



ISOLATED AND COMBINED EFFECT OF PLYOMETRIC AND SKILL TRAINING ON SPEED AND AGILITY AMONG WOMEN VOLLEYBALL PLAYERS

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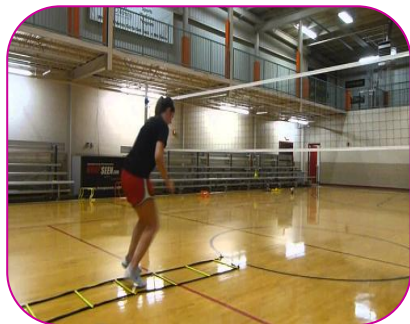
ABSTRACT

The purpose of the study was to find out the isolated and combined effect of plyometric training and skill training on speed and agility among women volleyball players. To achieve the purpose of this study, 60 volleyball players were selected randomly as subjects from Avinashilingam University, PSGR Krishnammal Arts & Science College, Nirmala College of Arts & Science, PSG Tech and Kongu Nadu Arts & Science College in Coimbatore at random and their ages ranged from 18 to 25 years. The subjects were divided into four equal groups of fifteen volleyball players each. The group I underwent plyometric training, group II underwent skill training, group III underwent combined plyometric training & skill training and group IV acted as a control group. The three experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. Data was analyzed by using Analysis of Covariance (ANCOVA) and Scheffe's Post hoc Test. In comparing the effect of combined plyometric and skill training group on bio-motor variables, from the obtained F-ratio, it was observed that combined group showed better performance on increasing speed and agility than the plyometric training skill training and control group.

KEY WORD: Plyometric, Skill Training, Speed, Agility, Volleyball.

INTRODUCTION

Plyometrics is the term given to practices intended to build the intensity of a competitor. It is characterized as what might as well be called unstable quality (Brukner and Khan, 2001) and alluded to by others as "speed-quality". In layman's terms, the point of plyometrics is to build the touchiness of the muscle enabling a competitor to run quicker, bounce further, or produce drive at a more prominent rate. Plyometric preparing is a type of preparing that is utilized to encourage create and improve hazardous power, which is an essential part in various athletic exhibitions. This preparation technique is intended to be utilized with other power advancement strategies in an entire preparing system to enhance the connection between most extreme quality and hazardous power. The cutting edge history of Plyometrics is to some degree brief yet not moderately new. This procedure was started in Russia and Eastern Europe amidst 1960. The Soviets were exceptionally effective in the utilization of Plyometrics in their preparation programs, particularly in olympic style sports.



Sport skill training is the basic form of an athlete's training. It is the preparation systematically organized with the help of exercises and which in fact is a pedagogically organized process of controlling the development of an athlete. Sports training are a basic preparation of the sportsmen for better performance through physical exercise. It is based on scientific principles of aiming at education performance and enhancement. Sports activities consist of motor movement and action and their success depends to a great extend on how correctly they are

performed. Techniques of training and improvement of tactical efficiencies play vital role in training process (Dick, 1997).

OBJECTIVE

- To find out the isolated and combined effect of plyometric training and skill training on speed and agility among women volleyball players.

METHODOLOGY

To achieve the purpose of the present study, sixty volleyball players from Avinashilingam University, PSGR Krishnammal Arts & Science College, Nirmala College of Arts & Science, PSG Tech and Kongu Nadu Arts & Science College in Coimbatore were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into four equal groups of fifteen volleyball players each. The group I underwent plyometric training, group II underwent skill training, group III underwent combined plyometric training & skill training and group IV acted as a control group. The three experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. Analysis of covariance (ANCOVA) and scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was fixed for the study.

RESULTS

Table 1: Analysis of Covariance of Mean of Isolated and Combined Effect of Plyometric and Skill Training and Control Groups on Speed (Scores in Seconds)

	EG I	EG II	EG III	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	7.33	7.37	7.40	7.39	BG	0.01	3	0.003	0.29
					WG	0.63	56	0.01	
Post-Test Means	7.12	7.15	6.94	7.37	BG	1.91	3	0.63	82.91*
					WG	0.43	56	0.007	
Adjusted Post-Test Means	7.12	7.14	6.94	7.37	BG	1.90	3	0.63	81.00*
					WG	0.43	55	0.007	

