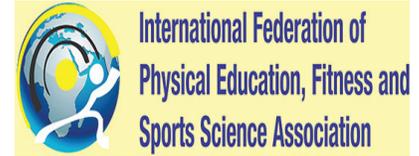
- It increase anabolism and catabolism.
- It elevates hormone level from pituitary glands.
- It increases respiratory, oxygen intake
- It increases basal metabolic rate.
- Genes concerned to gynecological matters are well kept in work when a lady practices sports regularity.
- Sports actives nervous the genes to produce adequate acetyl choline in the central nervous system as a result nerve impulse reaches soon and mental consciousness well be at stable state.
- Sports always helps in calibrating genes as the they are made to work when body is brought in movement as a result proteins and their target receptors works in a regular manner.

RESULTS

- Finally, genes, genetics, heredity, and gene therapy are sum of the buzz words, but perhaps the most exciting era is genetic era in sports which is creating upper hands in the field of sports technology.
- The day is not so far when a layman to induce special sports genes in body and become a champion.
- Constant work on present paper shows that genes play an important role in sports and in turn sports regulate special genes to maximum peak.
- More than training to make sportive body, the body being bestowed with sports genes responds quick and accurately.
- “Lets remember: Genes for sports and sports for genes”

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Research Article

Sports and games: A boon for cholesterol reduction

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INTRODUCTION

The man's participation in physical activity improves the functional capacity of the various systems. Recent studies have shown the significant relationship between the functional capacity of the respiratory system and the physical performance.

During physical exertion, the respiration plays a two-fold part in body, it supplies the oxygen required by the muscles on the hand, and on the other, it serves to keep the acid-base balance of the blood constant within certain narrow limits.

The greatest volume of air that can be inhaled from the resting respiratory level is called the aspiratory capacity which amount to 2–3 L.

Objectives

The objectives of the study are as follows:

- To make a comparative study on similar age group sporting and non-sporting person.
- To show the major differences in the human body with respect to bioclinical reaction during sport
- To make the sport/games not just a hobby but a necessity
- To show the changes in the ratio of high cholesterol low high-density lipoprotein (HDL) cholesterol/HDL level among actively involved, sporting people and literally effortless (sitting) people.

MATERIALS AND METHODS

To carry out the study of drastic differences in varies cholesterol level between sportive and non-sportive similar age group people, it required two groups one group comprising

of five members those who are physically involved in sports such as table tennis, throw ball, badminton, and other outdoor games and other group of four members those are non-sportive, performing their work by spending their time on chair:

1. To know the cholesterol level, 5 mL blood is collected by the means of new sterile disposal by vain-puncture technique
2. The blood is collected in a sterile vials and foiled tightly and allowed clot, to get the serum
3. Serum is then send to one of the most reputed pooja dynastic laboratory for lipid profile of individual sample of both group
4. Lipid profiling involves a verity of important biochemical tests such as blood sugar, cholesterol, HDL cholesterol, HDL Chol/Chol ratio low-density lipoprotein (LDL) triglycerides sGOT, LDH, CPK, and CKMB.

Observations

The impact of the sports carried biochemical reactions such a beneficial way that it shows reducing in blood sugar cholesterol, the basic principal of this reducing is nothing but burning of stored cholesterol and often, gained calories.

Sports make body effective and mind action, whereas sitting completely effortless resting body not only gains it but also put on calories bad cholesterol.

The following table shows various biochemical tests with differences between two group in terms of sports.

RESULTS AND DISCUSSION

By observing the table holding differences specially in cholesterol level, HDL, Chol/Chol ration, LDL, and triglycerides, it is clear that the above reading of lipid profiling is in a controlled normal range in case of sportive person, and the range is higher and uncontrolled range, in non-sportive person.

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| | Blood sugar (normal range 65–110 mg/dL) | Cholesterol (normal range upto 200 mg/dL) | HDL Chol/Chol ratio (normal range 1–5) | LDL (normal range 150 mg/dL) | Triglycordies (normal range 35.165 mg/dL) | VLDL (normal range upto 40 mg/dL) |
|---------------------|---|---|--|------------------------------------|---|---|
| Sportive person | | | | | | |
| 244 | 75 | 177.00 | 3.54 | 101.00 | 132.00 | 26.40 |
| 245 | 68 | 172 | 3.37 | 94.00 | 138.00 | 27.60 |
| 246 | 82 | 181.00 | 3.69 | 112.00 | 102.00 | 20.48 |
| 247 | 100 | 192.00 | 4.00 | 111.00 | 115.00 | 23.00 |
| 248 | 120 | 201.00 | 4.18 | 127.00 | 122.00 | 24.40 |
| Non sportive person | | | | | | |
| 249 | 110 | 249.00 | 5.41 | 171.00 | 164.00 | 32.80 |
| 250 | 129 | 241 | 5.12 | 161.00 | 169.00 | 33.80 |
| 251 | 130 | 200.00 | 4.73 | 117.00 | 201.00 | 40.80 |
| 252 | 152 | 224.00 | 5.04 | 138.00 | 199.00 | 39.80 |

