

# Effect of Strength Training and Court Drill Training on Selected Co-ordination and Service among School Level Tennis Players

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## Abstract

The purpose of the study was to find out the effect of strength training and court drill training on selected co-ordination and service among school level tennis players. To achieve the purpose of this study, forty five (n=45) school level tennis players were selected as subjects, who were members of Fisher Tennis club, in Chennai. The age group of the subjects were between 15 and 17 years. The subjects were randomly divided into three groups each consists of fifteen subjects. Group I underwent Strength training and Group II underwent Tennis court drill training and group III acted as control group. The investigator selected co-ordination and service as variables for this study and the variables were tested through Eye-hand co-ordination test and Hewitt's Tennis test respectively. Pre test post test random group design was followed in this study. The data obtained from initial and final scores were statistically analysed for test of singnifance using Analysis of Covariance (ANCOVA). In all cases the significance level was fixed 5%. The results proved that there was a significant improvement due to the strength training and court drills on selected co-ordination and service among school level tennis players.

**Keywords:** Tennis, Strength training and tennis court drill.

## Introduction

Tennis is a lifelong sport, and the goal for many of us is to continue to enhance our performance while staying injury free, whether playing recreationally, in tournaments, at the college level, or even the professional level (**Paul Roetert, 2011**). Most people have the capacity to improve throughout a lifetime of play provided they have relatively sound tennis technique from the start (**Catalano, 2005**). Tennis serve is one of the most important and powerful weapons among all tennis skills and techniques. The power service plays a very important role during a match (**Chien-Lu Tsai 2001**).

Strength training is a planned and structured mean of exercising with appropriate resistance that a participant gradually progresses as the musculoskeletal system becomes stronger. Physical fitness is the ability to meet the daily demands without becoming too exhausted.

Tennis drills are an important part in skill acquisition and perfection in tennis. They are used by professional tennis coaches at every tennis academy and every tennis camp around the world. They are a supplementary asset in player development, from poor tennis players to high level and advanced players. Drills can be used by two players or for large numbers of players (beginners or kids) in a group coaching situation.

### **Purpose of the Study**

The purpose of the study was to find out the effect of strength training and court drill training on selected co-ordination and serve ability in tennis among school level tennis players.

### **Hypothesis**

It was hypothesized that there would be statistically significant improvement in co-ordination due to strength training among school level tennis players.

It was hypothesized that there would be statistically significant improvement in service ability due to tennis court drill training among school level tennis players.

### **Review of Related Literature**

**Chandler et al. (1992)** Conducted a study on shoulder strength, power, and endurance in college tennis players. Twenty-four college tennis players were tested for bi lateral shoulder internal/external rotation strength on a Cybex 340 isokinetic dynamometer; they were positioned supine with the glen humeral joint abducted to 90°. Subjects produced significantly more torque in internal rotation at 60 and 300 deg/sec in the dominant arm compared to the non dominant arm. Subjects also produced significantly more power in internal rotation at 60 deg/sec in the dominant arm. No significant differences between the dominant and non dominant arms were seen in internal rotation power at 300 deg/sec or in the internal rotation endurance ratio. No significant differences were seen in external rotation on any measurement. By significantly increasing the strength of the dominant shoulder in internal rotation without subsequent strengthening of the external rotators, muscle imbalances may be created in the dominant arm that could possibly affect the tennis player's predisposition to injuries caused by overloading of the shoulder joint. This study suggests that external rotation strengthening exercises should be implemented in tennis conditioning programs to maintain muscle strength balance, and possibly reduce the chance of overload injury.

## Methodology

To achieve the purpose of this study, forty five school level tennis players, were selected as Fisher Tennis club, in Chennai. The age group of the subjects were between 15 and 17 years. The subjects were randomly divided into three groups consists of fifteen subjects each. Group I underwent strength training, group II underwent court drill training for a period of six weeks, and group three acted as control group. The investigator selected the variables, namely co-ordination and service were tested through Eye- hand co-ordination and Hewitt's tennis test. Pre test post test random group design was followed in this study. The data obtained from initial and final scores were statistically analysed for test of singnifance using analysis of covariance (ANCOVA), in all cases, the significance level fixed was 0.05 levels. Whenever the mean value was significant scheef's post hoc test was used to find the inter group difference.