**Significant at 0.05 level.*

Table-1 shows that the indicated that the obtained F-ratio for the pre-test means among the groups on speed were 7.33 for experimental group – I, 7.37 for experimental group – II, 7.40 for experimental group – III and 7.39 for control group. The obtained 'F'-ratio 0.29 was lesser than the table 'F'-ratio 2.77. Hence the pre-test mean 'F'-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 56. The post-test means were 7.12 for experimental group – I, 7.15 for experimental group – II, 6.94 for experimental group – III and 7.37 for control group. The obtained 'F'-ratio 82.91 was higher than the table 'F'-ratio 2.77. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 56. The adjusted post-test means were 7.12 for experimental group – I, 7.14 for experimental group – II, 6.94 for experimental group – III and 7.37 for control group. The obtained 'F'-ratio 81.00 was higher than the table 'F'-ratio 2.77. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 55. It was concluded that there was a significant mean difference among plyometric training group, skill training group, combined training group and control group in developing speed of the volleyball players.

Table 2: Scheffe’s Test for the Differences between the Adjusted Post Test Means on Speed

Adjusted Post-Test Means				Mean Difference	Confidence Interval
EG I	EG II	EG III	CG		
7.12	7.14	---	---	0.02	0.08
7.12	---	6.94	---	0.18*	
7.12	---	---	7.37	0.25*	
---	7.14	6.94	---	0.20*	
---	7.14	---	7.37	0.23*	
---	---	6.94	7.37	0.43*	

*Significant at 0.05 level.

Table-2 depicts that there existed significant differences between the adjusted means of plyometric training and plyometric training & skill training (0.18), plyometric training and control group (0.25), skill training and plyometric training & skill training (0.20), skill training and control group (0.23), plyometric training & skill training and control group (0.43). There was no significant difference between plyometric training and skill training group (0.08) at 0.05 level of confidence with the confidence interval value of 0.08. The pre, post and adjusted means on speed were presented through bar diagram for better understanding of the results of this study.

Fig. 1: Adjusted Post Test Differences of the Isolated and Combined Effect of Plyometric and Skill Training and Control Groups on Speed (PTG, STG, CPTSTG & CG)

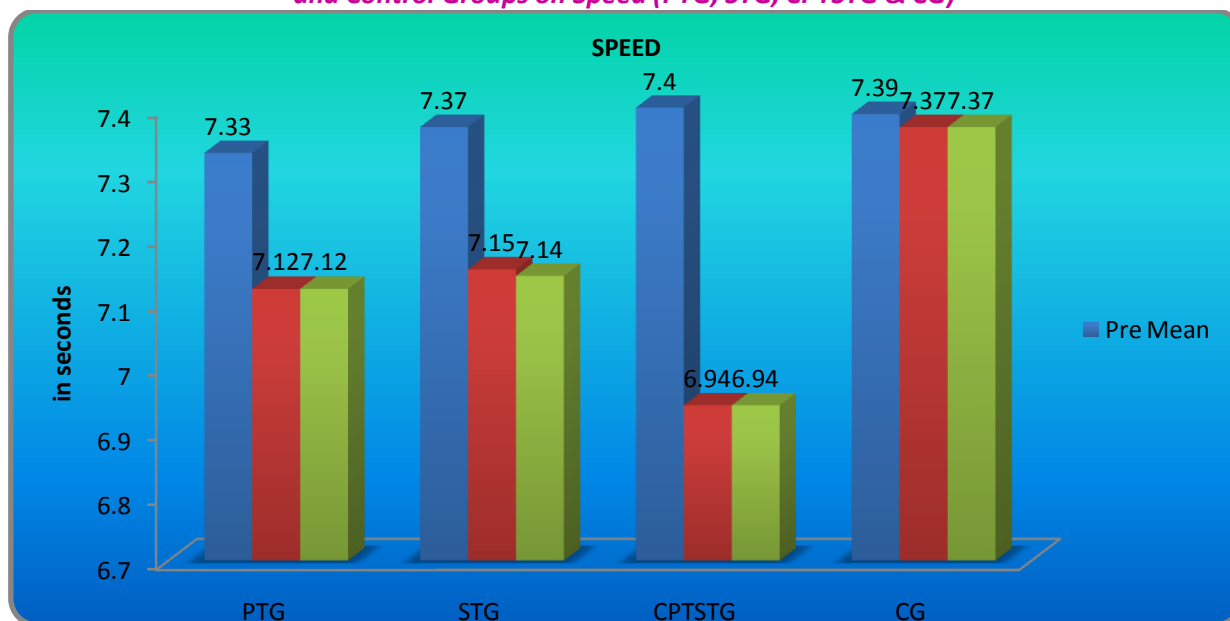


Table 3: Analysis of Covariance of Mean of Isolated and Combined Effect of Plyometric and Skill Training and Control Groups on Agility (Scores in Seconds)

