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IMPACT OF STRENGTH TRAINING PACKAGES ON SELECTED PHYSICAL FITNESS COMPONENTS AMONG TENNIS PLAYERS

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ABSTRACT:

The study was designed to investigate "Impact of strength training packages on selected physical fitness components among tennis players". To achieve the purpose of this study 30 male college level tennis players, who represented their respective colleges in Inter-Collegiate tournaments, were randomly selected from Bharathidasan University, Tiruchirappalli.The age group of the subjects was between 18 and 25 years. They were divided into two groups. The group I was considered as experimental group and group II was considered as control group. The investigator did not make any attempt to equate the group. The experimental group was given training for the period of six weeks of strength training. The following criterion variables were chosen namely speed, muscular strength and endurance. All the dependent variables were assessed before and after the training period of six weeks. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference at 0.05 level of confidence was fixed to test the level of significance differences.

KEYWORDS: *Physical fitness components,Speed, Muscular Strength, Endurance, Tennis and Training packages.*

INTRODUCTION

Today, tennis is a world-class competitive sport attracting millions of players and fans worldwide. Since early ages tennis players travel and compete extensively year round, with, for example, tournaments on the junior calendar numbering 397 in 118 countries (***USTA, 2002***). Success in tennis depends on several physical, technical/tactical and psychological factors, and in order to be competitive, players require a mixture of speed, agility, and power combined with medium to high aerobic and anaerobic capacity (***Fernandez-Fernandez et al., 2009***). Although performance cannot be defined by one predominant physical attribute, strength and power seem to be influential in tennis performance, with functional links observed between muscular strength in the dominant lower and upper extremities and ranking in competitive tennis players (***Girard and Millet, 2009; Kraemer, et al., 2003***).Strength training for tennis involves the upper and lower body in a highly specified training routine to isolate the muscles used for playing tennis. Strength training for tennis involves strengthening the upper and lower body for maximum performance on the tennis court. Tennis strength training requires a highly specified training routine to isolate the muscles used for playing tennis. As recently as the

famously shunned working out in the gym.To keep himself fit, he would just play as many matches as possible including a lot of doubles. He could get away with this because his talent for the game was simply out of this world (***John McEnroe.,1980***).

The importance of strength training for tennis cannot be emphasized enough. Obviously, a strong player is also one who is able to hit the ball harder. Aside from power, ball control can also be improved. This is because proper stroke mechanics can be more easily learned if the muscles and joints are well-conditioned. Another crucial reason why strength training for tennis is now mandatory for competitive players is that it helps protect against injuries. Tennis is a sport that places a lot of repetitive stress on certain joints like the shoulders, elbows and wrists. The trunk and back are strenuously worked out with all the twisting and coiling involved in hitting serves and ground strokes (***Ivan Lendl,1980***).

Training is a programme of exercise designed to improve the skills and to increase the energy capacity of an athlete for a particular event, therefore training is essential for the development of physical fitness components (***William and Sperryn,1976***).

Sports training is the process of sports protection based on scientific and pedagogical principles for higher performance(***Singh,1991***).Training means a systematic scientific programme of conditioning exercise and physical activities designed to improve the physical fitness and skills of the players or athletics participated. Training means preparing for something for an event or reason of athletic competition, a nursing carrier or operative performance of military combat, much growth and change occur during training.

Strength training is the use of resistance to muscular contraction to build the strength, anaerobic endurance and size of skeletal muscles. There are many different methods of strength training, the most common being the use of gravity or elastic/hydraulic forces to oppose muscle contraction. See the resistance training article for information about elastic/hydraulic training, but note that the terms "strength training" and "resistance training" are often used interchangeably.

There are different methods of specific training programmes available for the development of speed, muscular strength level, endurance and cardio respiratory endurance to their maximum. The basic scientific principles and guide lines for constructing an effective conditioning programme.Since there are specific principles and guidelines that must be and bored to in order for optimal training adaptation to take place.Training programme should be designed to suit the specific energy sources need for specific event or contest.

The training process acts as a means of improvement of sports performance. In order to ensure fast development in every individual the physical education teachers, the coaches and the instructors must possess a thorough knowledge of the improvement aspect of sports training (**Walter**, ***1969***).

