



Effect Of Functional Training On Selected Motor Performance College Level Soccer Players

Dr. Alauddin Shaikh Assistant Professor, Dr. Meghnad Saha College, Ranipur, Itahar, West Bengal –India. Email: alauddinshaikh82@gmail.com

Abstract: The purpose of the study was to find out the effect of functional training on soccer performance. Thirty-four college male soccer players at Dr. Meghnad Saha College of West Bengal (India), inter college level soccer players were randomly selected as subjects and aged 17-23 years, served as Functional Training Group (FTG) and Active Control Group (ACG). Eight weeks training were given for experiment. Basic motor performance was measured pre-test and post-test time for soccer performance and Descriptive Statistics statistic used for the results. After eight weeks training we are finding that the performance soccer player's experimental group improved In the current experiment, the aiming about a significantly improved in vertical leg power, speed was improved in 8.79% and agility Pre vs mid 3.65% and pre vs post 6.89%. Whereas static balance was improvement was 20.26% in mid and 39.75% in 4 weeks of Functional Training, post after 8 weeks of Functional Training

Keywords: Functional training, Soccer, Stability ball exercise, linear warm up, lateral warm up, Alternative lateral-linear warm up.

INTRODUCTION

Functional training has its origins in rehabilitation. Physical therapists developed exercises that mimicked what patients did at home or work in order to return to their lives or jobs after an injury or surgery. Thus if a patient's job required repeatedly heavy lifting, rehabilitation would be targeted towards heavy lifting, if the patient were a parent of young children, it would be targeted towards moderate lifting and endurance, and if the patient were a marathon runner, training would be targeted towards re-building endurance. Functional training involves mainly weight bearing activities targeted at core muscles of the abdomen and lower back. Most fitness facilities have a variety of weight training machines which target and isolate specific muscles. As a result the movements do not necessarily bear any relationship to the movements people make in their regular activities or sports. Functional training attempts to adapt or develop exercises which allow individuals to perform the activities of daily life more easily and without injuries. (Cannone, 2007)

Soccer is a game of ball control both individually and combination with other members of the team. To be able to control soccer ball a player must master the fundamentals by

using, any part of his body but his hand and arms should not be used. The fundamentals are: kicking, passing, dribbling, Trapping, tackling, heading (Frank F. 1955).

The game of football is both an art and science. It involves techniques of running, passing, kicking, tackling, blocking, heading, and dribbling. All these activities have obtained to be performing a great speed. Though the individuals' skills are very important but it should not be forgotten that it is a team game and the players have to work together during the match offence and defense. A player must, therefore, develop his skill and understanding for his contribution in favor to the demands of team game.

The skill can therefore, be best developed by working in a competitive situation though individual practice is needed. The game of football contents with physical challenges. Though two players may equal in their skills because of differences in physical and mental response there may be much differed in their performance.

Sports science has made rapid progress in the last few decades. Theory and the methods of sports, training was a subject of, central, importance among the various disciplines and it has developed rapidly. The growing sophistication of soccer has placed proportionately greater demands upon the players and coaches. : Modern" coaching: and training methods have focused on the development of basic components of the soccer and greater importance is given to aerobic kind of development (Thomas Reilly, 1983).

MATERIALS AND METHODS

Selection of the subject: The subjects of this study were collected from the students of Physical Education (elective subject) from the Dr. Meghnad Saha College. Total 34 student volunteers were chosen for this study. The age range of the subject was 17 to 23 years

Design of the study; This was an experimental study and it was a prospective randomized control trial study. In this study there were two groups, namely Functional Training Group (FTG) group and Active Control Group (ACG). Before commencement of functional training protocol these both groups 'initial data (baseline) of all parameters was collected and submitted for calculation. Then after 4 weeks and again after 8 weeks of functional training programmes the same variables were measured. In the time of experiment the active control group were maintained normal life except functional training in schedule, but regular game practices they were followed. All the tests were administered from 8-30A.M.to about 10-30 A.M. at playfield.

Testing Procedure: The motor performance was judged by Arm and Shoulder power: Leg Power (horizontal); Leg Power (vertical); Speed; Agility; Flexibility and Balance (Static) were measured.