	EG I	EG II	EG III	Control Group	Source of Variance	Sum of Squares	df	Means Squares	F
Pre-Test Means	12.50	12.60	12.52	12.51	BG	0.10	3	0.03	0.80
					WG	2.31	56	0.04	
Post-Test	11.71	11.69	10.14	12.53	BG	22.17	3	7.39	486.87*
					WG	0.85	56	0.01	

Means									
Adjusted Post-Test Means	11.71	11.69	10.14	12.53	BG	21.18	3	7.06	462.26*
					WG	0.84	55	0.01	

**Significant at 0.05 level.*

Table-3 reveals that the indicated that the obtained 'F'-ratio for the pre-test means among the groups on agility were 12.50 for experimental group – I, 12.60 for experimental group – II, 12.52 for experimental group – III and 12.51 for control group. The obtained 'F'-ratio 0.80 was lesser than the table 'F'-ratio 2.77. Hence the pre-test mean 'F'-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 56. The post-test means were 11.71 for experimental group – I, 11.69 for experimental group – II, 10.14 for experimental group – III and 12.53 for control group. The obtained 'F'-ratio 486.87 was higher than the table 'F'-ratio 2.77. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 56. The adjusted post-test means were 11.71 for experimental group – I, 11.69 for experimental group – II, 10.14 for experimental group – III and 12.53 for control group. The obtained 'F'-ratio 462.26 was higher than the table 'F'-ratio 2.77. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 55. It was concluded that there was a significant mean difference among plyometric training group, skill training group, combined training group and control group in developing agility of the volleyball players.

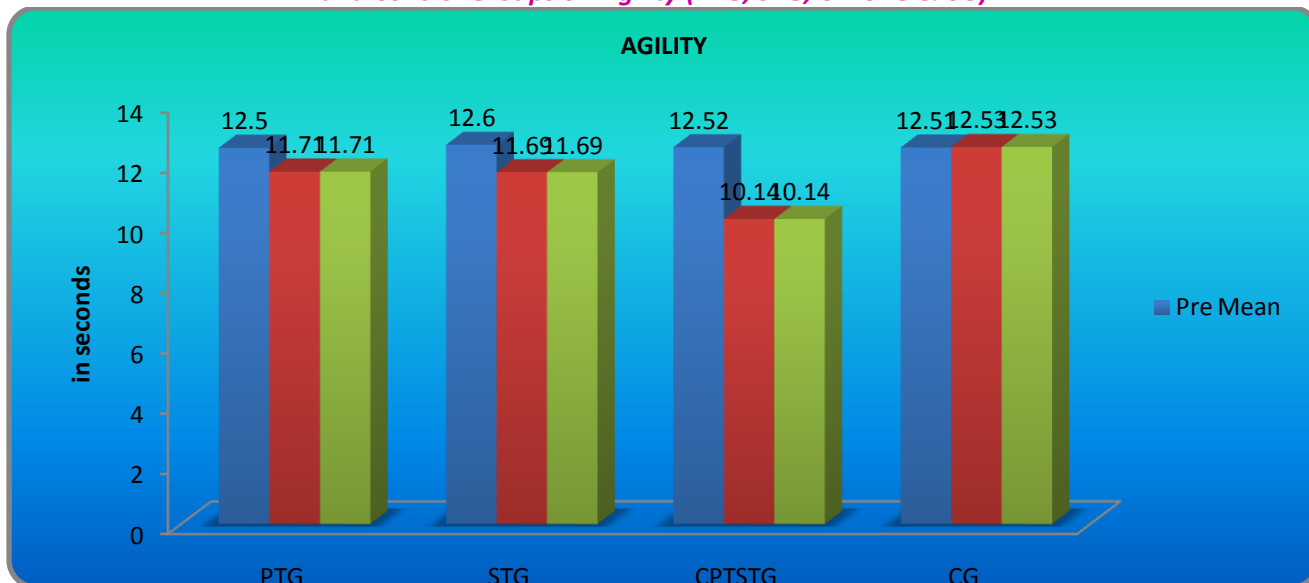
TABLE 4: Scheffe's Test for the Differences between the Adjusted Post Test Means on Agility

