

EFFECT OF AEROBIC CIRCUIT TRAINING AND SUSPENSION TRAINING ON BALANCE AND POWER AMONG SENIOR ATHLETES

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Abstract

The purpose of the study was to find out the effect of aerobic circuit training and suspension training on selected balance and power among senior athletes. To achieve the purpose, 30 male senior athletes were randomly selected as subjects from Alagappa University of and its affiliated colleges, India. Their age mean and height were 38 ± 2.1 years, 172 ± 1.5 cm respectively. They were randomly divided into three equal groups, and each group consisted of ten ($n = 10$) subjects, in which, Group I underwent aerobic circuit training, Group II underwent suspension training and Group III acted as control. All the subjects in the experimental groups (I & II) were given their respective training programme was performed three days/wk training for twelve weeks duration. The study was restricted to the following selected dependent variables namely balance and power; they were tested by standardized test items such as stroke balance stand test and standing board jump test. The participants were trained for twelve weeks of three days a week (alternate days). A pre and post test randomized design was employed for this investigation. The collected data were statistically analysed by using dependent-‘t’ test and ANCOVA. The Scheffe’s test was used as post-hoc test to determine which of the paired means differed significantly where the differences in adjusted post-test means resided in univariate ANCOVA among three groups. All the above statistical analysis tests were computed at 0.05 level of significance ($P < 0.05$). It was concluded that, the aerobic circuit training and suspension training groups had significantly improved the participant’s balance and power when compared than the control group and also made significant differences among experimental and control groups. The suspension training group had significantly outperformed than the aerobic circuit training group on participant’s selected balance and power. However, the control group had not shown any significant improvement on selected variables.

Keywords: *Aerobic Circuit, Suspension, Balance, Power*

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Introduction

Circuit training is an efficient, challenging form of conditioning that develops strength, aerobic and anaerobic endurance, flexibility and coordination all in one workout. It is one of the few forms of fitness training that has been shown to effectively develop both strength and cardiovascular fitness in the same exercise session¹.

The American College of Sports Medicine (ACSM) defines aerobic exercise as any activity that uses large muscle groups, can be maintained continuously and is rhythmic in nature². Aerobic exercises are advised for health promotion and prophylaxis for many cardiovascular diseases. They refer to all exercises that involve major muscle groups and improve oxygen consumption by the body³.

Suspension training was originally developed for use in the military in the 1990s, and has since been adapted for use by the general public. In theory, performing exercises with the suspension trainer should require greater muscle activation than the equivalent exercises performed without it, thereby potentially having a greater impact on strength, functional stability, and athletic performance⁵. Suspension training (ST) is defined as having one or more straps connected to one or more anchor point(s) as the user is suspended from the handles of the straps by either their hands or feet, while the non-suspended pair of extremities are in contact with the ground. This type of training changes how the muscles are recruited due to the unstable base of support⁴.

Purpose of the Study

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Methodology

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means resided in univariate ANCOVA among three groups. All the above statistical analysis tests were computed at 0.05 level of significance ($P < 0.05$).

Results and Discussion

TABLE I
MEANS, STANDARD DEVIATION AND DEPENDENT-‘T’ TEST VALUES ON BALANCE AND POWER OF EXPERIMENTAL AND CONTROL GROUPS

Variable Name	Test	ACTG	STG	CG
Balance	Pre Test	41.96	40.51	40.29
	Post Test	46.53	49.84	41.85
	t- test	9.02*	12.05*	1.94
Power	Pre Test	1.62	1.64	1.63
	Post Test	1.83	1.95	1.65
	t- test	7.53*	11.15*	1.92

**Significant at .05 level. The Table Value required at .05 levels with df 9 is 2.26.*

From the table-I, the aerobic circuit training and suspension training groups had significantly improved on selected balance and power while compared than the control group.

TABLE II
ANALYSIS OF COVARIANCE ON BALANCE AND POWER AMONG EXPERIMENTAL & CONTROL GROUPS

Test	ACTG	STG	CG	SOV	SS	Df	MS	F-ratio
Adjusted Post-Test Mean								
Balance	46.78	49.91	41.89	B.M	941.90	2	470.95	21.75*
				W.G	373.88	26	7.31	
Power	1.83	1.95	1.65	B.M	1.58	2	0.79	39.55
				W.G	0.52	26	0.02	

** Significant at 0.05 level. Table value for df 2, 26 was 3.37.*

From the table-II shows that the adjusted post-test means values on selected dependent variables such as balance and power. The obtained f- ratio for selected balance and power was 21.75 and 39.55 but the required table value of df 2 and 26 was 3.37. It shows that both training groups of adjusted post test mean value was greater than the required table value at 0.05 level of confidence. This results of the study indicated that there was a significant mean difference exist between the adjusted post-test means of aerobic circuit, suspension trainings and control groups on selected balance and power. To find out which of the two paired means had a significant difference, the Scheffe’s post-hoc test was applied and the results are presented in Table III.

