



International Journal of Physical Education, Sports and Health

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 4.69
IJPESH 2016; 3(2): 204-207
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www.kheljournal.com
Received: 25-01-2016
Accepted: 27-02-2016

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Effects of skill training and plyometric training on selected skill performance variable (service) among school volleyball players

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Abstract

The purpose of this study is to find out the effects of skill training and plyometric training on selected skill performance variables (Service) among school volleyball players. The study was formulated as a true random group design consisting of a pre-test and post test. The subjects (N=60) were randomly assigned to three groups of twenty school level volleyball players. The groups were designed as experimental group I –skill training group (STG) experimental group II – plyometric training group (PTG) and control group (CG) respectively. Pre test was conducted for all the 60 subjects on selected skill performance variables such as, service. The experimental groups the participated in respective training for a period of twelve weeks. The control group did not participated in any of the training programme. The post test was conducted on the above said dependent variables after a experimental period for all the three groups. The difference between initial and final mean scores of the groups was the effect of respective experimental treatment on the subjects. The differences in the mean scores was subjected to statistical treatment using ANCOVA In all cases 0.05 level was fixed test the hypothesis of the study.

Keywords: Skill Training Plyometric training Skill performance variable, Service

Introduction

Performance sports aim at high sports performance and for most physical and psychic capacities of sports men are developed to extreme limits. This normally does not happen in other areas of human activities. As a result, performance sports field possess valuable knowledge about the limits to which human performance and various performance factors can be developed. It also lead to discovery of means and methods for improving various physical and psychic capacities (performance factors) to exceptionally high level. This knowledge can be faithful by applied to other areas of sports and human activities.

Volleyball

Volleyball has developed into a highly competitive sport which requires a high level of physical, physiological and psychological fitness. The game at a high level of competition, requires quicker sudden movements and fast reaction. Volleyball matches have no time limit and matches can last for several hours, if the teams are evenly matched.

Volleyball skills

A volleyball player is supposed to master six basic skills: serve,. Each of these skills comprises a number of specific techniques that have been introduced along the years and are now considered standard practice in volleyball.

Serve

The serve marks the beginning of a rally in volleyball. A player stands behind the baseline and hits the ball, in an attempt to drive it into the opponent's court. His main objective is to make it land inside the court; it is also desirable to set the ball's direction, speed and acceleration so that it becomes difficult for the receiver to handle it properly. A serve is called an "ace" when the ball lands directly onto the court or travels outside after being touched by an opponent.

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In contemporary volleyball, many types of serve are employed, as follows:

Underhand and Overhand Serve: refers to whether the player strikes the ball from below, at waist level, or first tosses the ball in the air and then hits it above shoulder level. Underhand serve is considered very easy to receive and is not generally employed in international competitions.

Sky Ball Serve: a specific type of underhand serve, where the ball is hit so high it comes down almost in a straight line. This serve was invented and employed almost exclusively by the Brazilian team in the early 80's. It is now considered outdated.

Line and Cross-Court Serve: refers to whether the balls flies in a straight trajectory parallel to the side lines, or crosses through the court in an angle.

Spin Serve: an overhand serve where the ball gains topspin through wrist snapping.

Floater: an overhand serve where the ball is hit with no spin so that its path becomes unpredictable. Can be administered while jumping or while grounded.

Jump Serve: an overhand serve where the ball is first tossed high in the air, then hit with a strong downward movement of the arm, as in a spike; there is usually much topspin imparted on the ball. This is the most popular serve amongst college and professional teams.

Round-House Serve: the player stands with one shoulder facing the net, tosses the ball high and hits it with a fast circular movement of the arm. Usage of this serve in indoor volleyball is today restricted to a few Asian women's teams.

Volleyball Skill Training

Volleyball skill training should be viewed as a sport activity with an educational purpose, that is, fostering collaboration and teamwork, and teaching the importance of developing a strong body and a healthy mind. These characteristics of volleyball can be used by coaches to help children learn the joy of sports through training and playing. In view of this, it goes without saying that winning is not the ultimate goal. One should always remember that coaching volleyball is about providing valuable experiences that children need for their future, while enabling them to experience the joys of self-improvement.

Effects of Skill Training

Skills training employ highly repetitious drills where the focus is skill execution with decision making removed. This form of drill is referred to as 'closed' in contrast to 'open' where the skills are performed in a more game-like environment with decision making and greater unpredictability. An alternative approach called game-based training has evolved that combines the skill and physical elements in a coordinated and combined approach (Gabbett, T.J (2002). The use of games in training is based on the "specificity of practice principle" where the greatest improvements in performance occur when the physiological demands and movement patterns replicate the demands of the sport as closely as possible. Put simply, transfer of practice to the game environment depends on the extent to which practice or training resembles the game. Hence, practice sessions need to replicate actual game events and phases of play so players are repeatedly exposed to the

intensity, decisions, processing speed and skill execution required in the competition setting. The use of game-based training simulates movement patterns in a competitive environment where athletes must perform under pressure and fatigue. Game-based training offers an additional challenge to team sport athletes not normally present in non-skill related conditioning activities. (Gabbett, T (2003)^[5]

Plyometric Exercises

According to Will and Freeman (1980), "the word plyometrics is defined from the Greek work 'plethyoin' which means equal length. Plyometrics (Plyo – more greater, metric – measured quantity) exercises is based upon the belief that a rapid lengthening of a muscle just prior to a contraction will result in a much stronger contraction.

