



ISSN: 2456-0057

IJPNPE 2020; 5(1): 132-135

© 2020 IJPNPE

www.journalofsports.com

Received: 04-11-2019

Accepted: 07-12-2019

K Uma Rani

Research Scholar in Physical Education, Center for Distance Education, Acharya Nagarjuna University College of Physical Education and Sports Sciences, Guntur, Andhra Pradesh, India

Dr. PPS Paul Kumar

Director, Dean and Chairman, BOS, University College of Physical Education and Sports Sciences, Acharya Nagarjuna University College of Physical Education and Sports Sciences, Guntur, Andhra Pradesh, India

Effect of functional training and resistance training on leg explosive power and spiking among female volleyball players

K Uma Rani and Dr. PPS Paul Kumar

Abstract

The body is the temple of soul and can be a sound mind only in healthy body. To attain the harmony body, mind and spirit, the body must be physically fit. The future of the nation depends on today's younger generation and the health of the people is the wealth of the nation. Performance sports aim at high sports performance and for most physical and psychic capacities of sports men are developed to extreme limits. The purpose of the Study Effect of Functional Training and Resistance Training on Leg Explosive Power and Spiking among Female 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 equal groups of twenty female Jr. College volleyball players in each. The groups were assigned as experimental group I (Functional Training), Experimental Group II (Resistance Training) and control group respectively. Pre-tests were conducted for all the 60 subjects on selected physical fitness and performance variables. After the experimental period of twelve weeks post-test were conducted and the scores were recorded. The post-tests were conducted on the above said dependent variables after a period of twelve weeks training on functional training and resistance training. The difference between initial and final scores of selected variables was the effect of respective experimental treatments. The statistical significance was determined using statistical application ANCOVA. In all cases 0.05 level was fixed to test the significance.

Keywords: Leg explosive power and spiking, resistance & functional training, volleyball players

Introduction

The body is the temple of soul and can be a sound mind only in healthy body. To attain the harmony body, mind and spirit, the body must be physically fit. The future of the nation depends on today's younger generation and the health of the people is the wealth of the nation. Performance sports aim at high sports performance and for most physical and psychic capacities of sports men are developed to extreme limits.

Objective of the study

The objective of this study was to assess the effect of functional training and resistance training on selected physical fitness and performance variables among female volleyball players. The investigator also interested to assess the levels of selected physical fitness and performance variables who undergo this training schedule. As an interventional programme, the investigator suggested two different packages of training, namely, functional training and resistance training for the benefit of female volleyball players. The initial and final scores on selected variables would prove the varied effect of experimental treatment and thus the objective of this study was to find out the effect of functional training and resistance training on selected physical fitness and performance variables among female volleyball players.

Selection of subjects

The purpose of the study was to find out the effect of functional training and resistance training on selected physical fitness and performance variables among female volleyball players. To facilitate the study, 60 female volleyball players from different Jr. Colleges in Telangana state were randomly selected as subjects and their age were 16 - 18 years.

Corresponding Author:

K Uma Rani

Research Scholar in Physical Education, Center for Distance Education, Acharya Nagarjuna University College of Physical Education and Sports Sciences, Guntur, Andhra Pradesh, India

They were assigned into three groups, namely, experimental group I, experimental group II and control group. Experimental group I served as functional training group, experimental group II served as resistance training group and the third group served as control group (CG). The requirement of the experiment procedures, testing as well as exercise schedule were explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. The investigator got individual consent from each subject.

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 equal groups of twenty female volleyball players in each. The groups were assigned as experimental group I – (Functional Training), Experimental Group II (Resistance Training) and control group respectively. Pre-tests were conducted for all the 60 subjects

on selected physical fitness and performance variables. After the experimental period of twelve weeks post-test were conducted and the scores were recorded.

The post-tests were conducted on the above said dependent variables after a period of twelve weeks training on functional training and resistance training. The difference between initial and final scores of selected variables was the effect of respective experimental treatments. The statistical significance was determined using statistical application ANCOVA. In all cases 0.05 level was fixed to test the significance.

Compilation of analysis of covariance results on leg explosive power

The statistical analysis comparing the initial and final means of Leg explosive power due to Functional training and Resistance training among female volleyball players is presented in Table-1.

Table 1: Ancova results on effect of functional training and resistance training compared with controls on leg explosive power

	Functional Training	Resistance Training	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
Pre-test Mean	35.85	34.30	37.65	Between	112.43	2	56.22	1.32
				Within	2419.30	57	42.44	
Post-test Mean	38.55	36.75	37.80	Between	32.70	2	16.35	0.50
				Within	1867.90	57	32.77	
Adjusted Post-test Mean	38.62	38.17	36.31	Between	58.74	2	29.369	49.36*
				Within	33.322	56	0.595	
Mean Diff	2.70	2.45	0.15					

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.16, 2 and 56 (df) =3.16.

