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B Periyayaki

Research Scholar, Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu, India

Dr. R Chinnaiyan

Assistant professor, Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu, India

Effects of varied types of bilateral training on speed among women netball players

B Periyayaki and Dr. R Chinnaiyan

Abstract

This study was to find out the effects of varied types of bilateral training (bilateral resistance training and bilateral plyometric training) on speed among women netball players. To conduct this study, 45 female netball players aged between 18 and 25 years studying at various colleges in Trichy district of Tamil Nadu were selected as subjects. The selected subjects were divided into three equal groups, Group I (n=15) underwent bilateral resistance training, Group II (n=15) underwent bilateral plyometric training and group III (n=15) served as a non-participating control. Particularly attend training. The training program for this study will be conducted for 12 weeks, her 3 days per week. All the subjects are informed about the nature of the study and their consent is obtained in order to get their co-operation on till the end of the experimental and training period. The subjects were tested on speed before and after the training period. Prior after the training period speed was measured by using 50 mts dash. Analysis of Covariance (ANCOVA) was applied as statistical tool for the present study. The Scheffé S test was used as post-hoc test at whatever point the 'F' - ratio of the adjusted post-test means were discovered to be significant at 0.05 level of significance. Both, bilateral resistance training and bilateral plyometric training group influence on speed when compared with control group. Moreover, the current test's outcome shows that there was no significant difference found between bilateral resistance and plyometric training on speed.

Keywords: Bilateral resistance, training, bilateral plyometric training, speed

Introduction

Bilateral lifts produce greater force production and power enhancements in trained individuals. The ability to move more weight, at a fast velocity means that force production and power enhancements can be achieved (Hermassi *et al.*, 2011) [4]. Bilateral exercises have the ability to increase strength quickly through greater total load on the body's musculature and central nervous system compared to unilateral resistance training alone. Strength based sports and competitions like power lifting and Olympic weightlifting revolve around big bilateral movements. Bilateral exercises may be the better choice for those lacking confidence or experience to help build a base level of competence before progressing onto more difficult unilateral exercises. Bilateral exercises require less mental concentration and body awareness to maintain good.

Both bilateral and unilateral strength training improve muscle strength. General adaptations associated with improvement result in faster muscle contraction speed, faster motor unit activation, increased neuron firing rate, shorter length-shortening cycle duration, and improved proprioception. However, certain adjustments will occur depending on the training materials used. Unilateral strength training and plyometric training are becoming increasingly popular, especially among athletes in their sports. For athletes in team sports, the ability to exert force in multiple directions in the extremities is a clear advantage due to the demands of the game. Training at multiple levels appears to be a key factor. Research supports the concept that single leg strength, deceleration, and coordination at multiple levels are areas of need when designing training programs for team sport athletes (Lockie *et al.*, 2014; Maloney *et al.*, 2019) [7, 8].

Plyometric training involves jumps and hops that build muscle through cycles of muscle lengthening and shortening (Hakkinen K, 1985) [3]. This can be recognized by the rapid deceleration of the mass followed by its rapid acceleration in the reverse vertical direction. For the lower extremities, plyometric training includes exercises such as jumping up and down from high boxes or platforms.

Corresponding Author:**B Periyayaki**

Research Scholar, Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu, India

Bi-lateral plyometric training (BPT) are movements produced by both limbs. Bilateral exercises utilize the two limbs as one to interchange a load with the goal that the resistance is being shared between two limbs, Example: - Plyo jacks. Speed is the rapidity of movement. From a mechanical point of view, speed is expressed through a ratio between space and time.

Statement of the problem

The purpose of the present study was to find out the effects of varied types of bilateral training (bilateral resistance training and bilateral plyometric training) on speed among women netball players.

Methodology

To conduct this study, 45 female netball players aged between 18 and 25 years studying at various colleges in Trichy district of Tamil Nadu were selected as subjects. The selected

subjects were divided into three equal groups, Group I (n=15) underwent bilateral resistance training, Group II (n=15) underwent bilateral plyometric training and Group III (n=15) served as a non-participating control. Particularly attend training. The training program for this study will be conducted for 12 weeks, her 3 days per week. All the subjects are informed about the nature of the study and their consent is obtained in order to get their co-operation on till the end of the experimental and training period. The subjects were tested on speed before and after the training period. Prior after the training period speed was measured by using 50mts dash test.

Analysis of data

The data collected prior to and after the experimental periods on bilateral resistance training and bilateral plyometric training and control group were analysed and presented in the following table -I.

