REVIEW OF RESEARCH

EFFECT OF SKILL TRAINING AND PLYOMETRIC TRAINING ON SKILL PERFORMANCE AMONG SCHOOL VOLLEYBALL PLAYERS

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S. Shukkur[1] and Dr. D. Krishna Murthy[2]

[1]Ph.D- Scholar, Department of Physical Education, Sri Venkateswara University, Tirupati, Andhra Pradesh.
[2] Director, Department of Physical Education, Sri Venkateswara University, Tirupati, Andhra Pradesh.

ABSTRACT:

The rationale of the study was to examine the effect of effect of skill training and plyometric training on skill performance among school volleyball players. To accomplish this purpose, 36 male volleyball players studying in the various schools from Tirupathi, Andhra Pradesh were selected as subjects. They were divided into three equal groups and each group consisted of 12 subjects. Group-I performed skill training, group-II performed plyometric training and group-III acted as control. The training period for both the experimental groups was twelve weeks. The dependent variables tested were volleyball passing and serving skills. The collected data from these three groups prior and after the training period were statistically examined for significant difference if any, by applying Analysis of Covariance (ANCOVA). Since three groups were involved, Scheffe S test was applied as post-hoc test to find out any difference between the groups. The result of the study shows that there was significant improvement on volleyball skill performances such as passing and serving skills of school volleyball players.

KEYWORDS: *Skill training, plyometric training and volleyball skill performance.*

INTRODUCTION

Volleyball is an extremely demanding sport. At an elite level, players are often required to perform at their limits of speed, agility, flexibility, endurance and strength. On top of all of this, players must maintain a high state of concentration in order to meet the tactical/mental demands of dealing with their opponents. The varied potential stresses of competitive play are considerable. It is therefore essential that everyone involved with the modern game ought to be familiar with the fitness requirements of the game. The changing nature of game demands better skill and increased physical abilities. It is a known fact that players should be better in morphological measures, body composition, motor fitness components and physiological traits. The application of modern training methods will improve standards of game performance.

Speed and strength are integral components of fitness found in varying degrees in virtually all athletic movements. Simply put the combination of speed and strength is power. For many years, coaches and athletes have sought to improve power in order to enhance performance. Throughout this century and no doubt long before, jumping, bounding and hopping exercises have been used in various ways to enhance athletic performance. In recent years, this distinct method of training for power or explosiveness has been termed plyometric (Bompa et al., 2005).

Plyometric training is a type of exercise designed to produce fast, powerful movements, and improve the functions of the nervous system, generally for the

purpose of improving performance in sports. Plyometric is used to increase the speed or force of muscular contractions, providing explosiveness for a variety of sport-specific activities. Plyometric has been shown across the literature to be beneficial to a variety of athletes. Benefits range from injury prevention, power development and improvement in sprint performance.

Studies investigating the effectiveness of game-based training are limited, with many of the suggested advantages and disadvantages of game-based training based on anecdotal evidence. Jenkins, Gabbett and Abernethy (2009) provide a brief review of the relevant literature on game-based training, and summarize the advantages and disadvantages of this approach to training. Of the studies that have been performed, most have reported that game-based training offers a specific method of conditioning for team sport competition, but game-based training may not simulate the high-intensity, repeated-sprint demands of international competition. Game-based training has been reported to offer a safe, effective method of conditioning for team-sport athletes that results in comparable (and, in some cases, greater) improvements in physical fitness and performance than traditional conditioning activities.

The skill training and plyometric training programmes have become highly structured training for enhancement of physical fitness and skill performance. It has vastly different training effects depending upon the intensity and duration of the work and rest period. More research is required concerning the variation in skill training and plyometric training and its effects. The applicability of this method of training to improve the volleyball skill performance is not yet completely known. Consequently, the aim of the present study is to compare the skill training and plyometric training for differences in their effectiveness on skill performance of school volleyball players.