Training Protocols: The functional training protocols will be prepared with the help of latest literature and national and international experts. This research work will be done

with the cooperation and by help of books and journals to prepare training protocols; its three days per week for the period of eight weeks functional training exercises were given for experiments of group design. For experimental group were alternative 3 days per week functional training schedule of 5min of general warm-up, functional warm up-24min for 1st and 2nd day 30min for 3rd day. (Linear, Lateral and Alternative Linear Lateral) finally main work functional exercise training-21min for 1st day and 2nd day and 30 min for 3rd day, then cool down 5 min., whereas the active control group did general warm up-5min, specifics warm up-20min, individual game practices-30min, and cool down 5 min.

Statistical procedure: For the statistical analysis Mean, SD, Descriptive Statistics and percentage of performance increases were applied. The level of significance was set at 0.05 level of confidence.

RESULT AND DISCUSSION

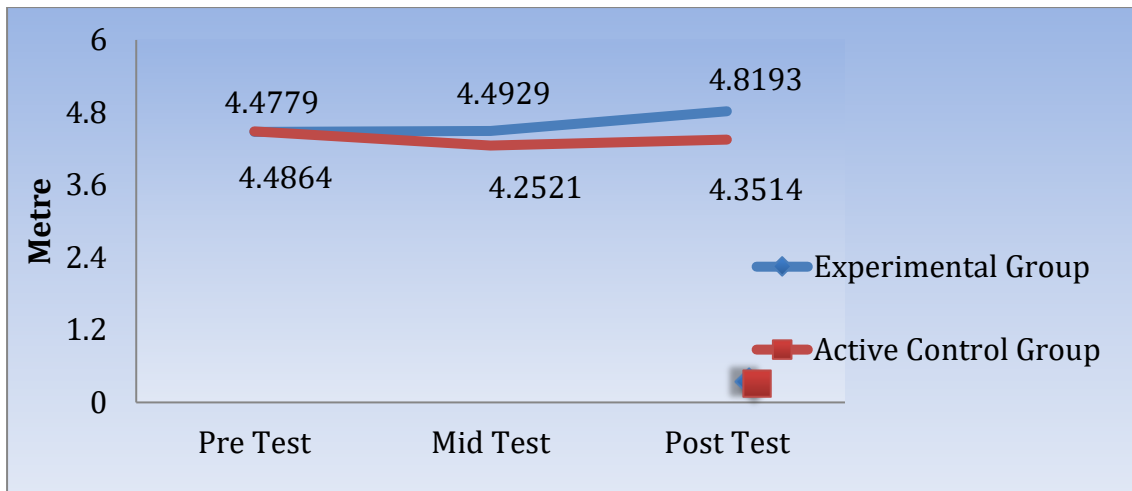
Result: The motor performance was judged by Arm and Shoulder power: Leg Power (horizontal); Leg Power (vertical); Speed; Agility; Flexibility and Balance (Static) were measured. The mean, SD and Descriptive Statistics of all the groups are presented in the following areas.

- 1. Arm and Shoulder Power:** The experimental group arm and shoulder power, pre-test mean was 4.47 ± 0.61 mt; mid test 4.49 ± 0.51 mt; and the post-test value was 4.81 ± 0.58 mt. After analysis of variance calculation in experimental and control group no significant difference was observed. The result is presented in the table 1 and graph 1.

Table 1: Arm & Shoulder Power [Descriptive Statistics]

Descriptive Statistics				
	Experimental Group		Active Control Group	
	Mean (mt)	SD	Mean (mt)	SD
Pre-test	4.4779	0.61698	4.4864	0.67052
Mid-test	4.4929	0.51361	4.2521	0.43251
Post-test	4.8193	0.58476	4.3514	0.56488