Adjusted Post-Test Means				Mean Difference	Confidence Interval
EG I	EG II	EG III	CG		
11.71	11.69	---	---	0.02	0.10
11.71	---	10.14	---	1.57*	
11.71	---	---	12.53	0.82*	
---	11.69	10.14	---	1.55*	
---	11.69	---	12.53	0.84*	
---	---	10.14	12.53	2.39*	

**Significant at 0.05 level.*

Table-4 shows that there existed significant differences between the adjusted means of plyometric training and plyometric training & skill training (1.57), plyometric training and control group (0.82), skill training and plyometric training & skill training (1.55), skill training and control group (0.84), plyometric training & skill training and control group (2.39). There was no significant difference between plyometric training and skill training group (0.02) at 0.05 level of confidence with the confidence interval value of 0.10. The pre, post and adjusted means on agility were presented through bar diagram for better understanding of the results of this study.

Fig. 2: Adjusted Post Test Differences of the Isolated and Combined Effect of Plyometric and Skill Training and Control Groups on Agility (PTG, STG, CPTSTG & CG)



CONCLUSION

- The significant mean difference does not exist among all the four groups in the pre test on speed and agility.
- In testing post test mean difference among the four groups statistically significant on variables of speed and agility. In testing the post adjusted mean among the four groups also predicts the above result.
- In comparing the effect of combined plyometric and skill training group, from the obtained f-ratios, it was observed that combined training group showed better performance on increasing speed and agility than the plyometric training, skill training and control group.

REFERENCES

1. Ashok, K. R., Balamurugan, B. & Karthik, R. V. (2012). Combined Effect of Plyometric Training and Skill Training on the Development of Fitness Related Parameters and Skill Performance variables among Male Volleyball Players. *International Journal of Health, Physical Education and Computer Science in Sports*, 8, 1.15-17.
2. Baumgartner, T. A., Andrew, S. J., Matthew, T. M., & David, A. R. (2003). *Measurement for Evaluation in Physical Education & Exercise Science*. New York: Mc-Graw Hill.
3. Blair, I. C. (1990). *The Promise of Plyometrics*. Martial Arts Training.
4. Brukner, P. & Khan, K. (2001). *Clinical Sports Medicine*. Revised Second Edition. McGraw Hill, Australia.
5. Chidambararaja, S. (2014). Effect of Upper and Lower Limb Plyometric Training on Performance Variables of Basketball Players. *International Journal of Recent Research and Applied Studies*, 2 (1), 1 -3.
6. Chu, Dorald, A. (1996). *Explosive Power and Strength: Complex Training for Maximum Strength*. 2nd Edition. Human Kinetics Publishers, Inc. United States.
7. Chu, Dorald, A. (1998). *Jumping Into Plyometrics*. 2nd Edition. Chicago, IL: Human Kinetics Publishers, Inc. United States.
8. Devaraju, K. (2014). Impact of Plyometric Training on Selected Physical Fitness Variables among Tennis Players. *International Journal of Recent Research and Applied Studies*, 1, 7(15), 59 - 61.
9. Dick Frank W. (1997). *Sports Training Principles*, London: A&C Black Publishers Ltd.,
10. Farentinos, R. & Radcliffe, J. (1985). *Advanced Plyometrics: Explosive Power Training*. Retrieved from <http://darkwing.uoregon.edu/~abwalls/neuro.html>.

11. Gnaneshwar, M.N. & Gopinath, R. (2013). Effect of Plyometric Training Isotonic Training and Combination of Isotonic And Plyometric Training on Speed and Muscular Endurance. *International Journal of Health, Physical Education and Computer Science in Sports*, 11, 1.125-127.
12. Gokulakrishnan, D. & Pushparajan, A. (2014). Effect of Plyometric Training Programme and Plyometric Training Parallel with Closed Kinetic Chain Resistance Training Programme on the Development of Anthropometric Variables of Adolescent Students. *International Journal of Recent Research and Applied Studies*, 1 (2), 4 -7.
13. Kala, C. & Gokulakrishnan. D. (2015). Effect of Concurrent Resistance and Plyometric Training on Selected Physical Variables among College Women Volleyball Players. *International Journal of Recent Research and Applied Studies*, 2, 1(7), 31 - 36.