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Effect of Plyometric Training on Speed and Agility of Volleyball Players

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Abstract : The purpose of this research is to know the effectiveness of plyometric training on Speed and Agility of Volleyball players. For this purpose, twenty eight club volleyball players in the age group of 16 to 18 years were selected as subjects. The selected subjects were divided into two equal groups, in which, Group-A: PTG acted as Plyometric training group (n=14) underwent plyometric exercises with specific skills practice and game and Group–B: CG acted as Control Group (n=14) which did not participate any training but allowed to take part in their regularly participating in physical activities. The training programme was carried out for five days per week for twelve weeks. Prior to and after the training period the subjects were tested for Speed by administering 50 Meters run measured in seconds and Agility by administering Illinois Agility Test measured in seconds. The collected data was examined by using dependent 't' test analysis. The Statistical Package for Social Science Version 24.0 and MS Office Excel 2015 was used. The level of significance was fixed at 0.05 level of significance to identify the significant differences in the selected physical fitness components such as speed and agility of volleyball players. After applying the dependent 't' test, it was found that there was a significant improvement in the Speed and Agility of experimental group when compared with Control Group. The study suggested that plyometric training with specific volleyball skills practice is suitable to maintain and develop speed and agility of volleyball players.

Index Terms - Plyometric Exercises, Speed, Agility, Volleyball, Training.

1. INTRODUCTION

The performance of sports primarily depends on his performance capability, comparable to speed, strength and endurance. Sports coaching may be a physical, technical, ethnical and intellectual involvement of presentation with the assistance of work up. Training is a pedagogical process, based on scientific principles, aiming at preparing sports men for higher performance in sports competitions (Singh, 1991).

Sport training is a process of athletics improvement, which is organized on the basic of scientific principles through systematic development of mental and physical efficiency, capacity and motivation to enable the athletes to produce outstanding and record breaking athletic performance.

Plyometric (plyo-more or greater, metric-measured or quantity) exercise based upon the belief that a rapid lengthening of muscle just prior to the contraction will result in a much stronger contraction. Plyometrics includes explosive powerful training exercises that are trained to activate the quick response and elastic properties of the major muscles in the body. It was initially made famous by Soviet Olympians in the 1970s, providing the core element in the strength programs of elite sporting athletes worldwide. Sports using plyometrics include Volleyball, tennis and volleyball as well as the various codes of football. Basic strength level must be attained before starting a plyometric training programme. The choice of exercise must correspond to age, sex and biological development of sports person. The study may be beneficial to the volleyball players to follow suitable plyometric training to improve physical fitness performance.

Guruvupandian and Murugavel (2017) investigated the influence of high intensity plyometric training program on motor fitness variables of intercollegiate male handball players. The study revealed that the Speed (50meters dash), agility (shuttle run)

parameters were significantly improved due to influence High Intensity Plyometric training. Aashish *et al*., (2015) investigated the effect of plyometric training program on the agility performance among male basketball players. The results found that there was significant effect of 6 week plyometric training program on agility (Barrow's Zig Zag test) in young male basketball players. Nurper (2015) examined how to speed, explosive strength, and kicking speed are affected by a 10-week plyometric training (PT) program in elite female soccer players. The result shows that significant changes in the speed due to 6 week plyometric training program in elite soccer players. Michailidis (2015) investigated the effectiveness of plyometric training on performance of preadolescent soccer players and results indicate that plyometric training improved speed (30 m sprint) in soccer players.

Research Topic

"Effect of Plyometric Training on Speed and Agility of Volleyball Players"

Objective

The aim of research was to examine the effect of plyometric training on speed and agility of volleyball players.

Hypothesis of the Study

It is hypothesized that there would be a significant difference in the Speed and Agility of Volleyball players due to intervention of plyometric exercises.

2. METHODOLOGY

For this purpose, twenty eight club volleyball players in the age group of 16 to 18 years were selected as subjects. The selected subjects were divided into two equal groups, in which, Group-A: PTG acted as Plyometric Training Group (n=14) underwent plyometric exercises with specific skills practice and game & Group–B: CG acted as Control Group (n=14) which did not participate any training but allowed to take part in their regularly participating in physical activities. The training programme was carried out for five days per week for twelve weeks. Prior to and after the training period the subjects were tested for Speed by administering 50 Meters run measured in seconds and Agility by administering Illinois Agility Test measured in seconds. The collected data was examined by using dependent 't' test analysis. The Statistical Package for Social Science Version 24.0 and MS Office Excel 2015 was used. The level of significance was fixed at 0.05 level of significance to identify the significant differences in the selected physical fitness components such as speed and agility of volleyball players.

