



ISSN: 2456-0057  
IJPNPE 2019; 4(1): 169-171  
© 2019 IJPNPE  
www.journalofsports.com  
Received: 22-11-2019  
Accepted: 26-12-2019

**S Chandra Mohan**  
Ph.D., Research Scholar, Part  
Time, Tamil Nadu Physical  
Education and Sports  
University, Chennai, Tamil  
Nadu, India

**Dr. STN Rajeswaran**  
Ph.D., Associate Professor,  
Department of Physical  
Education, Bharathiar  
University, Coimbatore,  
Tamil Nadu, India

## Effects of strength and coordination training on selected skills in school level boys field hockey players

**S Chandra Mohan and Dr. STN Rajeswaran**

### Abstract

Strength is important because muscle mass diminishes as you age. Just like flexibility, endurance, cardiovascular health and balance, you must stimulate your muscles or else you will lose muscle mass. Strength training puts stress on your bones and helps to increase bone density. By stressing your bones, strength training can increase bone density and reduce the risk of osteoporosis. Manage your weight. Strength training can help you manage or lose weight, and it can increase your metabolism to help you burn more calories. Strength training also known as weight or resistance training is physical activity designed to improve muscular fitness by exercising a specific muscle or muscle group against external resistance, including free-weights, weight machines, or own body weight, according to the American Heart Association. The present study was to find out the effects of strength and coordination training on selected skills in school level boys field hockey players. The selected subjects were the participants of inter school level students of Hockey tournament and their ranged between 12 and 14 year and pre and post-test random group design. Eighty students were randomly selected, they undergone Four equal group such as strength training group coordination training group combination training group and control group. In testing the significance of mean difference on post-test among the students. The whole students were taken as a strength training group coordination training group and they were psychologically motivated as shown in methodology. The result indicates that the mean differences on criterion variables used in the study at the end of the treatment was found to be statistically significant. Thus it was found that there was a significant mean difference among the students in the variables used in the study.

**Keywords:** Strength and coordination training

### Introduction

Strength is important because muscle mass diminishes as you age. Just like flexibility, endurance, cardiovascular health and balance, you must stimulate your muscles or else you will lose muscle mass. Strength training puts stress on your bones and helps to increase bone density. By stressing your bones, strength training can increase bone density and reduce the risk of osteoporosis. Manage your weight. Strength training can help you manage or lose weight, and it can increase your metabolism to help you burn more calories. Strength training also known as weight or resistance training is physical activity designed to improve muscular fitness by exercising a specific muscle or muscle group against external resistance, including free-weights, weight machines, or own body weight, according to the American Heart Association.

### Methodology

#### Selection of subjects

To fulfil the purpose of the study, was to find out the school male Hockey students from Madurai district were asked to assemble in a hall. The Researcher explained the proposed research work, nature of the study and subjects involved. All the players volunteered to serve as subjects out of which 80 (N=80) Hockey players were selected at random and their age ranged between 12 and 14 years. The subjects were segregated into four equal groups consist of 20 each by adopting random procedure.

**Corresponding Author:**  
**S Chandra Mohan**  
Ph.D., Research Scholar, Part  
Time, Tamil Nadu Physical  
Education and Sports  
University, Chennai, Tamil  
Nadu, India

**Selection of variables**

To assess the change as a result of strength training over skills in the game of hockey, the following skills were selected hockey skills.

**Testing procedure**

The Researcher explained the purpose of the training programmes to the subjects who are participating in the study. For the collection of data, the researcher explained the procedure of the test for hockey skills. The subject had a standard warm up prior to the test, they had been familiarized with the test protocol.