Statement of the Problem

The purpose of this study is to find out the effects of skill training and plyometric training on selected skill performance variables (Service) among school volleyball players.

Hypothesis

It was hypothesized that skill training and plyometric training would significantly improve the selected skill performance variables compared to control group.

It was hypothesized that compared to treatment groups, that is, skill training and plyometric training, skill training would be significantly better than plyometric training in improving selected skill performance among school volleyball players.

Limitations

1. Heredity which contribute to both physical and mental efficiency will not be controlled.
2. Diet of the subject, general activity, motivation of the subjects is beyond the control of the researcher.
3. Practice sessions are not taken in to consideration.
4. Academic pressure, like coaching class is not taken in to consideration.
5. Certain factors like food habits, life style, daily routine, climatic conditions and the environmental factors which may have an effect on this study were not taken into consideration while interpreting the results.

Delimitations

The study was limited among 60 school level volleyball players randomly selected from different schools in Andhra Pradesh.

This research confined among school boys in the age group of 13 to 15 years.

This study was delimited to the Skill performance variables, Service.

Definition of Terms

Skill:-The word skill could be defined as the learned ability to bring about predetermined results with maximum certainty and minimum outlay of time and energy (Reiley, 1996)^[4].

Service:-The serve marks the beginning of a rally in volleyball. A serve is called an "ace" when the ball lands directly onto the court or travels outside after being touched by an opponent.

Methodology

In this Study, the selection of subjects, selection of variables, orientation of subjects, reliability of instruments, competency

of tester, reliability of data, test administration, experimental design and the statistical procedure used have been explained.

Selection of Subjects

To facilitate the study, 60 school level volleyball players from different schools of Andhra Pradesh were randomly selected as subjects and their age ranged between 12-15 years. They were further divided into three groups namely volleyball skill training group (STG), plyometric training group (PTG), and control group (CG), on random basis consisting of 20 in each group.

Before the commencement of the training, purpose of the study and method of performing, volleyball skill training, and Plyometric training were explained to the subjects for their cooperation and to avoid injuries.

Selection of Variables

The researcher reviewed the various scientific literatures pertaining to volleyball skill training, and Plyometric training on selected skill performance variable from books, journals, and research papers. Taking into consideration the feasibility and availability of instruments the following variables were selected.

Dependent Variables:-Skill Performance:- Service

Independent variables:-1. Volleyball Skill Training (STG).
2. Plyometric Training (PTG) for 12 weeks

Experimental Design

The study was formulated as a true random group design consisting of a pre-test and post test. The subjects (N=60) were randomly assigned to three groups of twenty school level volleyball players. The groups were designed as experimental group I –skill training group (STG) experimental group II – plyometric training group (PTG) and control group (CG) respectively. Pre test was conducted for all the 60 subjects on selected skill performance variables such as, service. The experimental groups the participated in respective training for a period of twelve weeks. The control group did not participated in any of the training programme. The post test was conducted on the above said dependent variables after a experimental period for all the three groups. The difference between initial and final mean scores of the groups was the effect of respective experimental treatment on the subjects. The differences in the mean scores was subjected to statistical treatment using ANCOVA In all cases 0.05 level was fixed test the hypothesis of the study.

Test Administration.

Volley Ball Serve (Russel – Lange Volleyball Test)

This test was found to be quite effective to finding out the serving and volleyball ability of the students of the school. This test consist of two test items, namely serving test and repeated volley test.

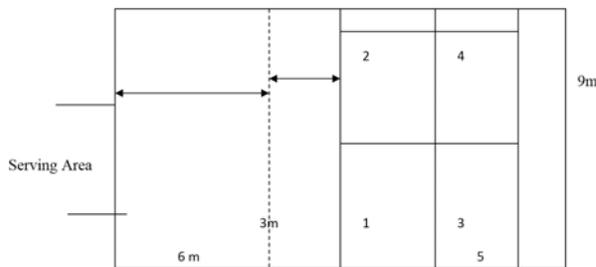


Fig I

The court with special markings as shown in the Figure I is first prepared which certain in each of the marked areas are chalked number to indicate the score value of the respective areas.

The players being tested stands behind the end line in the serving area, and in given 10 serves to place the ball into the target across the net. Any legal service is permitted.

