



The Effect of Resistance Training and Swiss Ball Resistance Training on Muscular Strength among Male Handball Players.

Dr. Shailesh Kumar Singh

Assistant Professor, LNIPE, NERC, Guwahati, Assam

ABSTRACT

The purpose of this study was to find out the effect of Resistance Training and Swiss Ball Resistance Training on Muscular Strength among Male Handball Players. To achieve the purpose of the study, thirty male handball players were randomly selected as subjects from LNIPE Guwahati and Gwalior during the Inter- University Handball Camp held at LNIPE Guwahati in 2014. The age of the subjects were ranged between 18 to 25 years. The study was formulated as pre and post test random group design, in which thirty subjects were divided into three equal groups. Experimental Group-I (n=10; RT Group) performed the Resistance Training Group. The Experimental Group-II (n=10, SBRT group) performed Swiss ball resistance training program. Control group (n=10; CG) did not undergo any specific training programmed, but they were practicing the regular sports practice. The analysis of covariance was used to analyze the significant difference, if any among the groups. Since, three groups were compared, whenever the obtained 'F' ratio for adjusted post test was found to be significant, the Scheffe's test to find out the paired mean differences, if any. The 0.05 level of confidence was fixed at the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered as an appropriate. The result of the study indicates due to training on muscular strength has been improved significantly.

KEYWORDS : Resistance Training, Swiss ball training

INTRODUCTION

Instability and support: Swiss ball exercise program has two primary functions. During an exercise, forces, instability making the exercise more difficult, to maintain your balance to engage your core muscles. Core instability prevents injuries which help with training your legs and back, for the development of a strong support system helps you get the most out of your exercise routine.

The Swiss ball can also be used to support your back as you work on developing core stability. For instance, you can place the ball against the wall and lean your back against it as you do a squat. To add lower back support to an abdominal crunch, sit on the ball, walk your feet out in front of you until you are lying back on the ball with a neutral spine, and do crunches from there. Rutherford and Jones (1986) suggested that adaptations from Swiss ball training resulted in better coordination of synergistic and stabilizer muscles. Behm (2002) and colleagues reported the effect of unstable conditions, as induced by sitting on a Swiss ball on force production of the knee extenders. Robert examined the effect of Swiss ball exercises on core stability and stated that there is an improvement in core strength among the subjects.

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of Resistance Training and Swiss Ball Resistance Training on Muscular Strength among Male Handball Players.

METHODOLOGY

Selection of Subjects

Thirty male handball players were selected from LNIPE Guwahati and Gwalior during the Inter- University Handball Camp held at LNIPE Guwahati in 2014 that have represented at the Inter- University and Inter State tournaments were randomly selected as subjects for the study. This experimental study was administered to only two experimental groups and one control group of 10 subjects each. The age of subjects ranged from 18 to 25 years only.

SELECTION OF VARIABLE AND THEIR CRITERION MEASURES

Table- 1: presents the Muscular Strength and criterion measures which were selected for the present study and were measured.

Table 1: Selected variables and their criterion measures

S.No	Variables	Criterion measures
1.	Muscular Strength	1RM test Bench Press (in Kg)

EXPERIMENTAL DESIGN

This experimental study was administered to only two experimental groups and one control group of 10 subjects each. For this purpose Group I underwent Resistance training, Group II underwent Swiss ball resistance training in three alternative days for twelve weeks. Group III acted as a control group.

TRAINING PROGRAMME

I- Four weeks - Resistance Training

S.no	Name of the exercise	Repetition	Set	Intensity	Rest
1.	Bench press	10-12	4 set	70%	2 mins
2.	Half squad	10-12	4 set	70%	2 mins
3.	Leg press	10-12	4 set	70%	2 mins
4.	Leg curls	10-12	4 set	70%	2 mins
5.	Chest press	10-12	4 set	70%	2 mins