Graph 1: Arm & Shoulder Power

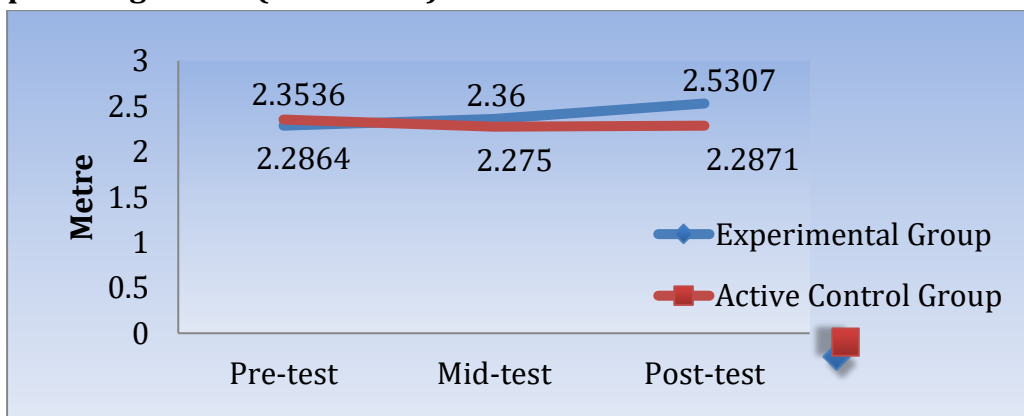


2. **Leg Power (Horizontal):** The horizontal leg power of experimental group, the results were as follows: pre-test 2.28 ± 0.13 mt; mid test 2.36 ± 0.16 mt; post-test 2.53 ± 0.56 mt. The result of experimental and active control group was not significant. The result is presented in the table 2 and graph 2.

Table 2: Leg Power (Horizontal) [Descriptive Statistics]

Descriptive Statistics				
	Experimental Group		Active Control Group	
	Mean (mt)	SD	Mean (mt)	SD
Pre-test	2.2864	0.13194	2.3536	0.17779
Mid-test	2.3600	0.16623	2.2750	0.15180
Post-test	2.5307	0.56733	2.2871	0.16508

Graph 2: Leg Power (Horizontal)



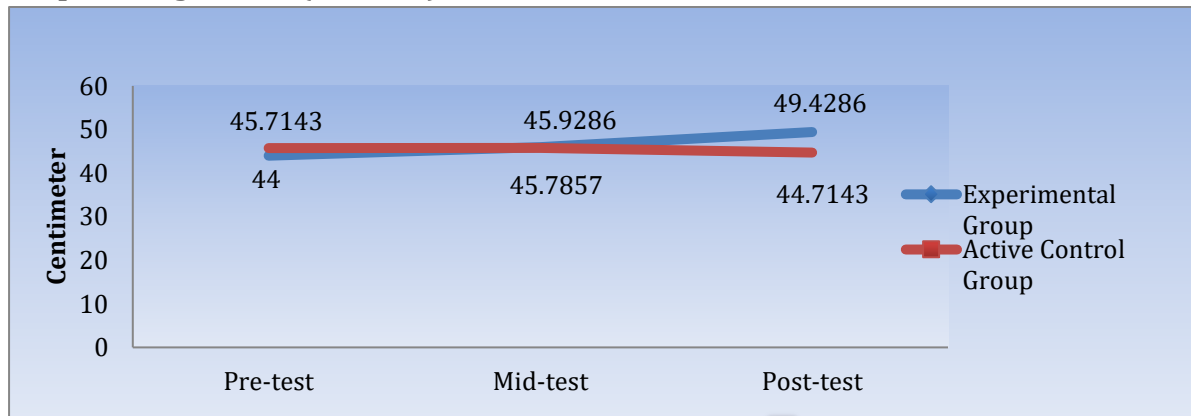
3. **Leg Power (Vertical):** In soccer players the vertical leg power mean of pre test was 44.00 ± 4.29 cm; mid test 45.92 ± 4.02 cm, where as in the post test it was 49.42 ± 4.32 cm. The experimental group result was significant at 0.05 levels. The result is presented in the table 3 and graph 3. The leg power (vertical) was improved 4.19% (pre vs mid) and 10.98% (pre vs post).

Table 4: Leg Power (Vertical) [Descriptive Statistics]

Descriptive Statistics				
	Experimental Group		Active Control Group	
	Mean (cm)	SD	Mean (cm)	SD
Pre-test	44.0000	4.29669	45.7143	6.73028
Mid-test	45.9286	4.02806	45.7857	7.30836
Post-test	49.4286	4.32727	44.7143	6.74170

***Significant at 0.05 levels**

Graph 4: Leg Power (Vertical)



