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A comparative study on effect of selected exercises on flexibility and co-ordination of badminton and tennis players

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Abstract
Sports are essentially that aspect of human activity, which strengthens the integration of the body and the mind. Flexibility refers to the absolute range of movement in a joint or series of joints, and length in muscles that cross the joints. Co-ordination is the ability to integrate muscles movement into an efficient pattern of movement. The study was conducted in district Shopian in order to know the impact of selected exercises on flexibility and coordination among tennis and badminton players. It was found that badminton players has shown significant improvement in both flexibility and coordination among the players than tennis players.

Keywords: Tennis, badminton, coordination, flexibility, Shopian

Introduction
The motto of sports, especially, in the international meets is to bring peace and unity among the nations and the prestige and honour of a country depend mainly on the behaviour, culture and dignity of its sports persons. The term "Sports" has been coined from the word "Disport" which means diverting oneself merely for fun or merry making. The primitive uncivilized man used to engage themselves in play and games mostly to kill time and for enjoyment. Sports and games in modern times have taken a definite shape in comparison with the immature and unscientific plays of ancient times. Today sports have got tremendous national value. Today sports are becoming professional; players are earning a lot through games and sports. Sports in recent times are mainly of a competitive in nature, though their procreative values cannot be underestimated or denied. Despite the fighting attitude between the competitors, sports bring the different nations closer and establish brotherhood and friendship between the people of different countries. Sports now-a-days has changed with a lot of characteristics e.g. more scientific and mass oriented, well organized and mostly health directed, elevate mental and physical fitness of the participants, increase mental concentration, bring honour and social dignity to the successful participants. "Physical fitness is one's richest possession, it cannot be purchased, and it has to be earned through a daily routine of physical exercise." Physical fitness is the capacity to carry out reasonably well various forms of physical activities without being unduly tired and includes qualities important to the individual's health and well-being. Many scientific studies over the past twenty years sport the value of regular exercise as a part of a healthy lifestyle. Studies have documented a sedentary lifestyle as risk factor for major degenerative diseases. National Health Statistics indicate that a high percentage of visits of physicians are for vague complaints such as chronic fatigue. In many cases, the cause of fatigue is the lack of regular physical exercise. Regular participation in vigorous exercise increases physical fitness. A high level of physical fitness is desirable for a full, productive life. Sedentary living habits and poor physical fitness have a negative impact on both health and daily living.

Sports are essentially that aspect of human activity, which strengthens the integration of the body and the mind. It is also pointed out in the literature that such performance provides stimulation to the Centre Nervous System to such an extent that the under developed, dead or dying cell will either be rehabilitated or their function will be assumed by other or newly generated cells.

In present era, games and sports have become an integral part of man`s life. In this scientific age, man has landed on the moon and is striving for higher targets in the space. Likewise, in the field of sports science he is trying to achieve a higher performance through critical thinking, scientific training and even through drugs and dopes. Nowadays games and sports is not limited to the self-satisfaction but it has got a wide range of importance. Through games and sports, a nation highlights its prestige on international fronts. That is why so many scientific means and methods are utilized by the sports persons for the great success.

Nowadays the modern physical education has totally changed and given a new mode. It is now recognised as an integral part of education and can no longer be divorced from it. Thousands of boys and girls of Olympic calibre and millions of men and women practiced sport for its own sake.

A person's flexibility refers to the ability of your joint to move through a full range of motion. Having flexibility in your muscle allows for movement around the joint and you can achieve this with a basic stretching work out. Stretching after your work out, when your muscles are warm and pliable, is a great way to increase flexibility and keep your body protected from injuries.

With the advancement of scientific research in field of sports in the last decades of 20th century, the researchers have considered so many things, which are required for high performance in addition to specific skills, body shape and neuro –muscular co-ordination etc. Physical fitness and motor fitness are also essential factors for the purpose.

To be successful in Badminton you need excellent court, speed, and agility, with a good background of endurance. The fitness training for Badminton should focus on speed, agility and endurance, with also strength and flexibility also important.

Training should sport specific, addressing the specific needs of a Badminton player on court training, such as playing games and badminton drills, will provide some fitness benefits, but it need to be supplemented with extra off court training, such as resistance exercise in the Gym and other cross training activities.

Flexibility refers to the absolute range of movement in a joint or series of joints, and length in muscles that cross the joints. Flexibility varies between individuals, particularly in terms of differences in muscle length of multi-joint muscles. Flexibility in some joints can be increased to a certain degree by exercise, with stretching a common exercise component to maintain or improve flexibility.

Quality of life is enhanced by improving and maintaining a good range of motion in the joints. Overall flexibility should be developed with specific joint range of motion needs in mind as the individual joints vary from one to another. Loss of flexibility can be a predisposing factor for physical issues such as pain syndromes or balance disorders. Gender, age, and genetics are important for range of motion. Exercise including stretching often improves flexibility.

Many factors are taken into account when establishing personal flexibility: joint structure, ligaments, tendons, muscles, skin, tissue injury, fat (or adipose) tissue, body temperature, activity level, age and gender all influence an individual's range of motion about a joint.