*Significant

As shown in Table I, the obtained pre-test means on Leg explosive power on Functional training group was 35.85, Resistance training group was 34.30 and control group was 37.65. The obtained pre-test F-value was 1.32 and the required table F-value was 3.16, which proved that there was no significant difference among initial scores of the subjects. The obtained post-test means on Leg explosive power on Functional training group was 38.55, Resistance training group was 36.75 and control group was 37.80. The obtained post-test F-value was 0.50 and the required table F-value was 3.16, which proved that there was no 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 49.36 was greater than the required value of 3.16 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-2.

Table 2: Multiple Comparisons of Paired Adjusted Means and Scheffe's Confidence Interval Test Results on Leg explosive power

MEANS				Required C.I.
Functional training Group	Resistance training Group	Control Group	Mean Difference	
38.62	38.17		0.45	0.61
38.62		36.31	2.32*	0.61
	38.17	36.31	1.87*	0.61

* Significant

The post-hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Functional training group and control group (MD: 2.32). There was significant difference between Resistance training group and control group (MD: 1.87). There was no significant

difference between treatment groups, namely, Functional training group and Resistance training group (MD: 0.45). The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure 1.

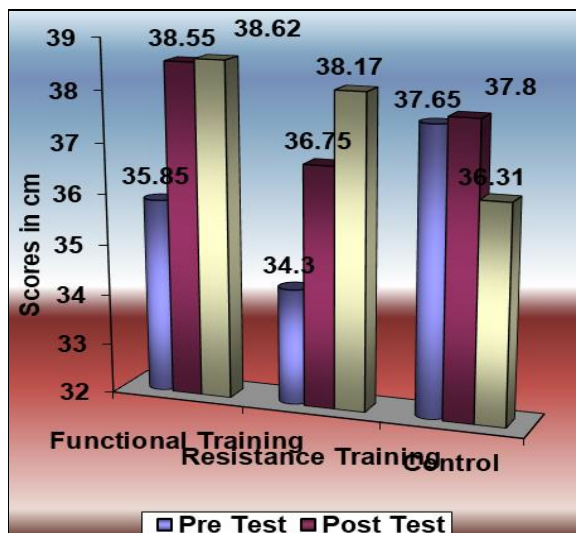


Fig 1: Bar diagram showing pre-test, post-test and ordered adjusted means on leg explosive power

Discussions on findings on leg explosive power

In order to find out the effect of Functional training and Resistance training on Leg explosive power the obtained pre and post-test means were subjected to ANCOVA and post-hoc analysis through Scheffe’s confidence interval test. The effect of Functional training and Resistance training on Leg explosive power is presented in Table II. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F-value 49.36 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 Functional training group and control

group (MD: 2.32) and Resistance training group and control group (MD: 1.87). Comparing between the treatment groups, it was found that there functional training was better than resistance group with mean difference of 0.45. However, this difference was not significant between Functional training and Resistance training group among female volleyball players. Thus, it was found that Functional training and Resistance training were significantly better than control group in improving leg explosive power of the female volleyball players.

Results on spiking

The statistical analysis comparing the initial and final means of Spiking due to Functional training and Resistance training among female volleyball players is presented in Table 3.

Table 3: Ancova results on effect of functional training and resistance training compared with controls on spiking

	Functional Training	Resistance Training	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
Pre-test Mean	8.75	8.70	9.05	Between	1.43	2	0.72	1.00
				Within	40.90	57	0.72	
Post-test Mean	10.35	9.85	9.00	Between	18.63	2	9.32	11.27*
				Within	47.10	57	0.83	
Adjusted Post-test Mean	10.41	9.95	8.83	Between	25.79	2	12.894	32.38*
				Within	22.297	56	0.398	
Mean Diff	1.60	1.15	-0.05					

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.16, 2 and 56 (df) =3.16.*Significant

As shown in Table-III, the obtained pre-test means on Spiking on Functional training group was 8.75, Resistance training group was 8.70 was and control group was 9.05. The obtained pre-test F-value was 1.00 and the required table F-value was 3.16, which proved that there was no significant difference among initial scores of the subjects.

The obtained post-test means on Spiking on Functional training group was 10.35, Resistance training group was 9.85 was and control group was 9.00. The obtained post-test F-value was 11.27 and the required table F-value was 3.16,

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 32.38 was greater than the required value of 3.16, 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 4.