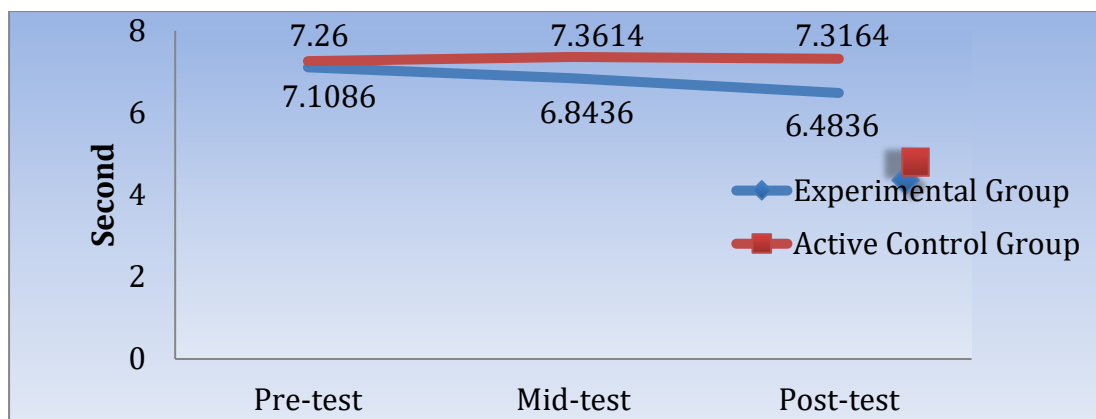
4. **Speed:** The result of speed in the soccer players was in the pre test mean 7.10 ± 0.28 sec; mid test 6.84 ± 0.52 sec and in post test mean was 6.48 ± 0.43 sec. The experimental group was found significant at 0.05 level in the pre vs post and mid vs post-test. The result is presented in the table 4 and graph 4. Speed increased only 3.73% (pre vs mid) and 8.79% (pre vs post).

Table 4: Speed [Descriptive Statistics]

Descriptive Statistics				
	Experimental Group		Active Control Group	
	Mean (sec)	SD	Mean (sec)	SD
Pre-test	7.1086	0.28705	7.2600	0.61303
Mid-test	6.8436	0.52206	7.3614	0.56051
Post-test	6.4836	0.43645	7.3164	0.69986

***Significant at 0.05 levels**

Graph 4: Speed



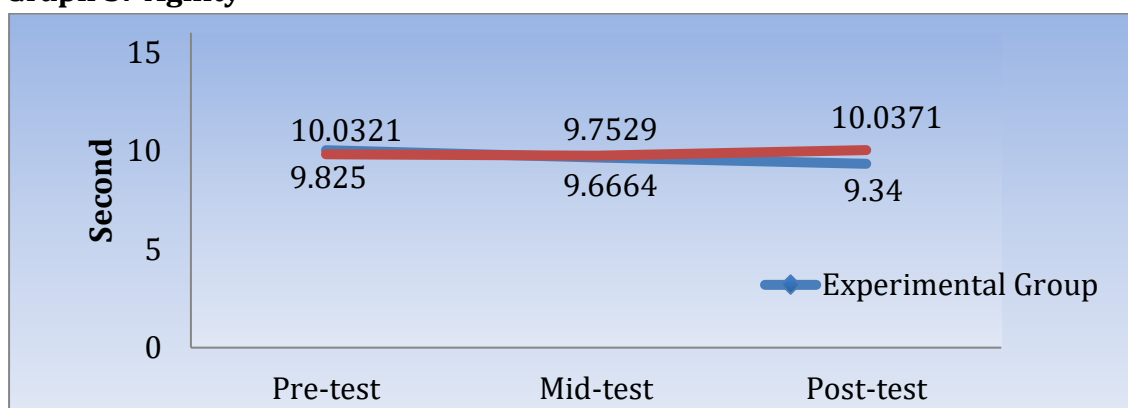
5. **Agility:** The pre-test mean of agility was 10.03 ± 0.67 sec; in mid test 9.66 ± 0.54 sec, and in post test 9.34 ± 0.35 sec. The result of experimental group was significant at 0.05 levels. The result is presented in the table 5 and graph 5. In agility very less improvement was observed: Pre vs mid 3.65% and pre vs post 6.89%.

