ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Influence of Unilateral Power Training Programme on Selected Power Parameters among Soccer Players

P. Muthukumar[1] & Dr. J. Suganthi[2]

[1]*Ph.D., Research Scholar, Department of Physical Education, H.H. The Rajah's College, Pudukkottai, Tamilnadu, India.*
[2]*Associate Professor & Head, Department of Physical Education, H.H. The Rajah's College, Pudukkottai, Tamilnadu, India.*

Received 12th November 2015, Accepted 15th December 2015

Abstract

The purpose of the study was to investigate the influence of unilateral power training on selected power parameters among soccer players. It was hypothesized that there would be significant differences on selected power parameters due to the influence of unilateral power among soccer players. For the present study the 30 male soccer players from H.H. The Rajah's College, Pudukkottai, Tamilnadu, India were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent unilateral power training and Group 'B' has not undergone any training. Explosive power was assessed by standing broad jump, elastic power was assessed by 3 hops test and upper body power was assessed by medicine ball throw. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05. The unilateral power training had positive impact on explosive power, elastic power and upper body power among soccer players.

Keywords: Unilateral Power, Explosive Power, Elastic Power, Upper Body Power, Soccer.

Introduction

Unilateral training is, as the name suggests, training one side of the body at a time. A unilateral movement involves the use of only one side of the body, such as a single leg squat, a single leg deadlift, single arm push-ups etc. Unilateral or partial unilateral supported exercises (USE) such as lunges, step-ups, and unilateral squats are implemented in resistance training programs as assistance exercises and generally receive less emphasis than do core exercises. Although USE are typically integrated into most training programs, the emphasis of utilization varies, in part, because of the lack of scientific data to determine the potential for these exercises to improve strength and power. Unilateral training creates a stabilisation effect, where the body is forced to stabilise other parts of the body in order to cope with the lack of balance and symmetry. This is applicable to functional movement needed for sports and other physical activities. This is not to be confused with training on an unstable surface. They are implemented in resistance training programs as assistance exercises and generally receive less emphasis than more compound exercises.

Correspondence
P. Muthukumar,
E-mail: pearlharshu@gmail.com, Ph: +9199437 05585

Gamble (2013) identified that unilateral training was more effective as it erased the aspect of athletes favouring a dominant leg when performing an exercise. This training style avoids asymmetry and muscle imbalances from occurring which is common within bilateral training. If you perform an exercise and one side is stronger than the other, the stronger side will likely carry more of the load to compensate for the weaker muscle causing muscular imbalances. These asymmetries are unmasked through unilateral exercises and are able to be corrected. Furthermore, Janzen, C. et al. (2006) suggests that incorporating unilateral movement into a training program enables athletes to enhance the rate of force development. The advantages of unilateral movement in a leg workout would be the reduction of spinal compression and the recruitment of muscle contraction. To achieve this contraction an individual wouldn't require maximum poundage which leads to the assumption that including single limb movements will improve the effectiveness of our lifts.

Methodology

The purpose of the study was to investigate the influence of unilateral power training on selected power parameters among soccer players. It was hypothesized that there would be significant differences on selected power parameters due to the influence of unilateral power among soccer players. For the present study the 30 male soccer players from H.H. The Rajah's

College, Pudukkottai, Tamilnadu, India were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent unilateral power training and Group 'B' has not undergone any training. Explosive power was assessed by standing broad jump, elastic power was assessed by 3 hops test and upper body power was assessed by medicine ball throw. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05.

Results

The findings pertaining to analysis of co-variance between experimental group and control group on selected motor components among soccer players for pre-post test respectively have been presented in table I to III.

Results

Table I. ANCOVA between Experimental Group and Control Group on Explosive power of Soccer players for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	1.60	1.59	BG	0.001	1	0.001	0.30
			WG	0.051	28	0.002	
Post Test Mean	1.65	1.59	BG	0.021	1	0.021	10.57*
			WG	0.055	28	0.002	
Adjusted Post Mean	1.65	1.59	BG	0.021	1	0.021	10.26*
			WG	0.055	27	0.002	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table I revealed that the obtained 'F' value of 10.26 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of Explosive power of soccer players between experimental group and control group. The graphical representation of data has been presented in figure I.