Scoring System:-The score is the point value as the spot on which the served ball lands. A ball lands on a line is scored the high values of the two areas. Serves in which foot fault occur are scored zero marks. Two trials will be given for each trial. Ten serving chances will be given and the sum of the scores in the areas for the best trial is recorded. (Johnson and Nelson, 1973)

Statistical Procedure:-The following statistical procedures were followed to estimate the effect of skill training and plyometric training on selected Skill performance variables among school level volleyball players.

The pre and test scores were analysed by using ANCOVA statistical technique. When the F ratio was found to be significant, Scheffe’s post hoc test was to find out the paired mean significant difference. (Thirumalaisamy, 1998).

Results and Discussions

Results on Serve:-The statistical analysis comparing the initial and final means of Serve due to Volleyball skill training and Plyometric training among volleyball players is presented in Table -I

Table I: Computation of Analysis of Covariance of Serve

	Volleyball Skill Training	Plyometric Training	Control GROUP	Source Of Variance	Sum Of Squares	Df	Mean Squares	Obtained F
Pre Test Mean	30.30	29.95	28.75	Between	26.43	2	13.22	1.46
				Within	516.90	87	9.07	
Post Test Mean	33.70	32.20	29.00	Between	230.53	2	115.27	13.82*
				Within	475.40	87	8.34	
Adjusted Post Test Mean	33.11	31.94	29.85	Between	103.50	2	51.75	111.70*
				Within	25.94	86	0.46	
Mean Diff	3.40	2.25	0.25					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.10, 2 and 86 (df) =3.10.

*Significant

As shown in Table I, the obtained pre test means on Serve on Volleyball skill training group was 30.30, Plyometric training

group was 29.95 was and control group was 28.75. The obtained pre test F value was 1.46 and the required table F

value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on Serve on Volleyball skill training group was 33.70, Plyometric training group was 32.20 was and control group was 29.00. The obtained post test F value was 13.82 and the required table F value was 3.10, which proved that there was significant difference among post test scores of the subjects.

Taking into consideration of the pre test means and post test

means adjusted post test means were determined and analysis of covariance was done and the obtained F value 111.70 was greater than the required value of 3.10 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in table II.

Table II: Scheffe's Confidence Interval Test Scores on Serve

MEANS				Required . C I
Volleyball skill training Group	Plyometric training Group	Control Group	Mean Difference	
33.11	31.94		1.17*	0.54
33.11		29.85	3.25*	0.54
	31.94	29.85	2.08*	0.54

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Volleyball skill training group and control group (MD: 3.25). There was significant difference between Plyometric training group and control group (MD: 2.08). There was significant difference between treatment groups, namely, Volleyball skill training group and Plyometric training group. (MD: 1.17).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure I.

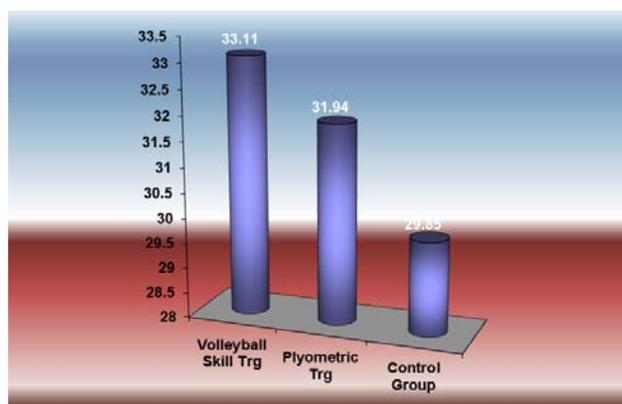


Fig I: Bar Diagram on Ordered Adjusted Means on Serve

Discussions on Findings on Serve

The effect of Volleyball skill training and Plyometric training on Serve is presented in Table I. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 111.70 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table -II proved that there was significant difference between Volleyball skill training group and control group (MD: 3.25) and Plyometric training group and control group (MD: 2.08). Comparing between the treatment groups, it was found that there was significant difference between Volleyball skill training and Plyometric training group among volleyball players.

Thus, it was found that Volleyball skill training was significantly better than Plyometric training and control group in improving volleyball skill performance, such as, Serve of the volleyball players.

Discussion on Hypothesis

1. It was hypothesized that skill training and plyometric training would significantly improve the selected skill performance variables compared to control group.
2. The results presented in Tables I, on selected skill performance, serve, proved that the obtained F values on adjusted means 111.70, was greater than the required F value of 3.10 to be significant at 0.05 level Hence, it was proved that experimental treatments, 12 weeks volleyball skill training and 12 weeks plyometric training significantly contributed for the improvement of selected skill performance variables of volleyball players, Since significant F values were obtained, post hoc analysis was made and the results presented in Tables II, proved that volleyball skill training and plyometric training significantly improved skill performance variables, serve, compared to control group and the formulated hypothesis No. 2 was accepted at 0.05 level.

Conclusions

It was concluded that 12 weeks volleyball skill training and plyometric training was able to significantly improve skill performance variable, such as, serve of the school level volleyball players compared to control group. It was also found that there volleyball skill training was significantly better than plyometric training in improving serving ability of school level volleyball players.

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