HDL: High-density lipoprotein, LDL: Low-density lipoprotein, VLDL: Very low-density lipoprotein

Thus, there is very less possibility that actively involved person may suffer with obesity, hyper glycemia, arteriosclerosis, and aththerosclerosis as compare to the rest.

CONCLUSION

Since from immenocable time, it is said that healthy mind and soul lies in healthy body and the best way to keep healthy by placing sports in our routine life being and end the day with sports that makes physically, mentally, and emotionally strong, thus finally research on both group reveals.

1. Outdoor games play an prominent role in reducing of cholesterol and sugar without medication.
2. The differences in cholesterol range between two groups even a layman to realize the role of sports in reducing of sugar and cholesterol.

3. Apart from slight exercise body needs bending, stretching and working of each and every muscles to metabolize the bio molecules in an efficient and normal manner.
4. 2 KM walks per day burns above 200 calories and tone up and strength an all types of muscles and makes person mentally confident, if just walk benefits the much then a run in above imaginable

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Research Article

Effects of two different intensity of cardiac rehabilitative protocols on peak expiratory flow rate and stress among coronary artery BAPSS-grafted male patients

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ABSTRACT

Exercise training improves exercise capacity, without significant complications or other adverse effects. Short-term exercise training for patients with coronary artery bypass graft (CABG) showed benefits to cardio respiratory function, muscular strength, metabolic profile, cardiac function, ventilator efficiency, hemodynamic function, and quality of life. During the training period, the experimental group underwent incentive spirometry and breathing exercise walking program period of 12 weeks for all days: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. From these analyses, it is found that the results obtained from the experimental groups had significantly creased on shown that they were improved their normal life after to the surgery and their lung and chest expansion was also improves in patent with CABG training, this is due to all the patient has undergone their protocols in time and as well as fallow the roles and regulation. They were relived from their chest complications, the patient will be free from all, by the way, the patient will be relives from stress and peak expiratory flow rate (PEFR) in the analyses on experimental groups. It is interesting to note that the results obtained that the value of stress from experimental Group II had greater reduction from its higher level to very low level than experimental Group I on the improvement. This is due to the long term exercise protocol in the experimental Groups I and II. It is concluded that the experimental groups had greater improvement in PEFR and stress in the CABG subjects, due to influence of cardiac rehabilitative protocols for a period of 12 week training. Hence, its concluded that that the PEFR rate was increased and stress was reduced from their higher abnormal level to normal level after 12 weeks of training period.

Key words: Cardiovascular disorders, Breathing exercise, Spirometry

INTRODUCTION

Cardiovascular disorders are an important public health problem worldwide. They are also the leading cause of mortality and morbidity in the industrialized world. Exercise training improves exercise capacity, without significant complications or other adverse effects. Short-term exercise training for patients with coronary artery bypass graft (CABG) showed benefits to cardio respiratory function, muscular strength, metabolic profile, cardiac function, ventilator efficiency, hemodynamic function, and quality of life. The worldwide health importance is getting to be more significant in the population. In this, CABG is the intervention to reduce

the symptoms like angina, with improving their cardiovascular fitness. The exercise such as deep breathing exercise and incentive spirometer along with walking will improve cardiovascular and pulmonary endurance and improving their quality of life.

Statement of the Problem: The researcher has decided to take up different combination of packages of cardiac rehabilitative protocols in CABG patients. Hence, the investigator is very much intent to adopt the concept to find out the different packages of cardiac rehabilitative protocols with the variables pulmonary and psychological variables in CABG patients

Selection of Variables: Peak Expiratory Flow Rate (PEFR) and Stress

Experimental design: The subject was selected for this study through the random group design consisting of pre- and post-test, 45 CABG subjects randomly divided into three groups,

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the group was assigned as an experimental Groups II and III and experimental Group I.

Training Schedules and Supplementation

During the training period, the experimental group underwent incentive spirometry and breathing exercise walking program period of 12 weeks for all days.