Figure I. Comparisons of Pre – Test Means Post – Test Means and Adjusted Post – Test Means for Control group and Experimental Group in relation to Explosive power

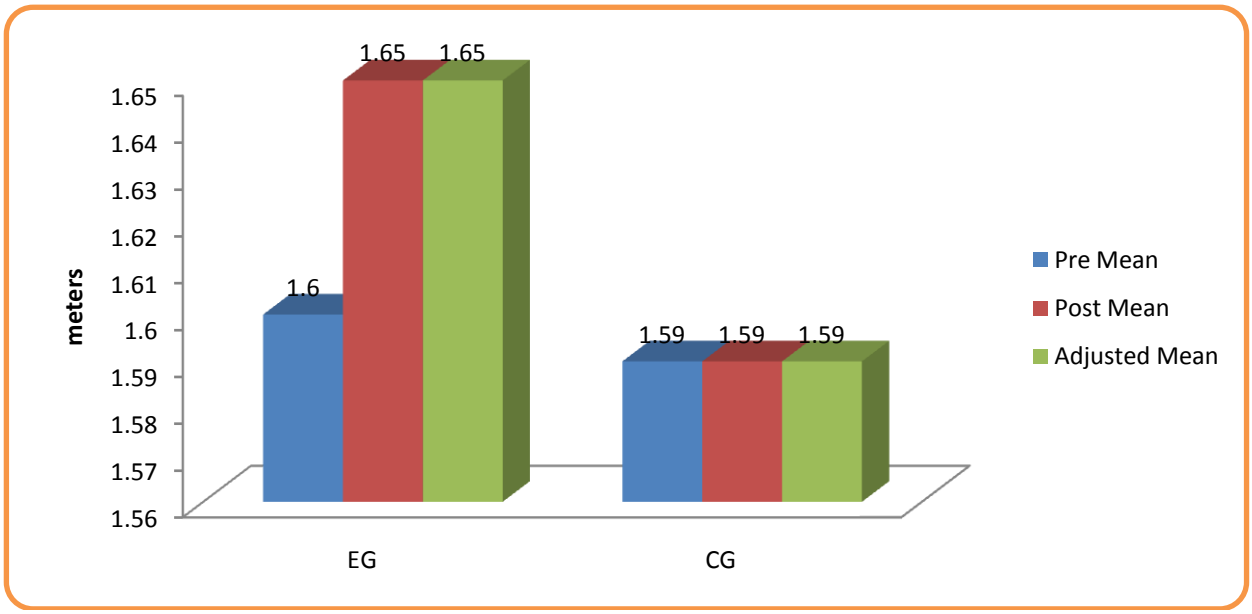


Table II. ANCOVA between Experimental Group and Control Group on Elastic power of Soccer players for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	2.62	2.61	BG	0.001	1	0.001	0.05
			WG	0.11	28	0.004	
Post Test Mean	3.62	2.63	BG	7.33	1	7.33	461.30*
			WG	0.44	28	0.01	
Adjusted Post Mean	3.62	2.63	BG	7.30	1	7.30	448.60*
			WG	0.43	27	0.01	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table II revealed that the obtained 'F' value of 448.60 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of elastic power of soccer players between experimental group and control group. The graphical representation of data has been presented in figure II.

Figure II. Comparisons of Pre – Test Means Post – Test Means and Adjusted Post – Test Means for Control group and Experimental Group in relation to Elastic power