Table 1: Analysis of covariance on speed of bilateral resistance and plyometric training groups and control group

	BRT Group	BPT Group	Control Group	SOV	SS	df	MS	'F'
Pre-test mean	7.77	7.78	7.87	B	0.095	2	0.047	0.273
SD	0.36	0.39	0.45	W	6.921	42	0.165	
Pre-test mean	7.46	7.59	7.88	B	1.34	2	0.668	5.184*
SD	0.35	0.32	0.40	W	5.41	42	0.129	
Adjusted post-test mean	7.51	7.63	7.88	B	0.960	2	0.480	31.041*
				W	0.635	41	0.015	

* Significant at 0.05 level of significance with df 2 and 42 and 2 and 41 were 3.222 and 3.226 respectively.

Table - I shows that the pre-test mean scores of speed of bilateral resistance training group is 7.77, bilateral plyometric training group is 7.78 and control group is 7.87. The post-test mean shows reduction over the pre test scores due to twelve weeks bilateral resistance and plyometric training program and the mean values recorded are 7.46, 7.59 and 7.88 respectively.

The obtained 'F' value on pre-test scores 0.273 is less than the required 'F' value of 3.222 to be significant at 0.05 level. This proves that there is no significant difference among the groups at initial stage and the randomized assignment of the subjects into three groups are successful.

The post test scores analysis proves that there is significant difference among the groups, as the obtained 'F' value 5.184

is greater than the required 'F' value of 3.222. This proves that there is significant difference among the post-test means of the subjects.

Taking into consideration of pre and post-test scores among the groups, adjusted mean scores are calculated and subjected to statistical treatment. The obtained 'F' value of 31.041 is greater than the required table 'F' value of 3.226. This proves that there is significant differences existed among the adjusted means due to twelve weeks of bilateral resistance and plyometric training programme on speed.

Since the significant improvements are recorded, the results are subjected to post hoc analysis using Scheffe's Confidence interval test. The results are presented in table – II

Table 2: Scheffe's confidence interval test scores on speed

Adjusted post-test means			Mean Difference	Confidence Interval Value
Bilateral resistance raining group	Bilateral resistance raining group	Control Group		
7.51	7.63		0.12	0.253
7.51		7.88	0.37*	
	7.63	7.88	0.25*	

*Significant at 0.05 level.

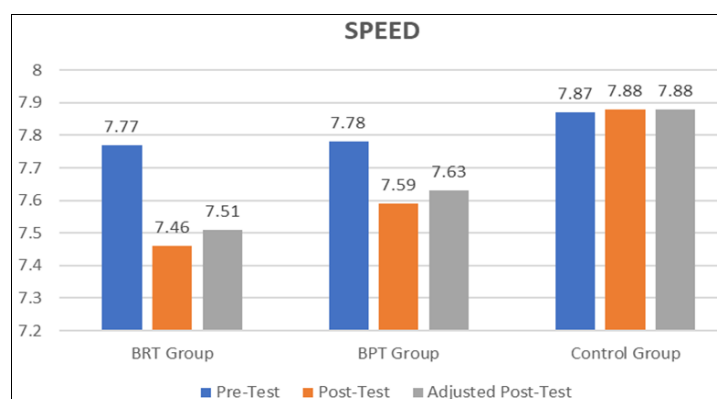


Fig 1: Adjusted post-test mean values on speed of bilateral resistance and plyometric training groups and control group

Conclusion

As the confidence interval required to be significant at 0.05 level is 0.253 and the obtained values are greater than the required value except between bilateral resistance and plyometric training group, it is observed that the significant difference is found to be existed. The ordered adjusted means on speed are illustrated through bar diagram for better understanding of the results of this study in figure-I

From the analysis of the data, the following conclusion were drawn.

It was found from the effects of the training that average speed has shown improvement for the bilateral resistance and plyometric training when compared with the control group. In addition, the result of the tests shows that there was a significant difference between experimental and control groups. Moreover, the current test's outcome shows that there was no significant difference found between bilateral resistance and plyometric training on speed.

Recommendations

The following recommendations were drawn, from the results of the present study:

1. Further studies may be made to investigate the effect of bilateral resistance and plyometric training on bio-motor and skill performance variables after considering diet as a control variable.
2. The effect of bilateral resistance and plyometric training can be assessed on other fitness and co-ordination and physiological factors.
3. Similar study may be conducted by psychological variables as dependent variables.
4. Similar study may be attempted by selecting the university, state or national level netball players as subjects.

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