METHODOLOGY

Subjects and Variables

To achieve this purpose, 36 male volleyball players studying in various schools from Tirupathi, Andhra Pradesh were selected as subjects. They were divided into three equal groups and each group consisted of 12 subjects. The selected dependent variables passing and serving skills were assessed by conducting the following test items.

Table – I: Dependent Variables and Tests

Sl.No	Variables	Test Items
1	Passing	Bready wall volley test
2	Serving	AAHPER Volleyball serve test

TRAINING PROGRAMME

The training programme for both skill and plyometric training groups were scheduled for one session a day. During the training period, the experimental groups underwent their respective training four days per week for twelve weeks. The experimental group-I performed skill training and experimental group-II performed plyometric training. Skill training drills follow work to rest ratios similar to competition, incorporate rapid starts, stops and changes of direction close to game speed, and also include technical skills. A 12-week plyometric training program was developed using four training sessions per week. The training program was based on recommendations of intensity and volume from Piper and Erdmann (1998), using similar drills, sets, and repetitions. Training volume ranged from 90 foot contacts to 140 foot contacts per session. The experimental groups underwent their training under the instruction and supervision of the investigator.

STATISTICAL TECHNIQUE

The data were collected on selected dependent variables such as serving and passing at before and after the twelve weeks of training as pre and post test from both experimental and control groups. Analysis of covariance (ANCOVA) was applied to find out significant difference if any between the experimental and control groups. Since three groups were involved, whenever the obtained 'F' ratio

value was found to be significant for adjusted post test means, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases the level of confidence was fixed at 0.05 for significance.

RESULTS

The influences of skill training and plyometric training on each of the selected dependent variables were analyzed and the obtained results are presented below.

Table–II: Analysis of Covariance on Passing and Serving Skills of Experimental and Control Groups

Variables	Skill Training Group	Plyometric Training Group	Control Group	S o V	Sum of Squares	df	Mean Squares	'F' ratio
Passing	33.78	31.36	28.14	B	138.76	2	69.38	24.52*
				W	90.65	32	2.83	
Serving	30.86	26.47	23.69	B	241.52	2	120.76	21.99*
				W	175.58	32	5.49	

(Required table value for significance at 0.05 level of confidence with degrees of freedom 2 and 32 is 3.29)
**Significant at .05 level of confidence*

The obtained 'F' ratio values 24.52 and 21.99 of passing and serving skills are greater than the required table value of 3.29 for the degrees of freedom 2 and 32 at 0.05 level of confidence. Hence, it was concluded that significant differences exist between the adjusted post test means of experimental and control groups on passing and serving skills. Since, the obtained 'F' ratio value in the adjusted post test means is found to be significant, the Scheffe'S test is applied as post hoc test to find out the paired mean difference, and it is presented in table-III.

Table – III: Scheffĕs Test for the Difference between the Adjusted Post-Test Mean of Selected Skill Performance Variables

Variables	Adjusted Post-test Mean				
	Skill Training Group	Plyometric Training Group	Control Group	Mean Difference	Confidence interval at .05 level
Passing	33.78	31.36		2.42*	1.76
	33.78		28.14	5.64*	1.76
		31.36	28.14	3.22*	1.76
Serving	30.86	26.47		4.39*	2.45
	30.86		23.69	7.17*	2.45
		26.47	23.69	2.78*	2.45