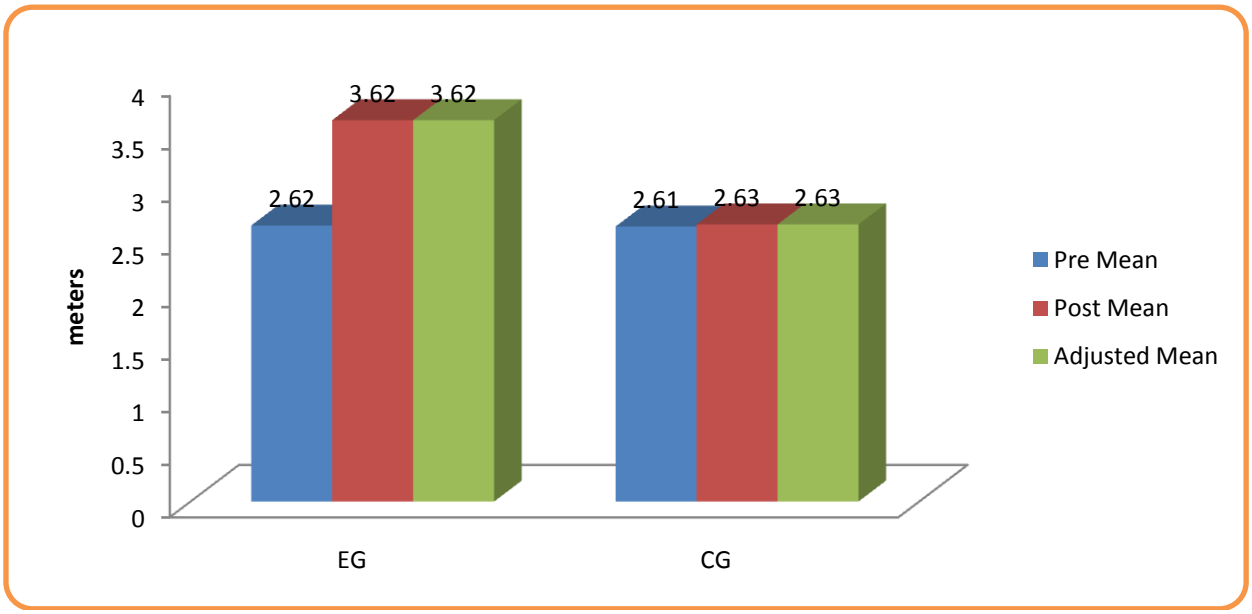


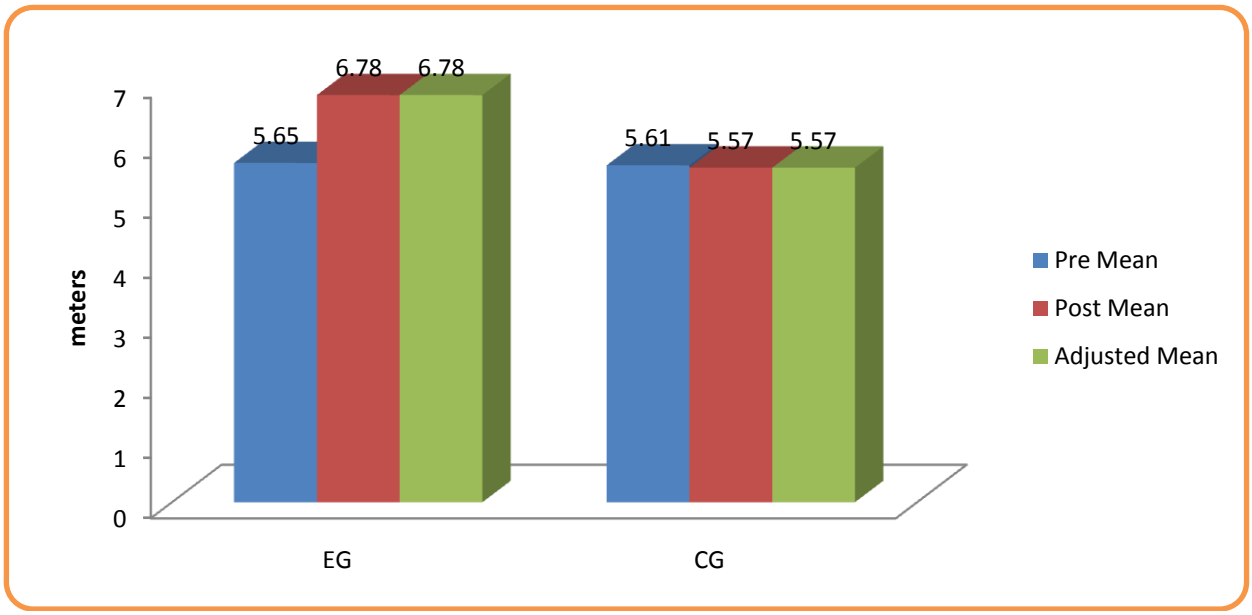
Table III. ANCOVA between Experimental Group and Control Group on upper body power of Soccer players for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	5.65	5.61	BG	0.008	1	0.008	0.07
			WG	3.22	28	0.11	
Post Test Mean	6.78	5.57	BG	11.05	1	11.05	166.91*
			WG	1.85	28	0.06	
Adjusted Post Mean	6.78	5.57	BG	10.94	1	10.94	165.40*
			WG	1.78	27	0.06	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table III revealed that the obtained 'F' value of 165.40 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of upper body power of soccer players between experimental group and control group. The graphical representation of data has been presented in figure II.

Figure III. Comparisons of Pre – Test Means Post – Test Means and Adjusted Post – Test Means for Control group and Experimental Group in relation to upper body power



Discussions on Findings

In case of power parameters i.e. Explosive power, elastic power and upper body power the results between pre and post (12 weeks) test has been found significantly higher in experimental group in comparison to control group. This is possible because due to regular unilateral power training which may also bring sudden spurt in power parameters in soccer players. The findings of the present study have strongly indicates that unilateral power training of twelve weeks have significant effect on selected power parameters i.e., Explosive power, elastic power and upper body power of soccer players. Hence the hypothesis earlier set that unilateral power training programme would have been significant effect on selected power parameters in light of the same the hypothesis was accepted.

Conclusions

On the basis of findings and within the limitations of the study the following conclusions were drawn:

1. The unilateral power training had positive impact on explosive power, elastic power and upper body power among soccer players.
2. The experimental group showed better improvement on explosive power, elastic power and upper body power among soccer players than the control group.

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