3. ANALYSIS OF DATA

The data collected prior to and after the experimentation on selected physical fitness aspects namely speed, and agility of Volleyball players of CG (Control Group) and PTG (Plyometric Training Group) group were analyzed and presented in the form of Table and Graphs each variable separately.

Table-1: Dependent 't' test Analysis results on Volleyball players' pre and post test scores of Speed performance of CG and PTG groups (Each group 14 volleyball players).

Tests	CG Group			PTG Group		
	Mean Scores	Std. Dev.	't' Value	Mean Scores	Std. Dev.	't' Value
Pre Test scores of Speed	9.087	0.528	1.05^{NS}	8.725	0.575	4.91*
Post Test scores of Speed	9.002	0.481		8.153	0.570	

NS=Not Sig. at 0.05 level of confidence: * Sig. at 0.05 level of confidence [Table Value = 2.16]

The table-1 explains the Dependent 't' test Analysis results on Volleyball players' pre and post test scores of Speed performance of CG and PTG groups. The obtained 't' value of 1.05 with regard to performance of speed is less than the table value 2.16, hence, it was not found significant at 0.05 level of confidence. The results found that the there was no significant changes made from pre test to post test scores on Speed performance of Volleyball players of CG group.

Further, the table-1 shows that obtained 't' value of 4.91 with regard to performance of speed is higher than the table value 2.16, hence, it was found significant at 0.05 level of confidence. The results found that the there was a significant changes made from pre test (M=8.725) to post test (M=8.153) scores on Speed performance of Volleyball players of PTG group and this may be due to PTG group subjects participated in plyometric exercises.

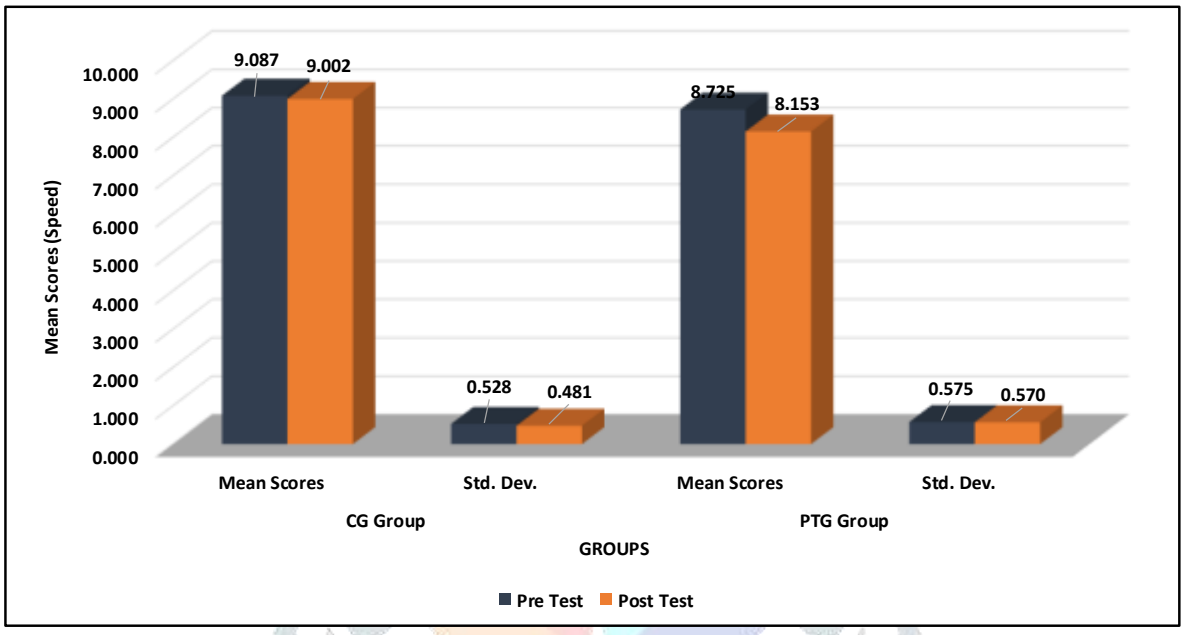

Fig.1: Comparison of Pre and Post Test scores on Speed ability of Volleyball players of CG and PTG groups.

Table-2: Dependent 't' test Analysis results on Volleyball players' pre and post test scores of Agility performance of CG and PTG group (Each group 14 volleyball players).