**Training procedure**

During the training period, the experimental groups underwent their respective training programme three days per week and selected skill training programme for two days per week over twelve weeks. The work lasts from 45 to 60 minutes tentatively including warming up and warming down periods. The training programmes were carried out on a hockey field during the morning hours. The subjects underwent the respective programmes as per the schedules under the supervision of the researcher. Attendance was maintained and calculated for all the training groups separately by dividing the total number of training sessions by the number of sessions they attended. All the subjects who are involved in the training programmes, were questioned about

their health status throughout the training period. None of them reported any injury like sprain, strain, muscle cramp etc., however, muscle soreness was reported in the early weeks but it has been subsided later.

**Statistical technique**

The data collected from the four groups on the selected variable criteria were analyzed with dependent t-test to find out the significant improvement if any, due to the influence of the selected training means. The concept of magnitude of improvement (MI) was also used to find out the percentage of the improvement of each criterion variable due to the influence of independent variables. Further, the concept of analysis of covariance (ANCOVA) was also used to find out the significant difference if any, among the experimental groups after the training programs. Since, four groups were compared whenever they obtained F-ratio for the adjusted post-test was found to be significant, the scheffe’s test was used as a post-hoc test to study the paired mean differences. The level of significance was fixed at 0.05 level of confidence to test the hypotheses.

**Results and findings**

The statistical analysis comparing the initial and final means of the effects of strength and coordination training on selected skills in school level boys field hockey players. Was presented in the following tables.

**Table 1:** Analysis of covariance among strength and coordination training and control group on shooting

Test	Strength training group	Coordination training group	Combination group	Control Group	Source of variance	DF	Sum of Squares	Mean Squares	F-ratio
Pre-test	9.25	9.20	9.30	9.15	B.G	3	0.25	0.08	0.10
					W.G	76	61.70	0.81	
Post-test	10.50	11.45	11.75	9.35	B.G	3	70.24	23.41	22.17*
					W.G	76	80.25	1.06	
Adjusted	10.49	11.46	11.71	9.39	B.G	3	66.81	22.27	26.75*
					W.G	75	62.44	0.83	

Table 1 Shows the obtained ‘F’ values on pre-test, post-test, adjusted post-test means of strength training group, coordination training group and combination training group and Control group. The pre-test means on shooting of strength training group, coordination training group and combination training group and Control group were 9.25, 9.20, 9.30 and 9.15 respectively. The ‘F’ value observed for the pre-test on shooting was 0.10. It fails to reach the table value of 2.72 for degree of freedom 3, 76 at 0.05 level of confidence. Based on the results it was conformed that the mean differences among the groups of strength training group, coordination training group and combination training group and Control group on shooting before the start of the respective treatments were found to be insignificant.

The post-test means on shooting of strength training group, coordination training group and combination training group and Control group were 10.50, 11.45, 11.75 and 9.35 respectively. The ‘F’ value observed for the post-test on shooting was 22.17. It was greater than the table value of 2.72 for degree of freedom 3, 76 at 0.05 level of confidence. Since the observed F-value on adjusted post-test means among the groups namely strength training group, coordination training group and combination training group and Control group on shooting was highly significant as the value was higher than the required table value of 2.72. Thus the results obtained proved that the trainings on shooting produced significant improvements among the experimental groups. The adjusted

post-test means on shooting of strength training group, coordination training group and combination training group and Control group were 10.49, 11.46, 11.71 and 9.39 respectively. The ‘F’ value observed for the adjusted post-test on shooting was 26.75. It was greater than the table value of 2.72 for degree of freedom 3, 75 at 0.05 level of confidence. Since the observed F-value on adjusted post-test means among the groups namely strength training group, coordination training group and combination training group and Control group on shooting was highly significant as the value was higher than the required table value of 2.72. Thus the results obtained proved that the trainings on shooting produced significant improvements among the experimental groups. Since significant differences were recorded, the scores were further subjected to statistical treatment using scheffe’s post hoc test and the results which were presented in the table 2.