Statistical Technique

Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups (thirumalaisamy, 2004).

Computation of Analysis of Covariance

The following tables illustrate the statistical results of effects of exercise protocols. Among CABG and ordered adjusted means and the difference between the means of the groups under study.

The following Table 1 illustrated the statistical results of the effects of different intensity of cardiac rehabilitative protocols on oxygen saturation and anxiety among CABG male patients.

Table 1 shows analyzed data on PEFr. The pre-test means of PEFr were 357.93 for experimental Group II, 370.86 for experimental Group III, and 388.67 for experimental Group I. The obtained “F” ratio 0.03 was lesser than the table “F” ratio 3.1. Hence, the pre-test was not significant at 0.05 level of confidence for degrees of freedom 2 and 42.

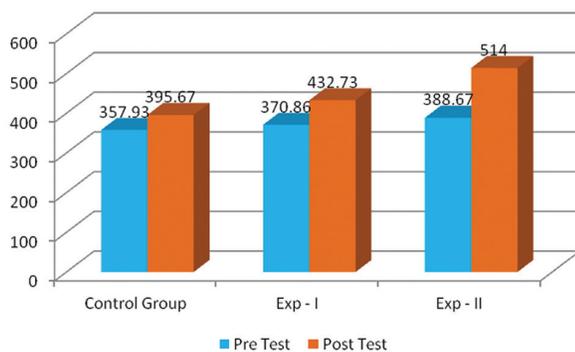


Table 1: Computation of analysis of covariance of PEFr

| Test | Cot .group | Exp-I | Exp-II | SV | SS | DF | MS | OF | TF |
|-----------|------------|--------|--------|----|-----------|----|----------|-------|-----|
| Pre-test | 357.93 | 370.86 | 388.67 | B | 7143.24 | 2 | 3571.62 | 01.67 | 3.1 |
| | | | | W | 89624.00 | 42 | 2133.90 | | |
| Post-test | 395.67 | 432.73 | 514.00 | B | 109904.93 | 2 | 54952.47 | 20.81 | 3.1 |
| | | | | W | 110932.27 | 42 | 2641.24 | | |
| Adjusted | 409.10 | 434.33 | 498.10 | B | 57655.96 | 2 | 28827.98 | 48.60 | 3.1 |
| | | | | W | 24318.294 | 41 | 593.13 | | |
| Mean gain | 37.73 | 61.86 | 125.33 | | | | | | |

*Significant at 0.05 level of confidence for 2and 42 (df) =3.1 and 41 (df)=2.72. PEFr: Peak expiratory flow rate

The post-test means were 86.93 for experimental Group II, 81.47 for experimental Group III, and 106.20 for experimental Group I. The obtained “F” ratio 95.20 was higher than the table “F” ratio 3.1; hence, post-test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42.

The adjusted post-test means were 87.67 for experimental Group II, 80.96 for Experimental Group III, and 105.97 for experimental Group I. The obtained “F” ratio 145.66 was higher than the table “F” ratio 3.1. Hence, adjusted post-test was significant at 0.05 levels for the degrees of freedom 2 and 42.

Barros *et al.* (2010) conducted a study in patient undergoing CABG surgery who have compromised ventilatory capacity during the post-operative period (CABG). Thirty-eight patients who have had CABG have lower respiratory muscle strength after surgery. RMT was efficient in restoring ventilatory capacity in the following parameters at this phase: This group includes maximal inspiratory pressure, maximal expiratory pressure, PEF, and tidal volume.

Since the results obtained from the analysis of covariance in very good agreement with the earlier results, it is worthwhile to mention that experimental Group III (high intensity Training) is one of the better training methods to sustain the PEFr level. This, in turn, helps to be healthy, life style changing to the CABG persons

Computation of Analysis of Covariance

The following Table 2 illustrates the statistical results of effects of exercise protocols among CABG and ordered adjusted means and the difference between the means of the groups under study.