PURPOSE OF THE STUDY

The purpose of the study was to find out the impact of strength training packages on selected physical fitness components among tennis players.

METHODOLOGY

To achieve the purpose of this study 30 male college level tennis players, who represented their respective colleges in Inter-Collegiate tournaments, were randomly selected from Bharathidasan University, Tiruchirappalli. The age group of the subjects was between 18 and 25 years. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (n=30) were randomly assigned two equal groups as strength training group and control group in an equivalent manner. The strength training group participated for a period of six weeks for alternate three days in a week and the post- tests were taken. The variables such as speed were measured using 50 meters run was selected, muscular strength were measured using Push-ups test was administered to measure the muscular strength and endurance were measured using 12 minutes run / walk test was selected to test the endurance. To find out the difference between the two groups analysis of co-variance (ANCOVA) was used.

RESULTS AND FINDINGS

The purpose of the study was to find out the impact of strength training packages on selected speed, muscular strength and endurance were analyzed and presented below.

COMPUTATION OF MEAN, STANDARD DEVIATION AND ANALYSIS OF COVARIANCE OF SPEED ON EXPERIMENTAL AND CONTROL GROUPS

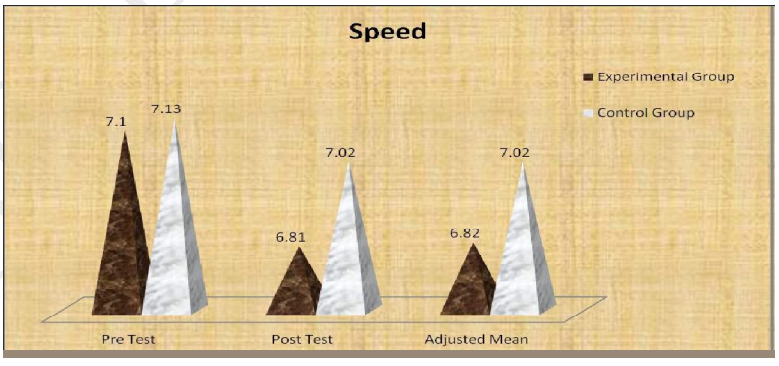
Test	Strength training group		Control group	Sum of variance	Sum of squares	df	Mean square	F ratio
Pre test	Mean	7.10	7.13	Between groups	0.005	1	0.005	0.13
	Sd(±)	0.17	0.19	Within groups	0.96	28	0.03	
Post test	Mean	6.81	7.02	Between groups	0.32	1	0.32	5.00*
	Sd(±)	0.16	0.31	Within groups	1.81	28	0.06	
Adjusted Mean		6.82	7.02	Between sets	0.30	1	0.30	4.68*
				Within sets	1.78	27	0.06	

*** Significant at 0.05 level**

(Table value for df 1 and 28 was 4. 20, Table value for df 1 and 27 was 4.20)

The obtained F-ratio of 4.68 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among strength training group and control group on speed. The above table also indicates that pre-test of control and experimental groups did not differ significantly and post-test of control and experimental groups have significant difference on speed.

The mean values of pre, post and adjusted post test data, on speed of both experimental and control groups are graphically represented in the figure.



THE MEAN VALUES OF PRE, POST AND ADJUSTED POST TEST DATA ON SPEED OF BOTH EXPERIMENTAL AND CONTROL GROUPS

COMPUTATION OF MEAN, STANDARD DEVIATION AND ANALYSIS OF COVARIANCE OF MUSCULAR STRENGTH ON EXPERIMENTAL AND CONTROL GROUPS

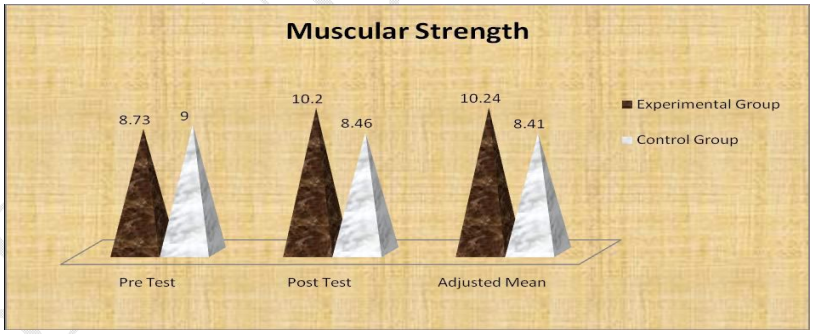
Test	Strength training group		Control group	Sum of variance	Sum of squares	df	Mean square	F ratio
Pre test	Mean	8.73	9.00	Between groups	0.53	1	0.53	0.07
	Sd(±)	2.25	3.00	Within groups	196.93	28	7.03	
Post test	Mean	10.20	8.46	Between groups	22.53	1	22.53	7.68*
	Sd(±)	1.14	2.13	Within groups	82.13	28	2.93	
Adjusted Mean		10.24	8.41	Between sets	24.99	1	24.99	11.75*
				Within sets	57.39	27	2.12	