Individual body flexibility level is measured and calculated by performing a sit and reach test, where the result is defined as personal flexibility score.

Co-ordination

Co-ordination is the ability to integrate muscles movement into an efficient pattern of movement. Co-ordination makes the difference between good and bad performance. The efficiency of skill patterns depend on the interrelation of speed, agility, balance and muscle movements to be performed and see the relationship of each movement to the total pattern. Development of kinaesthetic perception usually allows movements to become rhythmical and efficient.

For any type of work co-ordination is very important. If the organs of the body are weak then the neuro-muscular co-ordination would be affected. This neuro-muscular co-ordination is very important for any physical activities. The neuro-muscular co-ordination of the individual which includes his ability to learn new skills and finally achieve competency in physical activities is essential to all phases of Physical Education.

Material and Methods

The data pertaining to this study was collected on twenty (20) Badminton and twenty (20) Tennis players of various colleges of J and K.

Sampling Procedure

Simple Random sampling (SRS) method was adopted for the selection of 40 players.

Following fitness variation were chosen for this study.

- Flexibility
- Coordination

The data pertaining to this study was collected on twenty Badminton and twenty Tennis players of GDC Shopian of J and K by administering Sit and Reach Test, Shoulder Elevation Test, Eye-Hand Co-ordination Test and Eye-Foot Co-ordination Test. The Pre-test data was collected before training programme and Post-test data was collected immediately after training programme.

Objectives

1. To study the flexibility among selected players of badminton and tennis players in Shopian District.
2. To study the coordination among selected players of badminton and tennis players in Shopian District.

Hypothesis

1. There is no significant difference between in flexibility of badminton and tennis players.
2. There is no significant difference between coordination of badminton and tennis players.

Result and Discussion

The student's't'-statistical technique was employed to determine the difference in the performance between pre-test and post-test means of each group. The difference was found to be significant by t-ratio, and tabulated't' value was observed to access the significant difference between the two means.

The student's' test was employed by using the following formula.

T= $\frac{DM}{SE}$ where as DM =difference of means

SE= Standard error

DM= $\overline{X}_1 - \overline{X}_2$

$$\text{Standard error} = \sigma^2 \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

$$\text{Hence t-test} = \frac{\overline{X_1} - \overline{X_2}}{\sigma^2 \sigma^2 \sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Significance of mean difference in flexibility and co-ordination between pre-test and post-test of experimental group

Group	Mean	S.D.	MD	SE	T-ratio
Pre-test	206.22	30.66	33.37	10.25	3.255@
Post-test	239.59	17.63			

@significant at 5% level of significance
Tabulated $t_{0.05(19)}$=1.729

If calculated't' is greater that the tabulated 0.05 the there is a significant diffidence between the means of two test performance of group. Therefore null hypothesis is rejected and can be stated that flexibility and co-ordination among selected players has been improved by doing some selected exercises. With the help of selected exercises in week training course, the selected players flexibility and coordination has improved and has proved statistically. This clearly states if the players has to give selected training course for some duration of time their flexibility and co-ordination among players is increasing day by day. Therefore it is recommended there should be a couch for players either for badminton or for tennis, in both the cases that will help them to do some exercises in a retune basis and in a correct manner. So that their flexibility and co-ordination will improve that is very necessary for player to win the games.

Significance of mean difference in post-test between control group and experimental group

Group	Mean	S.D.	MD	SE	T-ratio
Control Group	211.34	18.48	28.25	7.24	3.90@
Experimental Group	239.59	17.63			

@significant at 5% level of significance
Tabulated $t_{0.05(38)}$=1.645 Calculated 't' is =3.90 >tabulated t at 5% level of significance =1.645

If calculated't' is greater that the tabulated value at 5% level of significance. Therefore null hypothesis is rejected and alternative hypothesis is accepted and concluded that there is significant difference in the flexibility and co-ordination among players between control group and experimental group. The composite mean value of experimental group has improved by doing selected exercise in six weeks. The impact of training course ids clearly seen if we compare the mean values of both the groups before and is statistically found significant at 5% level of significant.

It was found that mean of pre-test and post-test of control group is not significant. That means result was same before six weeks and after six weeks of daily normal exercises. Daily normal exercises have not increases their flexibility and co-ordination among players in this group of players.

It was found that mean of pre-test and post-test of experimental group is significant. That mean impact of training course of selected players has improved their flexibility and co-ordination among players within six weeks of regular selected exercises.

It was found that the post test of experimental group and control group has got significant mean difference. This clears states that within six weeks of doing selected exercises by the selected players in experimental group have increasing their flexibility and co-ordination. While as players in control group their mean values has not improved significantly.

It has been observed from the result of the finding of this study that the experimental group had shown significant improvement in flexibility and coordinative ability compared to control group. It may be because of due to nature of regular exercise programme. The regular selected exercise programme might have developed the muscle tone, joint mobility and neruo-muscular coordination. Hence a significant improvement in the performance has shown the selected subjects.

Conclusion

Selected exercises improved the Flexibility and Co-ordination of Badminton players significantly. The Tennis players which engaged in selected exercises did not show significant improvement in Tennis Performance. However badminton players has shown significant improvement in both flexibility and coordination among the players

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