Table 5: Agility [Descriptive Statistics]

Descriptive Statistics				
	Experimental Group		Active Control Group	
	Mean (sec)	SD	Mean (sec)	SD
Pre-test	10.0321	0.67897	9.8250	0.61820
Mid-test	9.6664	0.54110	9.7529	0.68800
Post-test	9.3400	0.35386	10.0371	0.65773

*Significant at 0.05 levels

Graph 5: Agility



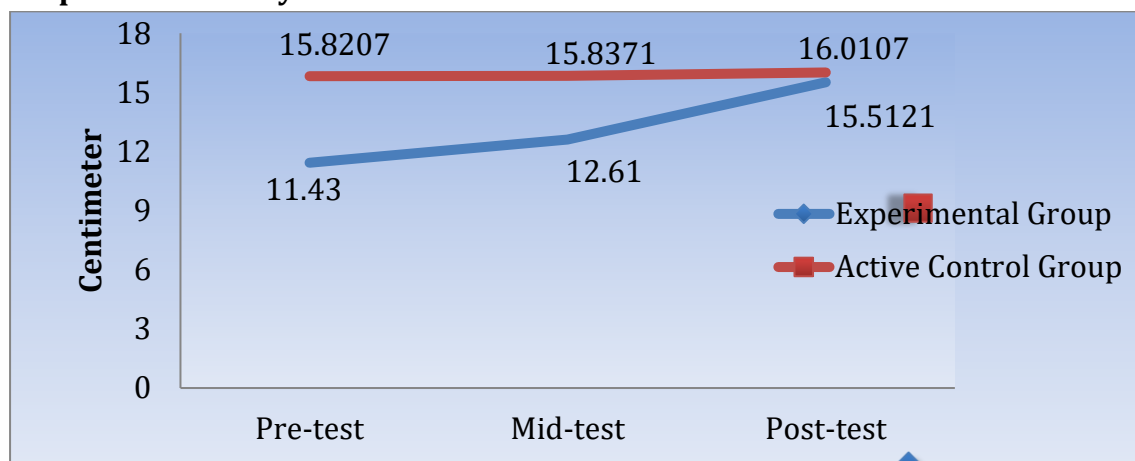
6. **Flexibility:** In flexibility the pre test mean was 11.43 ± 5.43 cm; in mid test 12.61 ± 4.57 cm, and in post test 15.51 ± 4.73 cm. The result was not significant in the experimental and active control group. The result is presented in the table 6 and graph 6.

Table 6: Soccer Group: Flexibility [Descriptive Statistics]

Descriptive Statistics		
	Experimental Group	Active Control Group

	Mean (cm)	SD	Mean (cm)	SD
Pre-test	11.4300	5.43401	15.8207	4.97782
Mid-test	12.6100	4.57164	15.8371	3.84579
Post-test	15.5121	4.73041	16.0107	3.71174

Graph 6: Flexibility



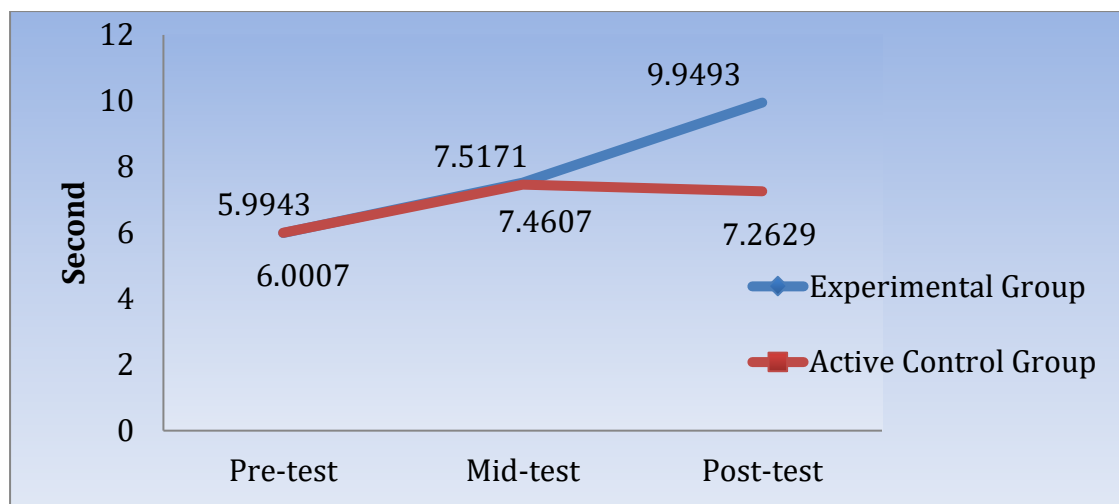
7. **Static Balance:** In static balance the pre-test mean was 5.99 ± 3.15 sec; mid test 7.51 ± 3.73 sec and in the post test it was 9.94 ± 3.60 sec. The experimental group mean difference was shown significant at 0.05 level. The result is presented in the table 7 and graph 7. Balance was improved after functional training in mid test the improvement was 20.26% whereas in post test 39.75%.