*** Significant at 0.05 level**

(Table value for df 1 and 28 was 4. 20, Table value for df 1 and 27 was 4.20)

The obtained F-ratio of 11.75 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among strength training group and control group on muscular strength. The above table also indicates that pre-test of control and experimental groups did not differ significantly and post-test of control and experimental groups have significant difference on muscular strength.

The mean values of pre, post and adjusted post test data, on muscular strength of both experimental and control groups are graphically represented in the figure



THE MEAN VALUES OF PRE, POST AND ADJUSTED POST TEST DATA ON MUSCULAR STRENGTH OF BOTH EXPERIMENTALAND CONTROL GROUPS

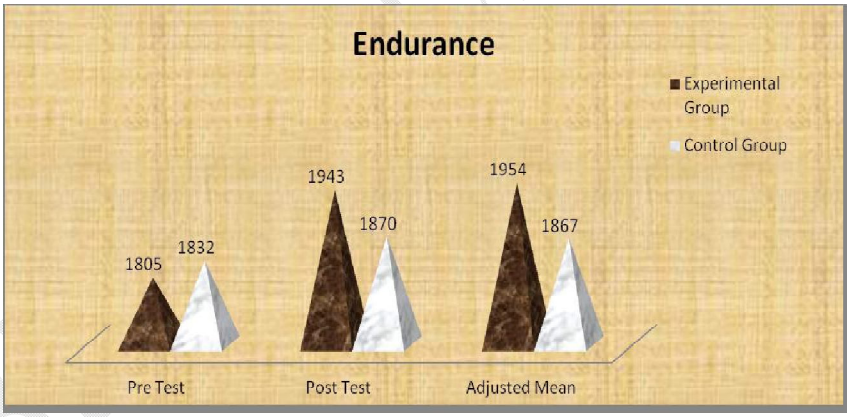
COMPUTATION OF MEAN, STANDARD DEVIATION AND ANALYSIS OF COVARIANCE OF ENDURANCE ON EXPERIMENTAL AND CONTROL GROUPS

Test	Strength training group		Control group	Sum of variance	Sum of squares	df	Mean square	F ratio
Pre test	Mean	1805	1832	Between groups	5333.33	1	5333	0.51
	Sd(±)	99.77	104.00	Within groups	290813	28	10386	
Post test	Mean	1943	18780	Between groups	31687	1	31687	3.03
	Sd(±)	105.2	99.17	Within groups	292780	28	10456	
Adjusted Mean		1954	1867	Between sets	54972	1	54972	14.05*
				Within sets	105586	27	3910	

*** Significant at 0.05 level**

(Table value for df 1 and 28 was 4. 20, Table value for df 1 and 27 was 4.20)

The obtained F-ratio of 14.05 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among experimental group and control group on endurance. The above table also indicates that pre and post-tests of control and experimental groups did not differ significantly.



THE MEAN VALUES OF PRE, POST AND ADJUSTED POST TEST DATA ON ENDURANCE OF BOTH EXPERIMENTAL AND CONTROL GROUPS

DISCUSSION ON FINDINGS

The result of the study revealed that there was significant difference exists among the Tennis players reference to the past studies on selected physical fitness components namely speed, muscular strength and endurance respectively in accordance with **Chandler** (***1992***), **Chandler*et.al.,*** (***1995***), **Desgorces** (***2010***).

CONCLUSIONS

1. There was significant improvement on speed, muscular strength, and endurance due to the impact of strength training packages on selected physical fitness components among tennis players.
2. However the control group had not shown any significant improvement in any of selected variables.

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