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Influence of Plyometric Training with Soccer Skill Practices on Motor Fitness Variables among Soccer Players

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Abstract

The purpose of the study was to find out the influence of plyometric training with soccer skill practices on motor fitness variables among soccer players. To achieve the purpose of the study, forty college men soccer players who participated in the intramural tournament during the academic year 2013 – 2014 were randomly selected as subjects from Meenakshi College of Engineering, Chennai. The age of the subjects ranged from 18 to 24 years. The subjects were attached at random to one of the two groups in which group I (N=20) underwent plyometric training with soccer skill practices, group II (N=20) acted as control group. The subjects were free to withdraw their consent in case they felt any discomfort during the period of training. However there were no dropouts in the study. A qualified physician examined the subjects medically and declared that they were fit to participate in the training programme for the study. The selected subjects' age, height and weight ranged from 18 years 6 months to 24 years 3 months, 148cms to 165cms and 49 kgs to 66 kgs respectively. The subjects in all the two groups were tested on selected criterion variables such as speed, agility and muscular endurance were assessed by 50 metres run, shuttle run and sit ups respectively prior to (pre test),after six weeks (mid test)and after twelve weeks (post test) of training except those of control group who did not participate in any special training. The pre, mid and post test data collected from two groups on the dependent variables were statistically examined for significant differences, if any, by applying the One Way Repeated Measures ANOVA. Among each training, to find out which of the three paired means (pre, mid and post) had a significant difference, the New man keuls post – hoc test was applied. Plyometric training with soccer skill practices for 12 week had significantly improved motor fitness (speed, agility and muscular endurance among college players. The result indicated that plyometric training significantly improved muscular endurance of soccer players between 1st, 6th and 12th week hence e it could be taken that even 6 week of plyometric training would sufficiently improve speed and agility which sustain for 12 eek with no remarkable after the first phase of training. The result indicated that though plyometric training significantly improved speed and agility of soccer players after the first six week of training, the improvement was not significant in these variables between 6th and 12th week hence e it could be taken that even 6 week of plyometric training would sufficiently improve speed and agility which sustain for 12 eek with no remarkable after the first phase of training.

Keywords: Plyometric, Soccer, Skill, Motor.

Introduction

Sport training is a systematic process extending over a long period. For best results, the system of training has to be based and conducted on scientific facts and lines. Where it is not possible to do that, the training has to be based on the results of successful practice. Soccer has a vivid and interesting history in the world of sports. Early evidence of soccer being played as a sport finds occurrence in China during the 2nd and 3rd centuries BC. In China, it was during the Han dynasty that people dribbled leather balls by kicking it into a small net. Recorded facts also support the fact that Romans and Greeks used to play ball for fun and frolic. Some facts point to Kyoto in Japan where kicking of ball was a popular sport. It is said that early growth of the modern soccer started in England. Some amusing facts even mention that the first ball used was the head of some Danish brigand. It is said that during medieval times, the old form of soccer used to allow many ill practices like kicking, punching, biting and gouging. The main aim was to carry the ball to a target spot. People grew so fond of the game that they would throng the field all day long. Sometimes the competition grew fierce and masses got so wild that there were frequent incidents of violence during the game. It is also said that soldiers admired the game so much that they missed archery practice to watch it. King Edward III banned soccer in 1365 owing to the growing incidents of violence and military indulgence in the sport. In 1424

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King James I of Scotland also proclaimed in the Parliament— "Na man play at the Fute-ball" (No man shall play football) When and where exactly did soccer start is a question that has no precise answer to it. You can easily say that this popular game has been played for more than three thousand years. The nativity of modern-day soccer must be credited to Britain. It was also known as the association football, with Scotland and England being the co-founders of the systematic game of soccer.

