ORIGINAL ARTICLE

EFFECT OF SWISS BALL AND CRUNCHES ON BALANCE FOR SEDENTARY COLLEGE BOYS

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Abstract:

The aim of the present study was to evaluate the effect of Swiss ball and crunches on balance. For the purpose of the study 30 sedentary male students from Pondicherry University were randomly selected and their age ranged between 19-22 years. Subjects were asked to assemble in the multipurpose hall in the morning hours and were given training. The subjects were hostel students and their food patterns were similar. Their life style and living condition were not taken into consideration. They were divided into three groups A, B and C with 10 subjects in each group. Group A was kept under control group (CG), group B was treated with Swiss ball training group (SBTG) and group C were given crunches exercise group (CEG). The subjects of group B and C underwent training for twelve weeks with the duration of 45 minutes. The training was started at 6.30 am and it was given for 6 days per week. The pre test and post test on balance was measured using stroke stand. The data was statistically analysed by using ANCOVA to find out the significant difference among the three groups. The finding of the study revealed that there was a beneficial effect on balance for both the experimental groups when compared to the control group. The training was more effective for SBTG than the CEG.

KEYWORDS:

Swiss ball, Crunches, Balance.

INTRODUCTION

Exercise ball is a great way to become more fit. The posture and body awareness naturally improve, balance, overall strength and endurance.Feel unstable when sitting on the exercise ball. Because the feeling of it fades the more by sitting, the muscles and joints get better at responding to the unstable environment. The core stabilization muscles, abdominals and back muscles are particularly strengthen. Swiss ball training as a form of exercise gets little to no attention compared to cardiovascular training. Swissball training is often acknowledged as a beneficial thing to do for optimal health, but not essential enough to regularly incorporate into the exercise routine. It is not the only factor but it is definitely the main one that can bring about the most significant results.

The workouts will enhance whatever fitness routine had been done by adding a cross-training element. It not only improves your balance, you'll increase your strength, especially core strength (meaning strong torso muscles), and tone up a variety of muscles. Balance training is often linked to stability training. While training the body in a position or a series of positions that occur during movement, while co-contractions of the muscles on either side of the joints help in maintaing that specific position. In other

words, muscles on both sides of the joint assist in stabilization. In real life, the body needs a variety of muscles to keep you steady on the feet and to help in movement as well.

MATERIALS AND METHODS

SELECTION OF SUBJECTS

To achieve the purpose of this study, 30 sedentary students were randomly selected from different departments in Pondicherry University, Puducherry. The subject's age ranged between 19 to 22 years as per the university records.

INCLUSION AND EXCLUSION CRITERIA

The subjects were oriented for this study and the purpose of the study was explained. The method of performing the test on balance was explained to the subjects before conducting the test. The research scholar explained and demonstrated the stroke stand to the subjects. The recordings of the measurements were made known to the subjects with a view to familiarize about their performance. The subjects of the experimental groups received personalized attention and supervision of the trainer in relation to the Swiss ball and crunches. The training was carried out in the multipurpose hall in the physical education department. The training was given for forty five minutes in the morning hours at 6.30 am for twelve weeks. The subjects living condition and life style were not taken into consideration for this study. The subjects were hostlers and their food pattern was similar.

RESULT

TABLE I
MEAN AND STANDARD DEVIATION FOR PRE AND POST TEST ON BALANCE

VARIABLES	GROUPS	N	TEST	MEAN	STD. DEVIATION
Balance	Control group	10	Pre test	12.28	3.91
			Post test	12.41	3.64
	Swiss ball group	10	Pre test	10.79	3.24
			Post test	17.15	2.83
	Crunches group	10	Pre test	12.47	3.35
			Post test	15.52	3.24

Table I shows the mean and standard deviation for pre and post test scores on balance test for control group, Swiss ball group and crunches group. The initial and final means for control, Swiss ball group and crunches group on Balance test were 12.28 and 12.41, 10.79 and 17.15, 12.47 and 15.52.

TABLE II
ANOVA TABLE FOR BALANCE OF CONTROL, SWISS BALL GROUP AND CRUNCHES GROUPS

Variables	Source of Variance	df	Sum of squares for x	Sum of squares for y	Mean squares X	Mean squares Y	'F' ratio
Balance	Between Groups	2	17.14	116.10	8.57	58.05	5.27
	Within Groups	27	333.72	297.29	12.36	11.01	
	Total	29	350.85	413.39			

*Significant at 0.05 level of confidence with degrees of freedom for 2 and 27.
Required table value at 0.05 level is 3.36.

Table II discloses the pre and post test results of ANOVA on balance for three different groups namely control, Swiss ball group and crunches group. The calculated 'F' value is 5.27, which is significant at 0.05 level of confidence. This implies that there is a significant change due to the effect of selected training.