**Table- I**  
**Experimental group-I**  
**Strength Training Schedule**

S. No	Exercise	I & II week			III & IV week				V & VI week				
		Load	Repetition	Set	Rest	Load	Repetition	Set	Rest	Load	Repetition	Set	Rest
1	Dumbbell snatch	40%	12	3	3mins	50%	12	2	3mins	60%	12	2	3mins
2	Late pull	40%	12	3	3mins	50%	12	2	3mins	60%	12	2	3mins
3	Bench press	40%	12	3	3mins	50%	12	2	3mins	60%	12	2	3mins
4	Cable rotation chop	40%	12	3	3mins	50%	12	2	3mins	60%	12	2	3mins
5	Squat	40%	12	3	3mins	50%	12	2	3mins	60%	12	2	3mins
6	Leg press	40%	12	3	3mins	50%	12	2	3mins	60%	12	2	3mins

**Table- II**  
**Experimental group-II**  
**Court Drill Training Schedule**

Sl. No	Exercise	I & II week			III & IV week			V & VI week		
		Repetition	Set	Rest	Repetition	Set	Rest	Repetition	Set	Rest
1	Tennis ball throwing just as service	12	3	3mins	15	2	3mins	18	2	3mins
2	Toss and catch	12	3	3mins	15	2	3mins	18	2	3mins
3	Service drills	12	3	3mins	15	2	3mins	18	2	3mins
4	Target drills	12	3	3mins	15	2	3mins	18	2	3mins
5	Placement of the service	12	3	3mins	15	2	3mins	18	2	3mins
6	Deuce court & Add court service	12	3	3mins	15	2	3mins	18	2	3mins

## Result and discussion

The statistical analysis comparing the initial and final score of among experimental groups and control group.

**Table-III**  
**Computation analysis of co-variance**

Variable	Means	Exp. Group - I	Exp. Group - II	Con. Group	S O V	Sum of Squares	Df	Mean Squares	Obtained F
Co-ordination	Pre	13.80	13.93	13.33	B	2.98	2	1.49	1.00
					W	62.67	42	1.49	
	Post	16.27	17.40	13.27	B	136.84	2	68.42	25.78*
					W	111.47	42	2.65	
	Adjusted	16.16	17.15	13.62	B	94.91	2	47.46	40.26*
					W	48.46	41	1.18	
Service	Pre	15.33	18.27	19.27	B	125.38	2	62.69	15.38*
					W	171.20	42	4.08	
	Post	20.20	22.47	18.80	B	102.71	2	51.36	10.55*
					W	204.53	42	4.87	
	Adjusted	21.36	22.14	17.96	B	128.24	2	64.12	16.39*
					W	160.39	41	3.91	

\*Significant, table F ratio at 5% level of confidence for 2, 42 (df) = 3.22.

As shown in table -III, the obtained F value on the scores of pre test mean 1.00, which was less than the required table value. Hence, it was insignificant at 5% level. The obtained F value on post test mean was 25.78, which was greater than required table value of 3.22 and it was significant at 5% level. Taking into consideration of the pre test mean and post test mean adjusted post test mean were determined and analysis of covariance was done and the obtained F value 40.26 was greater than the required value of 3.22 and hence it was accepted that there was significant difference among the treated groups. Since significant difference was recorded, the results were subjected to post hoc analysis using Scheffe's Confidence interval test. The result was presented in the table-IV.

**Table- IV**  
**Scheffe's Confidence Interval test scores**

Mean				
Exp Group - I	Exp Group - II	Control Group	Mean difference	Required CI
<b>Co-ordination</b>				1.00
16.16	17.15		1.01*	
16.16		13.62	2.54*	
	17.15	13.62	3.53*	
<b>Service</b>				1.82
21.36	22.14		0.78	
21.36		17.96	3.40*	
	22.14	17.96	4.17*	

\*Significant

The post hoc analysis of obtained mean proved that there was significant difference existed between strength training and control group and there was significant difference existed between court drills training and control group and there was no significant difference between treatment groups, strength training and court drills training.

### **Discussion and findings**

Treiber et al. (1998) concluded that resistance training using Theraband tubing and lightweight dumbbells had a significant improvement in shoulder internal and external rotation and service velocity in both the training groups on strength and functional performance in college-level tennis players.

Fernandez et al. (2013) found that six week junior conditioning program schedule had significant improvement on service velocity and service accuracy.

Based on these studies the resistance training and lightweight dumbbells had a significant improvement in shoulder internal and external rotation improved service velocity on training groups in the college level tennis players. My research findings shows significant improvement of co-ordination and service ability due strength training and tennis court drill training among school level tennis players.

## Conclusion

It was concluded that there was significantly improved on co-ordination and service drill technique due to strength training and tennis court drill training among school level tennis players.

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