Plyometric training is a form of exercise training designed to increase muscular power. Athletes such as basket ball players, football players and boxers have incorporated plyometric training into their training regimen, adding explosive power to their game. The main focus of plyometrics training is to shorten the time between stretching and contracting muscles. The exercises required take the form of explosive workouts such as jumps, hops and bounds which in turn cultivate explosive bursts of speed and power. Plyometric shoes are used to increase the athletes speed, quickness and power for running faster and jumping higher. Before doing a plyometric work it is vital that the athlete do a proper and thorough warm up. The eccentric contractions are the same contractions that can result in pulled muscle injuries such as pulled groin and hamstring muscles. It is also essential for the players be in good condition and well monitored. It is easy to perform these exercises wrong and end in injury. In conclusion plyometric training is stretching muscles while they are contracting, teaching them to have an explosive contraction after the muscles are stretched. These workouts if properly executed will increase speed, power and quickness, adding to a player on field performance. Players should first check with their coach or trainer to see which exercises would best suit their program for plyometric training (Berkey, 2009).

Methodology

The purpose of the study was to find out the influence of plyometric training with soccer skill practices on motor fitness variables among soccer players. To achieve the purpose of the study, forty college men soccer players who participated in the intramural tournament during the academic year 2013 – 2014 were randomly selected as subjects from Meenakshi College of Engineering, Chennai. The age of the subjects ranged from 18 to 24 years. The subjects were attached at random to one of the two groups in which group I (N=20) underwent plyometric training with soccer skill practices, group II (N=20) acted as control group. The subjects were free to withdraw their consent in case they felt any discomfort during the period of training. However there were no dropouts in the study. A qualified physician examined the subjects medically and declared that they were fit to participate in the training programme for the study. The selected subjects' age, height and weight ranged from 18 years 6 months to 24 years 3 months, 148cms to 165cms and 49 kgs to 66 kgs respectively. The subjects in all the two groups were tested on selected criterion variables such as speed, agility and muscular endurance were assessed by 50 metres run, shuttle run and sit ups respectively prior to (pre test),after six weeks (mid test)and after twelve weeks (post test) of training except those of control group who did not participate in any special training. The pre ,mid and post test data collected from two groups on the dependent variables were statistically examined for significant differences, if any, by applying the One Way Repeated Measures ANOVA. Among each training, to find out which of the three paired means (pre, mid and post) had a significant difference, the New man keuls post – hoc test was applied.

Table I. Test Selection

S.No	Variables	Tests	Units of measurement
1	Speed	50 mts run	Seconds
2	Agility	4X10 mts shuttle run	Seconds
3	Muscular Endurance	Bent knee sit ups	Numbers

Results

Table I. One Way Repeated Measures ANOVA on Selected Variables of Pre, Mid and Post Tests of Plyometric Training with soccer skill practices Group

Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F'-ratio
Speed	Between	0.465	2	0.232	8.043*
	Error	1.098	38	0.029	
Agility	Between	0.578	2	0.289	8.249*
	Error	1.331	38	0.035	
Muscular Endurance	Between	809.733	2	404.867	34.321*
	Error	448.267	38	11.796	

* Significant at 0.05 level. The table value required for significance at 0.05 level with df 2 and 38 is 3.24.

Table - I shows that the obtained F-ratio values of plyometric training with soccer skill practices group on all the selected variables were 8.043, 8.249 and 34.321which were greater than the table value of 3.24 with df 2 and 38 required for significance at 0.05 level of confidence. The results of the study indicate that there was significant difference among the means of three tests at different time period for plyometric training group on selected variables. To find out which of the three paired means had a significant difference, the Newman Keuls post hoc test was applied and the results are presented in Tables II to IV.

Table II. Newman Keuls Test for the Differences between Treatment Means on Speed of Plyometric Training with Soccer Skill Practices Group

Means		Ordered Means			Range (r)	Critical Value
		Post test	Mid test	Pre test		
		7.40	7.50	7.62		
Post Test	7.40	-	0.10	0.22*	3	0.16
Mid Test	7.50	-	-	0.12	2	0.14
Pre Test	7.62	-	-	-	-	-

*Significant at 0.05 level.