TABLE III
THE SCHEFFE’S TEST FOR DIFFERENCES ON BALANCE AND POWER
BETWEEN THE ADJUSTED POST-TEST PAIRED MEANS

Variable	ACTG	STG	CG	Mean Difference	CI
Balance	46.78	49.91	-	3.13*	2.33
	46.78	--	41.89	4.89*	
	--	49.91	41.89	8.02*	
Power	1.83	1.95	-	0.12*	0.12
	1.83	--	1.65	0.18*	
	--	1.95	1.65	0.30*	

**Significant at 0.05 level of confidence*

From the table III shows that, there was a significant difference on selected dependent variables between three groups. It was concluded that the suspension training group is better than aerobic circuit training group and control group. The aerobic circuit training group also had improving their balance and power among male senior athletes while compared than the control group.

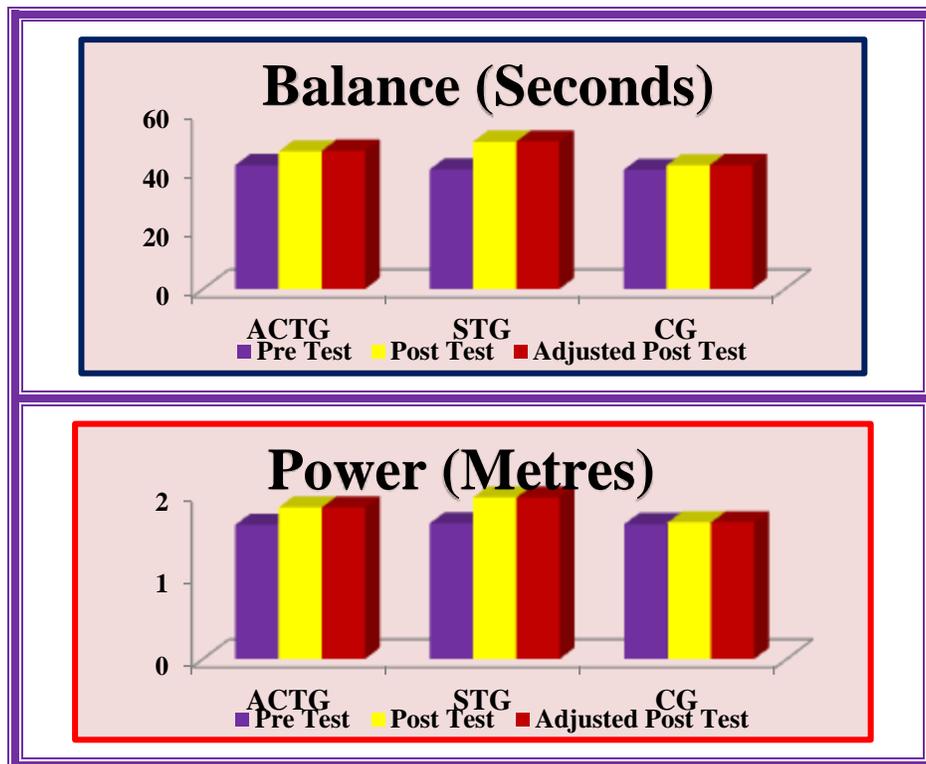


Figure 1: Mean value of aerobic circuit training group, suspension training group and control group on balance and power among senior athletes.

Discussion on Findings

The result of study indicates that there were significant differences on balance and power on aerobic circuit training, suspension training and control groups of senior athletes. The following studies are supported to the result of this investigation from Cressey EM West CA Tiberio DP Kraemer WJ Maresh CM, (2007); Strassnig, M. T., Signorile, J. F., Potiaumpai, M., Romero, M. A., Gonzalez, C., Czaja, S., & Harvey, P. D. (2015) and Byrne, J. M., Bishop, N. S., Caines, A. M., Crane, K. A., Feaver, A. M., & Pearcey, G. E. (2014).

Conclusions

On the basis of findings of the study, the following conclusions may be drawn:

The present study was exposed that significant difference was found in the mean of balance and power of aerobic circuit training and suspension training and control groups. The suspension training group had significantly outperformed than the aerobic circuit training group on the participant's balance and power. However the control group had not shown any significant improvement on selected dependent variables.

Conflict of Interest: - Nil

Source of Funding: - self

Ethical Clearance: - yes

Reference:

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