Table 7: Balance [Descriptive Statistics]

Descriptive Statistics				
	Experimental Group		Active Control Group	
	Mean (sec)	SD	Mean (sec)	SD
Pre-test	5.9943	3.15055	6.0007	3.01239
Mid-test	7.5171	3.73870	7.4607	3.23197
Post-test	9.9493	3.60652	7.2629	2.82842

***Significant at 0.05 levels**

Graph 7: Balance



Discussion: This study has several strengths. First, it was a randomized controlled functional exercise intervention trial with training groups with active control group in each group and with only very few drop-outs. Second, the functional training participants did not have any health problems or training-induced injuries compared with the controls during the intervention. Third, the general training attendance was very good, although there was variability among the training groups.

In Soccer college level players' motor performance variables were improved significantly in Leg Power (vertical), Speed, Agility, and Balance (Static). Whereas no significant improvement was observed in Arm and Shoulder power, Leg Power (horizontal) and Flexibility. Finally, considering all the soccer skills performance less improvement was observed in both experimental and control groups.

Functional training was developed to prevent injury and for rehabilitation after injury. As per the result of this study, functional training may improve some motor performance parameters but it is not effective to develop sports performance parameters as such. However, the test item selected to evaluate functional training effectiveness has some limitations. Also, the functional exercise trainer (research scholar) has less experience on functional training that may influence the result of the functional training. Expert data collector might be another limitation of this study.

In 2009, published a report in the Journal of Strength and Conditioning Research which compared functional training to fixed variable training techniques; this was considered the first research of its type comparing the two methods of strength training. Results of the study showed very substantial gains and benefits in the functional training group over fixed training equipment. Functional users had a 58% greater increase in strength over the fixed-form group. Their improvements in balance were 196% higher over fixed and reported an overall decrease in joint pain by 30%. (Spennewyn, 2008)

One of the fastest growing areas of physical conditioning and rehabilitation is functional training. Books and articles have popularized the term functional as a descriptor to

training, exercise and rehabilitation. Essentially, functional training is aimed at bringing the situational need and constraints of real-life activities, including sporting events, into the training environment to enhance training effectiveness. Functional training is a training in which exercise and movements are integrated, multi directional and proprioceptively enriched, insures optimal neuro-muscular control and efficiency of function. In practical terms, functional training involves a host of agility drills, closed-chain exercises, ballistic movements and balance activities that target physiological systems, neuromuscular systems, and to a lesser extent, motor abilities (Gambetta & Clark, 1998).

In Soccer skills performance variables the improvement was observed only in the heading accuracy and penalty accuracy. All the results were stated in the tabular form and with graphical representation. After the result part discussion was made with the support of available authentic scientific literatures.

In the current experiment, the aiming about a significantly improved in vertical leg power, speed was improved in 8.79% and agility Pre vs mid 3.65% and pre vs post 6.89%. Whereas static balance was improvement was 20.26% in mid and 39.75% in 4 weeks of Functional Training, post after 8 weeks of Functional Training

The term Functional training describes multiplanar, multijointed resistance exercises that stimulate movements patterns from everyday life and sport. Functional training is believed to enhance neuro-muscular coordination with the assumption that the neuromuscular improvement will enhance performance in activities of daily living or sports. However, although functional training has increased in popularities, the motor and sports performance benefits have not been properly investigated. Most publication on functional training are primarily descriptive or provide anecdotal information (Lagally, et.al, 2009).

CONCLUTION

In the current experiment, the aiming about a significantly improved in vertical leg power, speed was improved in 8.79% and agility Pre vs mid 3.65% and pre vs post 6.89%. Whereas static balance was improvement was 20.26% in mid and 39.75% in 4 weeks of Functional Training, post after 8 weeks of Functional Training under the following conclusions are

1. Arm and shoulder power was not improved significantly.
2. Horizontal leg power was not improved significantly.
3. Vertical leg power improved significantly in the experimental group and the percentage of improvement was 10.98% after post test.
4. Speed was improved significantly in the experimental group and the improvement was 8.79% after 8 weeks.
5. Agility was improved significantly and it increased 6.89% after post test.

6. Flexibility was not improved significantly.
7. Balance improved significantly in the experimental group and finally 39.79% was observed after 8 weeks.

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