Figure I. Means Values on Speed of Plyometric Training with soccer skill practices Group

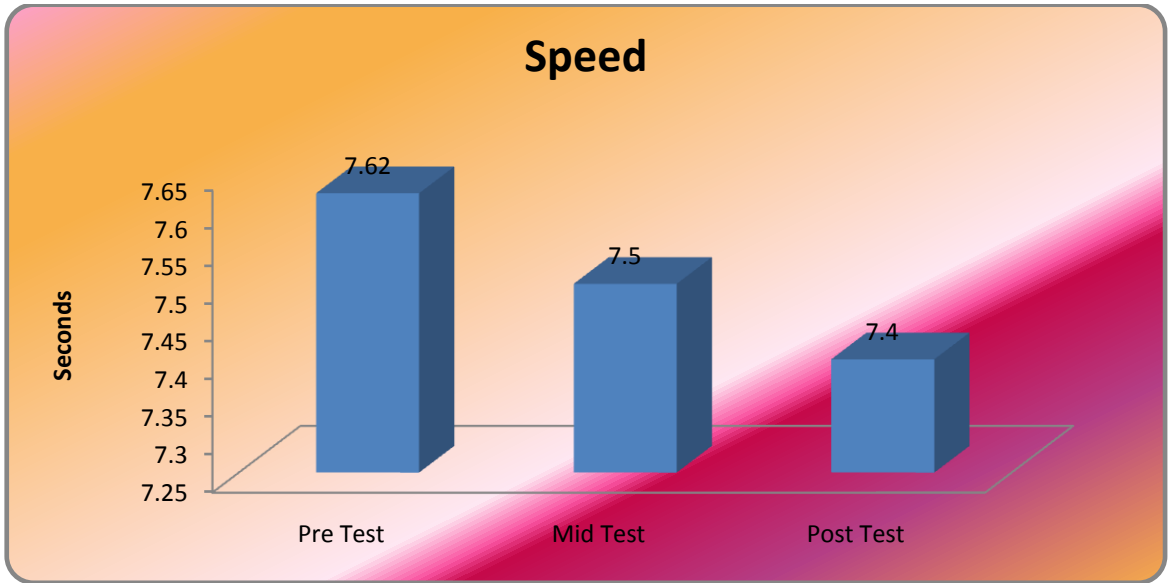


Table III. Newman Keuls Test for the Differences between Treatment Means on Agility of Plyometric Training with soccer skill practices Group

Means		Ordered Means			Range (r)	Critical Value
		Post test	Mid test	Pre test		
		7.40	7.49	7.63		
Post Test	7.40	-	0.09	0.23*	3	0.18
Mid Test	7.49	-	-	0.14	2	0.16
Pre Test	7.63	-	-	-	-	-

*Significant at 0.05 level.

Figure II. Means Values on Agility of Plyometric Training with soccer skill practices Group