**Significant*

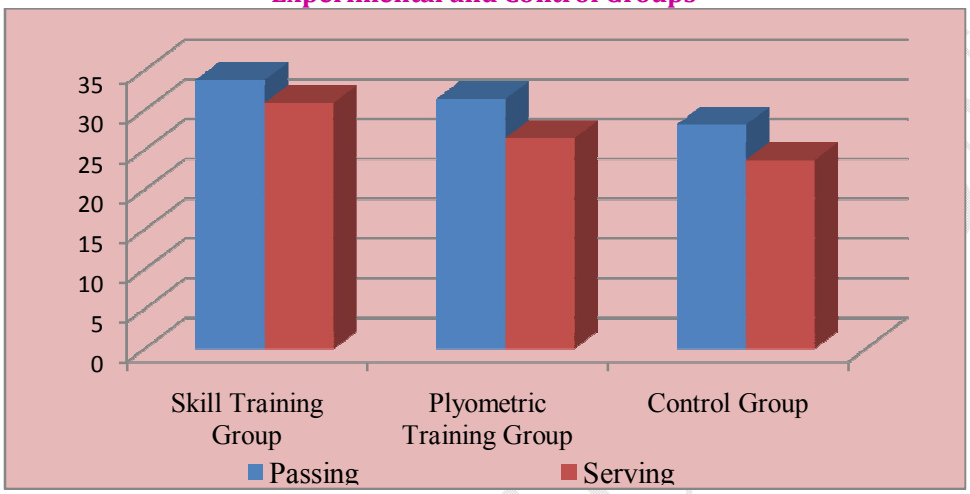
The Scheffe's post hoc analysis proved that there were significant mean differences exist between skill training and plyometric training groups, skill training and control groups, plyometric training and control groups on passing and serving skills. Since, the mean differences were higher than the confident interval value of 1.76 and 2.45 at 0.05 level of confidence.

Hence, it was concluded that due to the effect of skill training and plyometric training the passing and serving skill performances of the volleyball players was significantly improved. It was also

concluded that skill training is significantly better than plyometric training in improving volleyball passing and serving skill performances.

The adjusted post test mean values on passing and serving skill performances of skill training, plyometric training and control groups are graphically represented in figure-I.

Figure-I: Adjusted Post Test Mean Values on Passing and Serving Skill Performances of Experimental and Control Groups



DISCUSSION

Physical fitness variables are very important for volleyball players and form a condition for higher performance. The components of physical fitness like strength, speed, endurance, flexibility and the various coordinative abilities are essential for a high technique and tactical efficiency (Mal, 1982). Depending upon the demand of the game, each factor of physical fitness should be optimally developed. The higher the fitness level, the faster the recovery of skeletal muscles following a fatiguing bout of exercise. The higher the training level, the less likely that the expected effects of fatigue that are seen in untrained populations would occur (Carpenter et al., 1998; Bompa, 1999).

Volleyball games typically have short bursts of play that require start and stop action. Cardio exercises to improve endurance should include volleyball drills that mimic the bursts of stamina needed in a volleyball game. A number of studies demonstrate the effectiveness of skill and plyometric training compared to non- exercising control groups. Many volleyball trainers use “plyometric exercises” that help to build power and speed through jumping drills. The plyometric exercises help to condition a volleyball player’s vertical jump technique to improve spiking, blocking and serving. Starting a workout routine that includes high intensity integral training with a variety of cardio equipment and strength training will also help to improve endurance and fitness. Volleyball players can use integral training to condition them for quick volleyball maneuvers through bursts of intense exercises and drills (Balakrishnan, 2007).

Skills learned from skill-based conditioning games are more likely to be applied in the competitive environment, their use may provide a practical alternative to traditional conditioning for improving the playing performance (Gabbett, 2008). Gabbett (2006) also suggests that not only specific fitness be improved through skill-based conditioning, but also that the associated skill practice is transferable to the match situation. Trajkovic et al., (2012) documented that general conditioning along with specific volleyball conditioning is necessary in the preseason period for the development of the lower-body strength, agility and speed performance in volleyball players. Arockiaraj, Muthueleckuvan and Veeramani (2012) found significant improvement on speed, forearm pass and overhead pass due to the effect of skill based conditioning among male volleyball players.

CONCLUSIONS

It was concluded that there was a significant improvement on volleyball passing and serving skill performance of school volleyball players due to the effect of skill and plyometric training however, skill training was significantly better than plyometric training in improving passing and serving skill performance of school volleyball players. Hence, it is recommended that volleyball players and coaches include skill based conditioning and plyometric training methods as part of their training schedule for team preparation.

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S. Shukkur
Ph.D- Scholar, Department of Physical Education, Sri Venkateswara University, Tirupati, Andhra Pradesh.