DISCUSSIONS

Discussions and Findings of Stress

Table 2 shows analyzed data on stress. The pre-test means of stress were 9.33 for control Group I, 9.33 for experimental Group I, and 9.40 for control group. The obtained “F” ratio

Table 2: Computation of analysis of covariance of stress

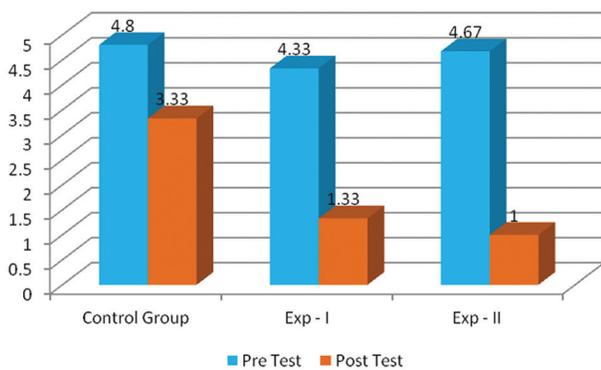
| Test | Exp-I | Exp-II | Exp-III | SV | SS | DF | MS | OF | TF |
|-----------|-------|--------|---------|----|-------|----|-------|--------|-----|
| Pre-test | 4.33 | 4.67 | 4.80 | B | 1.73 | 2 | 0.867 | 2.42 | 3.1 |
| | | | | W | 15.07 | 42 | 0.36 | | |
| Post-test | 1.33 | 1.00 | 3.33 | B | 47.78 | 2 | 23.89 | 115.77 | 3.1 |
| | | | | W | 8.67 | 42 | 0.21 | | |
| Adjusted | 1.36 | 0.99 | 3.32 | B | 44.98 | 2 | 22.49 | 107.86 | 3.1 |
| | | | | W | 8.549 | 41 | 0.21 | | |
| Mean Gain | 3 | 3.67 | 1.47 | | | | | | |

*Significant at 0.05 level of confidence for 2 and 42 (df) = 3.1 and 41 (df) = 2.72.

0.03 was lesser than the table “F” ratio 2.7. Hence, the pre-test was not significant at 0.05 level of confidence for degrees of freedom 2 and 42.

The post-test means were 2.8 for experimental Group I, 1.13 for experimental Group II, and 1.40 for control group. The obtained “F” ratio 21.28 was higher than the table “F” ratio 2.7. Hence, post-test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42. The adjusted post-test means were 2.81 for experimental Group I, 1.14 for experimental Group II, and 1.39 for control group. The obtained “F” ratio 23.39 was higher than the table “F” ratio 2.72. Hence, adjusted post-test was significant at 0.05 levels for the degrees of freedom 2 and 42.

Thomas *et al.* (2001) conducted a study to see how the combined impacts of pulse pressure and heart rate affected cardiovascular mortality in a large French population. Between January 1978 and December 1988, a significant increase in cardiovascular mortality in men is associated with a combined elevation of the two components of pulsatile arterial stress, especially in younger men. In women, steady-state stress (measured mostly by MAP) is a significant predictor of cardiovascular mortality, but not pulsatile stress.



Duits *et al.* (1999) conducted a study on in patients undergoing CABG surgery, the present study is a longitudinal study aiming to investigate structural links between anxiety, depression,

personality, and background factors. The same study was conducted in this study; also, the patient who underwent CABG subjects will have pain in the chest region due to the insertion area. During their regular activities, the chest will be mobilizing; hence, the patient will have difficulty in breathing and it alters their lung volumes also, by giving of this exercise training to the patients, they will be free from their pain and also it will improve their chest mobility and patient will be relieve from the stress too. Since the results obtained from the analysis of covariance in very good agreement with the earlier results, it is worthwhile to mention that high intensity. Training is one of the better training methods to sustain the anxiety level. This, in turn, helps to be healthy, life style changing to the CABG persons

Discussion on Findings of PEFR and Stress

From these analyses, it is found that the results obtained from the experimental groups had significantly creased on shown that they were improved their normal life after to the surgery and their lung and chest expansion was also improves in patent with CABG training, this is due to all the patient has undergone their protocols in time and as well as fallow the roles and regulation. They were relieved from their chest complications, the patient will be free from all, by the way, the patient will be relives from stress and PEFR in the analyses on experimental groups. It is interesting to note that the results obtained the value of stress from experimental Group II had greater reduction from its higher level to very low level than experimental Group I on the improvement. This is due to the long-term exercise protocol in the experimental Groups I and II. It is concluded that the experimental groups had greater improvement in PEFR and stress in the CABG subjects, due to influence of cardiac rehabilitative protocols for a period of 12 week training.

RESULTS

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

1. Experimental groups showed significantly greater increase on PEFR and greater reduction in stress than that control group at the end of 12 week period of time.
2. Experimental Group II showed significantly greater increase on PEFR and greater reduction in stress than that experimental Group I at the end of 12 week period of time.

CONCLUSION

Hence, its concluded that that the PEFR rate was increased and stress was reduced from their higher abnormal level to normal level after 12 weeks of training period.

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