Tests	CG Group			PTG Group		
	Mean Scores	Std. Dev.	't' Value	Mean Scores	Std. Dev.	't' Value
Pre Test scores of Agility	19.171	1.295	1.01^{NS}	19.161	1.195	6.77*
Post Test scores of Agility	19.125	1.356		18.931	1.190	

NS=Not Sig. at 0.05 level of confidence: * Sig. at 0.05 level of confidence [Table Value = 2.16]

The table-1 explains the Dependent 't' test Analysis results on Volleyball players' pre and post test scores of Agility performance of CG and PTG groups. The obtained 't' value of 1.01 with regard to performance of Agility is less than the table value 2.16, hence, it was not found significant at 0.05 level of confidence. The results found that the there was no significant changes made from pre test (M=19.171) to post test (M=19.125) scores on Agility performance of Volleyball players of CG group.

Further, the table-1 shows that obtained 't' value of 6.77 with regard to performance of Agility is higher than the table value 2.16, hence, it was found significant at 0.05 level of confidence. The results found that the there was a significant changes made from pre test (M=19.161) to post test (M=18.931) scores on Agility performance of Volleyball players of PTG group and this may be due to PTG group subjects participated in plyometric exercises.

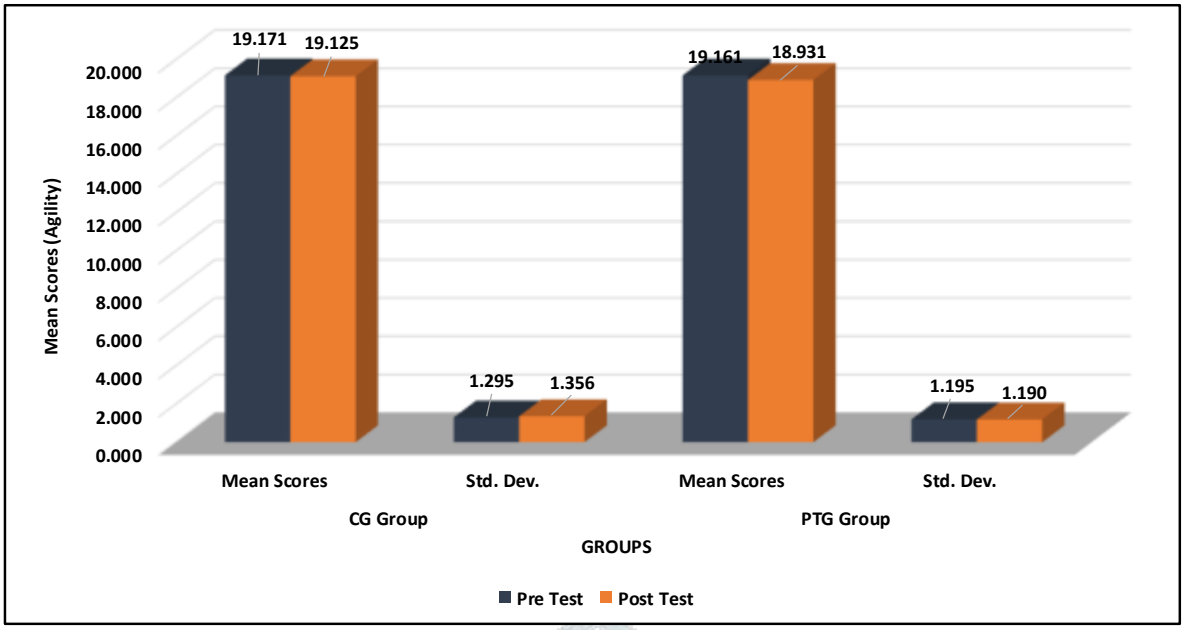

Fig.2: Comparison of Pre and Post Test scores on Agility of Volleyball players of CG and PTG groups.

4. DISCUSSION ON FINDINGS

The results of the investigation found that PTG showed significant changes made in the Speed and Agility performance of Volleyball players due to intervention of plyometric exercises when compared with CG group. The result shows that the 12 weeks practice of ploymetric exercises improved speed and agility of Volleyball players. This may be due to subjects participated in a plyometric exercises by using skater jumps, split squat jumps, box jumps, jump squats with volleyball skills practice was to specifically target the requirements of competitive Volleyball players. The similar results supported by Parimalam (2013) and Sandeep Sharma (2015) found that specific exercise programms was improved the physical fitness variables of Basketball Players.

5. CONCLUSION

This study confirmed that plyometric exercises group showed significant changes in Speed and Agility of Volleyball players due to intervention of 12 weeks plyometric exercises.

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