TABLE III
CALCULATION OF ANALYSIS OF COVARIANCE ON BALANCE OF SWISS BALL, CRUNCHES GROUPS AND CONTROL GROUP

Variables	Source of Variance	df	Sum of Squares x	Sum of Squares y	Sum of Squares x.y	Mean Squares x.y	'F' ratio
Balance	Between Groups	2	17.14	116.10	182.12	91.01	249.10
	Within Groups	27	333.72	297.29	9.50	0.37	
	Total	29	350.85	413.39			

*Significant at 0.05 level of confidence with degrees of freedom for 2 and 27.
Required table value at 0.05 level is 3.36.

The above table III shows the adjusted means for the post test data of ANCOVA among the three groups on balance. The calculated 'F' value is 249.10 is greater than the required table value 3.36 at 0.05 level of confidence. This indicates that there is a significant difference among the groups which indicates that there is an effect in training programme which in turn induces changes in the post test programme.

Whenever, the obtained 'F' ratio value is found to be significant, the Scheffe's post hoc test is applied to find out the paired mean differences, and it is presented in tables.

TABLE IV
ORDERED ADJUSTED MEANS AND DIFFERENCES BETWEEN MEANS FOR EXPERIMENTAL GROUPS AND CONTROL GROUP IN ANALYSIS OF COVARIANCE PROBLEM ON BALANCE

SWISS BALL GROUP	CRUNCHES GROUP	CONTROL GROUP	MEAN DIFFERENCES
18.14	14.93	-	3.21
18.14	-	12.01	6.13
-	14.93	12.01	2.92

* Significant at 0.05 level. Scheffe's confidence interval at 0.05 level is 0.71.

The table IV shows the Scheffe's post-hoc method of testing the significance for the differences between the paired means following a significant analysis of co-variance for crunches, Swiss ball and control groups. The adjusted mean on balance in order of magnitude and the difference between the means for the control and two experimental groups are given in the table. The mean differences between the Swiss ball group and crunches group are 3.21, which is insignificant at 0.05 level of confidence. In the comparison between Swiss ball group and control group the difference are 6.13, which is significant at 0.05 level of confidence. The ordered adjusted means on balance and differences between crunches group and control group are 2.92, which is significant at 0.05 level of confidence. This indicates that the Swiss ball group had a better improvement when compared to the crunches group and control group. The differences in means of crunches group, Swiss ball group and control group is presented in fig 1.
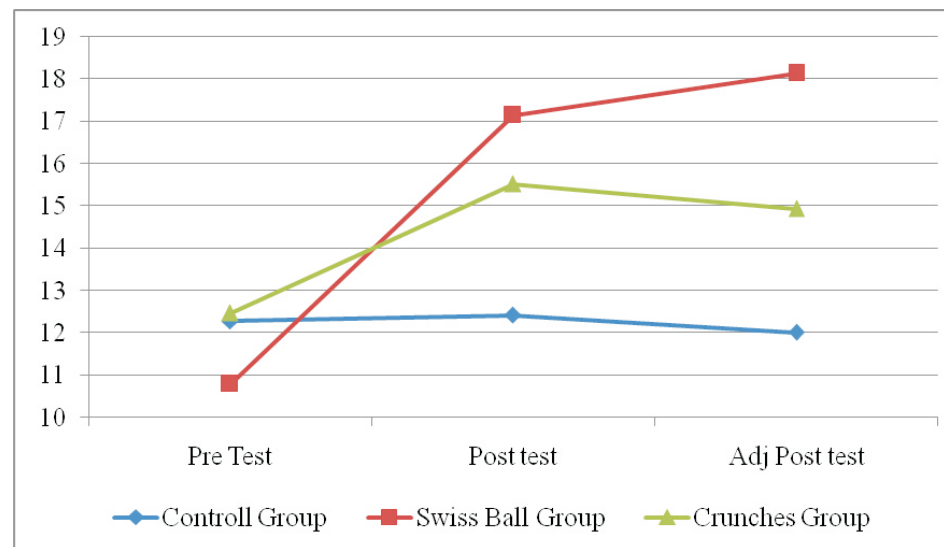
Fig. 1. Mean differences among experimental groups and control group on Balance

DISCUSSION

The study was framed to analyze the effect of Swiss ball and crunches on balance on sedentary men (aged 19 and 22 years). The subjects were given training on Swiss ball and crunches exercise continuously for a period of 12 weeks for six days in a week. The selected physical variable is balance. The main aim of the study was to enhance the efficiency of physical fitness of the college men. The result of the study is in consonance with the findings of the following studies by , et. al., (August 2009)1, Gergley, et. al., (August 1984)2, Neufer, et. al., (October 1987)3 and Thompson, et. al., (September 1996)4.

CONCLUSION

It was observed from the pre test results, that there is no significant difference among control and experimental groups. While the post test results of control and experimental groups revealed that, there is a significant difference among the three groups. The training program has influenced the experimental groups where as there is no effect in the control group. In the analysis of co-variance on balance among control and two experimental groups, a significant difference was revealed which throws light on the application for twelve weeks Swiss ball training and crunches exercise. From the statistical analysis it is clear that both the training programmes had its own effect. But the Swiss ball training showed significant effects in balance when compared to crunches group and control group.

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