TRAINING PROGRAMME

II- Four weeks - Resistance Training

S.no	Name of the exercise	Repetition	Set	Intensity	Rest
1.	Bench press	10-12	4 set	80%	2 mins
2.	Half squad	10-12	4 set	80%	2 mins
3.	Leg press	10-12	4 set	80%	2 mins
4.	Leg curls	10-12	4 set	80%	2 mins
5.	Chest press	10-12	4 set	80%	2 mins

TRAINING PROGRAMME

III- Four weeks - Resistance Training

S.no	Name of the exercise	Repetition	Set	Intensity	Rest
1.	Bench press	12-14	5 set	90%	2 mins
2.	Half squad	12-14	5 set	90%	2 mins
3.	Leg press	12-14	5 set	90%	2 mins
4.	Leg curls	12-14	5 set	90%	2 mins
5.	Chest press	12-14	5 set	90%	2 mins

TRAINING PROGRAMME

I- Four weeks - Resistance Training With Swiss ball

S.no	Name of the exercise	Repetition	Set	Intensity	Rest
1.	Bench press	10-12	4 set	70%	2 mins
2.	Half squat	10-12	4 set	70%	2 mins
3.	Leg press	10-12	4 set	70%	2 mins
4.	Leg curls	10-12	4 set	70%	2 mins
5.	Chest press	10-12	4 set	70%	2 mins

TRAINING PROGRAMME

II- Four weeks – Resistance Training With Swiss ball

S.no	Name of the exercise	Repetition	Set	Intensity	Rest
1.	Bench press	10-12	4 set	80%	2 mins
2.	Half squat	10-12	4 set	80%	2 mins
3.	Leg press	10-12	4 set	80%	2 mins
4.	Leg curls	10-12	4 set	80%	2 mins
5.	Chest press	10-12	4 set	80%	2 mins

TRAINING PROGRAMME

III- Four weeks - Resistance Training With Swiss ball

S.no	Name of the exercise	Repetition	Set	Intensity	Rest
1.	Bench press	12-14	5 set	90%	2 mins
2.	Half squat	12-14	5 set	90%	2 mins
3.	Leg press	12-14	5 set	90%	2 mins
4.	Leg curls	12-14	5 set	90%	2 mins
5.	Chest press	12-14	5 set	90%	2 mins

Statistical Technique

The data were analyzed by using ANCOVA find out the significance of the mean difference between the groups. The **repeated analysis of variance** was used to find out the significance of the mean difference between the pre and post test.

Results

Table: II - MUSCULAR STRENGTH

	Resistance Training	Swiss Ball Training	Control Group	Source of Variance	Sum of Square	DF	Mean Square	F
Pre Test	84.3	88.5	84.5	Between Within	112.26 649.1	2 27	56.13 24.04	2.33
Post Test	126.7	98	84.8	Between Within	9178.46 1285.7	2 27	4589.23 47.61	96.37
Adjusted Post Mean	127.35	96.77	85.33	Between Within	9306.22 1156.22	2 26	4653.11 44.47	104.63

F Value 3.34

Table- II (a)

Resistance Training	Swiss Ball Training	Control Group	Mean Difference	Confidence Interval Value
127.35	96.77	-	30.58	7.92
127.35	-	85.33	42.02	7.92
-	96.77	85.33	11.44	7.92

Table- II (a) shows the Scheffe's post –hoc test result .The ordered adjusted final mean difference for Muscular strength of experimental groups I,II and control group were tested for significant at 0.05 level of confidence against confidential interval value.

The mean difference between experimental group I and experimental group II, experimental group I and control group and experimental group II and control group were 30.58, 42.02 and 11.44 respectively, and it was seen to be greater than the confidential interval value of 7.73 Hence the above comparisons were significant.

Figure 1: Graphical Representation of Muscular Strength of Male Handball Players.



CONCLUSION

The Resistance training and Swiss ball resistance training significantly produced the performance variable muscular strength of male handball players than the control group.

The Muscular strength favored to Resistance training greater than Swiss ball training and the control group of Male handball players.

Control group did not produce any significant improvement on Muscular Strength variables of Male handball players.

In the present study, the effect of both Resistance training and Swiss ball resistance training has significant improvement in the Muscular Strength among Male handball players.

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