**Table 2:** Scheffee’s post hoc values of adjusted post-test mean difference on shooting

STG	CRTG	CMT G	CONT G	MEAN DIF	CI
10.49	11.46			-0.98	0.94
10.49		11.71		-1.22*	
10.49			9.39	1.10	
	11.46	11.71		-0.25	
	11.46		9.39	2.07*	
		11.71	9.39	2.32*	

Table 2 shows the significant difference of paired adjusted post-test means strength training group, coordination training group and combination training group and Control group on shooting. The obtained mean difference between the strength training group and coordination training group, coordination training group and combination training group, coordination training group and combination training group. Strength training group and Control group, coordination training and Control group, Combination training and Control group were 10.49, 11.46, 11.71 and 9.39 respectively. The required confidence interval value was 0.94. Since the obtained mean differences between the strength training group and coordination training group, coordination training group and combination training group, coordination training group and combination training group. Strength training group and Control group, coordination training and Control group, Combination training and Control group were greater than the obtained confidence interval value on shooting, it was concluded that there were significant difference in the effects on shooting. The Graphical Representation of the Adjusted Post Test Mean Values of Experimental Groups and Control Groups on shooting are presented in Figure 1

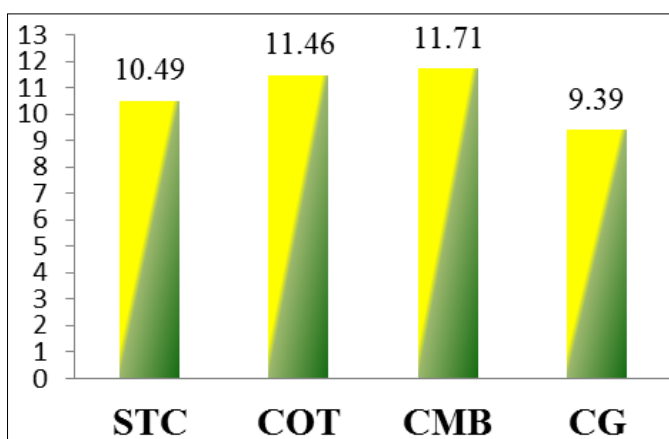


Fig 1: Shooting

### Conclusion and recommendation

Strength training and coordination training is an important component in the development and maintenance of fitness. According to this study the research scholar investigated to find out this study Strength training and coordination better improvement in field hockey skills. The experimental groups namely strength training group, coordination training group and combination training group had significantly improved hockey skills, such as shooting. Significant differences in achievement were found among strength training group, coordination training and combination training group all the selected criterion variables such as shooting. The coordination training group was found to be better than the strength training group and coordination training group in developing shooting. The present study, it may be concluded that the hockey Skills such as dribbling, hitting, pushing, were improved by co-ordination training group. Hence, coaches and Physical Educators could adopt such training to improve Coordination training and strength training group among their athletes. A similar study may be conducted by selecting on physiological and other performance factors as criterion variables.

### Reference

1. Dr. Rameshkumar S *et al.* Effects of selected physical activities on biochemical variables among university level cricket players. Review of research, 2019, 8(4).
2. Hardayal Singh. Sports Training General Theory and Methods, Patiala Nataji Subash National Institute of Sports. 14, 1984.
3. Helgerud J *et al.* Aerobic endurance training improves soccer performance. Medical Science of sports exercises. 2001; 33(1):1925-31.
4. Iaia FM *et al.* High intensity training in football. International Journal of Sports Physiology Performance. 2009; 4(3):291-306.
5. Horse Wein. The Advanced Science of Hockey, London: Pelham Book Ltd): 20, 1981.
6. John W, Best, James V, Kahn. Research in Education, New Jersey: pretince Hall Inc.1, 1992.
7. Gabbett T *et al.* Changes in skill and physical fitness following training in talent-identified volleyball players”, Journal of strength and conditional research. 2006; 20(1):29-35.
8. Geithner CA *et al.* Physical and performance difference among forwards, defensemen and goalies in elite Womens ice hockey. Journal of strength and conditional research. 2006; 20(3):500-5.