Table 4: Multiple Comparisons of Paired Adjusted Means and Scheffe’s Confidence Interval Test Results on Spiking

Functional training Group	MEANS			Mean Difference	Required C.I.
	Resistance training Group	Control Group			
10.41	9.95			0.46	0.50
10.41		8.83		1.58*	0.50
	9.95	8.83		1.12*	0.50

* Significant

The post-hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Functional training group and control group (MD: 1.58). There was significant difference between Resistance training group and control group (MD: 1.12). There was no significant difference between treatment groups, namely, Functional training group and Resistance training group. (MD: 0.46). The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure-2.

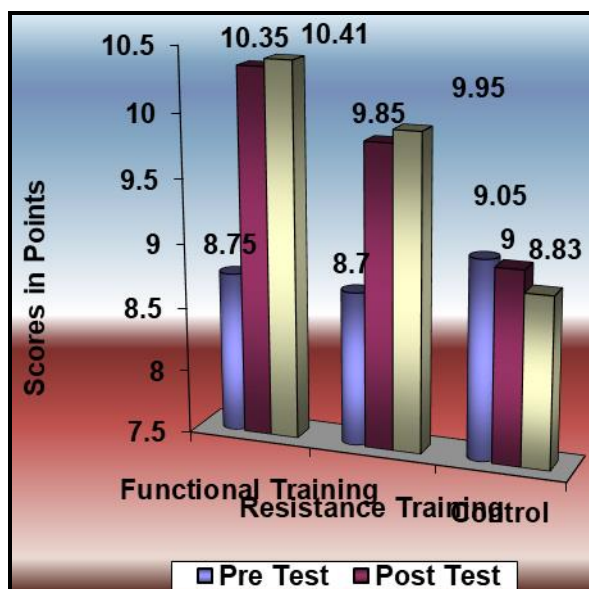


Fig 2: Bar diagram showing pre-test, post-test and ordered adjusted means on spiking

Discussions on findings on spiking

In order to find out the effect of Functional training and Resistance training on Spiking the obtained pre- and post-test means were subjected to ANCOVA and post-hoc analysis through Scheffe's confidence interval test. The effect of Functional training and Resistance training on Spiking is presented in Table-IV. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F-value 32.38 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-V proved that there was significant difference between Functional training group and control group (MD: 1.58) and Resistance training group and control group (MD: 1.12). Comparing between the treatment groups, it was found that functional training was better than resistance training in improving passing performance, however this difference was not significant among female volleyball players. Thus, it was found that Functional training and Resistance training were significantly better than control group in improving Spiking performance of the female volleyball players.

Discussions on findings

This research is aimed at comparing the effect of functional training and resistance training on selected physical fitness and performance variables of female volleyball players.

For this purpose, the following were hypothesized.

- It was hypothesized that there would not any significant differences between treatment groups, namely, functional

training and resistance training on selected physical fitness variables, leg explosive power among female volleyball players compared to control group.

- It was hypothesized that functional training would significantly improve the selected performance, spiking among female volleyball players compared to control group.

Conclusions

Within the limitations and delimitations of the study, the following conclusions were drawn.

- It was concluded that 12 weeks functional training and 12 weeks resistance training significantly improved leg explosive power of female volleyball players compared to control group. It was also found that though functional training showed superiority than resistance training on physical fitness variable, leg explosive power, the difference was not significant as such there was no significant difference between the experimental protocols of this study in altering leg explosive power of female volleyball players.
- The results of this study made to conclude that 12 weeks functional training and 12 weeks resistance training significantly improved performance spiking among female volleyball players compared to control group. It was also found that there was no significant difference between the experimental protocols of this study in altering spiking ability of female volleyball players.

Recommendations

The training protocols suggested in this study may be included in the training schedule of training female volleyball players. The training methods of this study may be implemented to other sports and games which require leg strength which in turn would improve performances of the game.

References

- Anario Anthony A. Development Condition for Physical Education and Athletes, St. Louis: The C.V. Mosby Company, 1972, 33.
- Arnheim DD. Modern Principles of Athletic Training. The Mosby College Publishing Co. St. Louis, U.S.A, 1985, 78.
- Baumgartner, Jackson. Measurement for Evaluation in Physical Education and Exercise Science, McGraw Hill, 1975.
- Baumgarther. Measurement for Evaluation in Physical Education and Exercise Science, McGraw Hill, 1987.
- Bompa T. Theory and Methodology of Training. The key to Athletic Performance. Kendall/Hunt; Dubuque, IA, 1999.
- Bompa T. Total training for coaching team sports. Sport Books Publisher; Toronto, 2004.
- Bud Getchell, Physical Fitness: A way of life, Second Edition Englewood Cliffs, N.J. 1979.