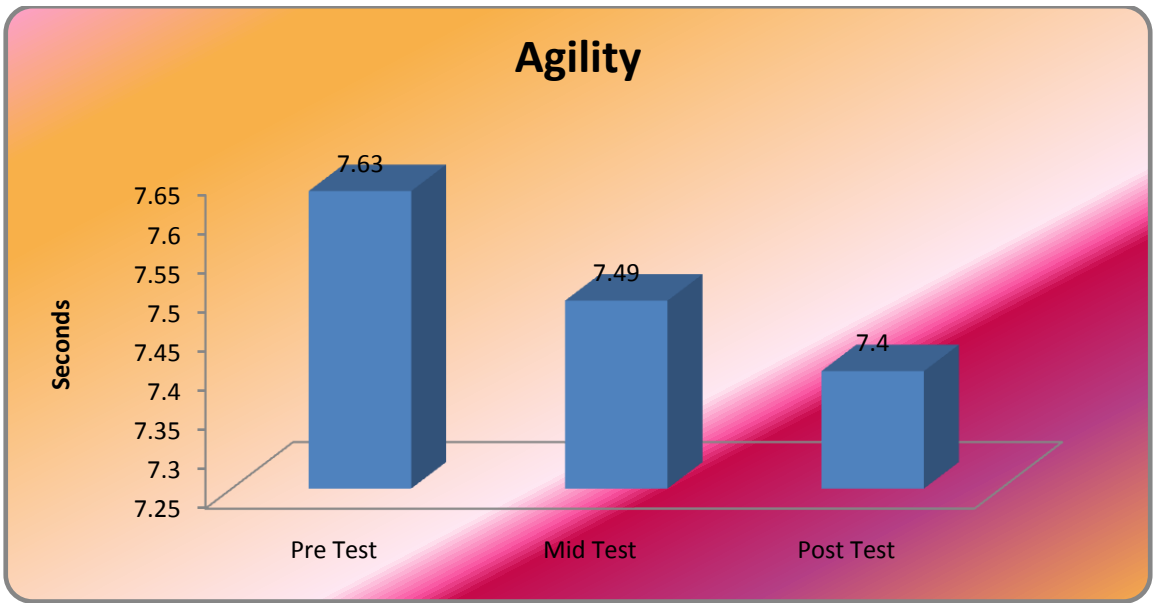


Table IV. Newman Keuls Test for the Differences between Treatment Means on Muscular Endurance of Plyometric Training with soccer skill practices Group

Means		Ordered Means			Range (r)	Critical Value
		Post test	Mid test	Pre test		
		41.10	35.50	32.20		
Post Test	41.10	-	5.60*	8.90*	3	3.37
Mid Test	35.50	-	-	3.30*	2	2.94
Pre Test	32.20	-	-	-	-	-

*Significant at 0.05 level.

Figure III. Means Values on Muscular Endurance of Plyometric Training with soccer skill practices Group

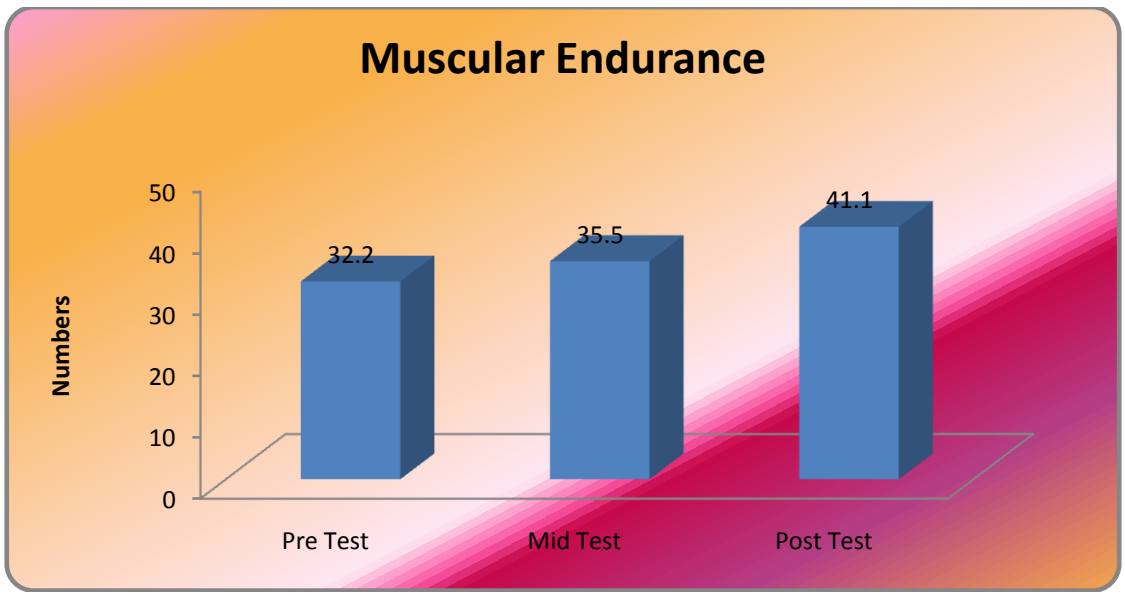


Table V. One Way Repeated Measures ANOVA on Selected Variables of Pre, Mid and Post Tests of Control Group

Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F'-ratio
Speed	Between	0.003	2	0.003	0.074
	Error	0.700	38	0.018	
Agility	Between	0.001	2	0.001	0.032
	Error	0.394	38	0.010	
Muscular Endurance	Between	1.900	2	1.900	0.161
	Error	224.100	38	5.897	

* Significant at 0.05 level. The table value required for significance at 0.05 level with df 2 and 38 is 3.24.

Table V shows that the obtained F-ratio values of control group on all the selected variables as 0.074, 0.032 and 0.161 were lesser than the table value of 3.34 with df 2 and 38 required for significance at 0.05 level of confidence. The results of the study indicate that there was insignificant difference among the means of three tests at different time period for control group on all selected variables.

Figure IV. Means Values on Speed of Control Group

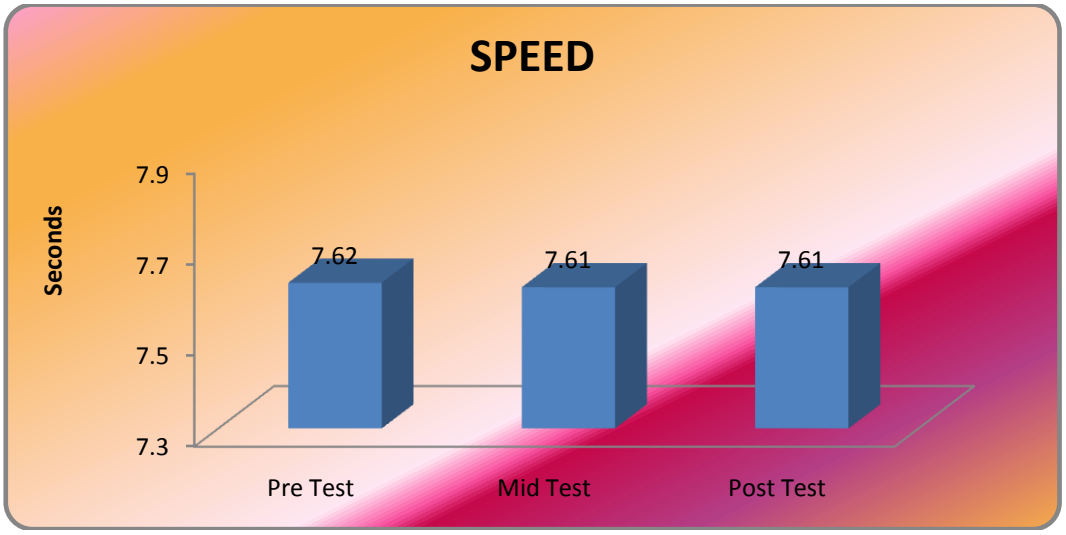


Figure V. Means Values on Agility of Control Group

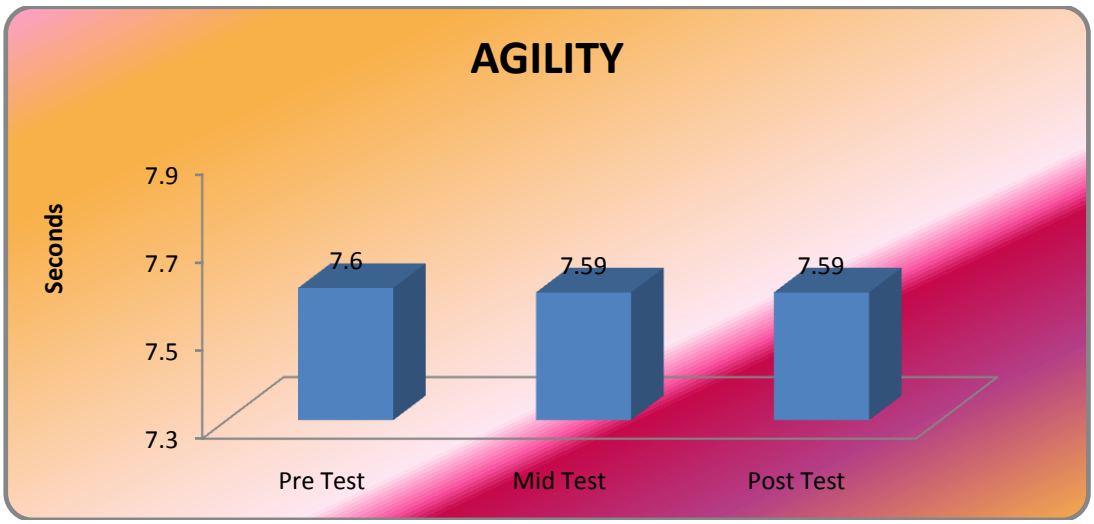
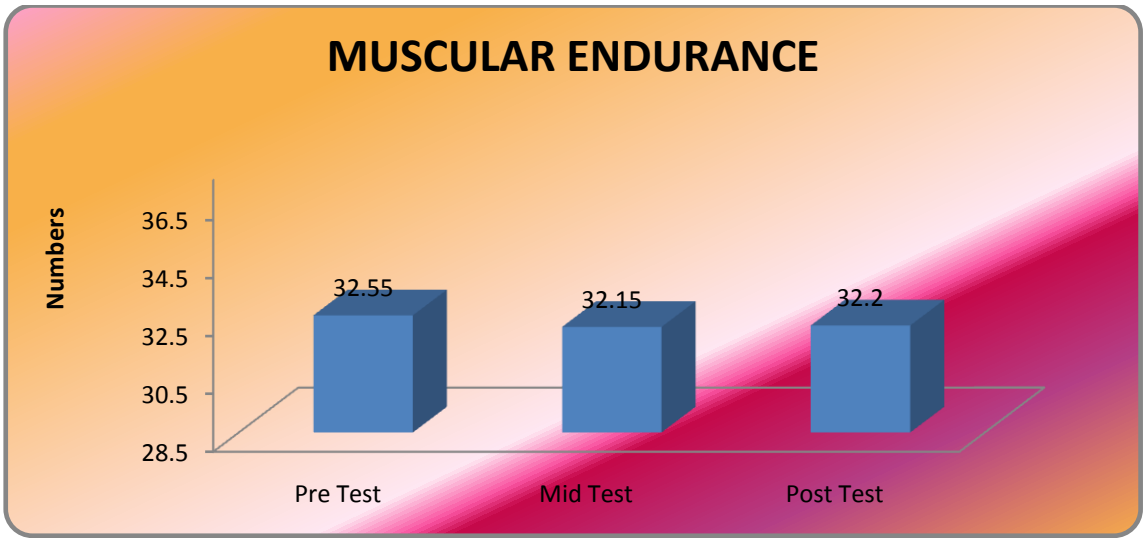


Figure VI. Means Values on Muscular Endurance of Control Group



Conclusions

Based on the finding of the study, the following conclusions were drawn

1. Plyometric training with soccer skill practices for 12 week had significantly improved motor fitness (speed, agility and muscular endurance among college players
2. The result indicated that though plyometric training significantly improved speed and agility of soccer players after the first six week of training, the improvement was not significant in these variables between 6th and 12th week hence e it could be taken that even 6 week of plyometric training would sufficiently improve speed and agility which sustain for 12 eek with no remarkable after the first phase of training.
3. The result indicated that plyometric training significantly improved muscular endurance of soccer players between 1st, 6th and 12th week hence e it could be taken that even 6 week of plyometric training would sufficiently improve speed and agility which sustain for 12 eek with no remarkable after the first phase of training.

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