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A STUDY TO COMPARE THE EFFECTS OF SWISS BALL EXERCISES VERSUS THERABAND EXERCISES ON ABDOMINAL GIRTH

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ABSTRACT

Background of The Study: Obesity refers to a condition of having excessive amount of body fat. Not only the amount of excess fat needs to be considered but also, the body part where it is distributed matters a lot. Fat deposition in the abdomen can be dealt with exercises. Various exercises have been designed for obesity but, in particular, the exercises designed for abdomen like Swiss ball and Thera band exercises proves more beneficial. **Aim of the Study:** The main aim of the study is to compare the effects of swiss ball exercises versus thera band exercises on abdominal girth. **Objective of the Study:** The objectives of the study are. To assess the effect of swiss ball exercises on abdominal girth. To assess the effect of thera band exercises on abdominal girth To compare the effect of swiss ball exercises versus thera band exercises **Methodology:** 40 subjects were selected based on the inclusion and exclusion criteria and divided into 2 group A and B. Group A consists of 20 subjects and Group B consists of 20 subjects. Group A were treated with swiss ball exercises and Group B were treated with thera band exercises for 6 weeks. Pre and Post test scores were assessed for abdominal girth. **Result:** Statistical analysis was done which showed a significant improvement in post-test assessment scores of group A than group B subjects. Comparison of post-test mean values of Group A and B subjects, showed improvement in the Group A than group B. Hence, Group A consisting of 20 subjects, who were treated with swiss ball exercises have more significant improvement than Group B consisting of 20 subjects, who were treated with thera band exercises at $p < 0.0001$. **Conclusion:** This study concluded that both the groups have a significant effect in both the exercises. While comparing both groups, Group A have more significant improvement than Group B.

KEYWORDS: Swiss ball exercise, Thera band exercise, abdominal girth, Obesity.

INTRODUCTION

Obesity can be seen as the first wave of a defined cluster of non-communicable diseases called "New World Syndrome" creating an enormous socioeconomic and public health burden in poorer countries.[1] Abdominal obesity tends to increase with weight gain and is strongly associated with various diseases such as coronary heart disease and type 2 diabetes mellitus.[3] In addition, abdominal obesity is associated with increased levels of visceral fat. This appears partially responsible for metabolic complications such as insulin resistance, glucose intolerance, high total and low-density lipoprotein cholesterol, low high-density lipoprotein cholesterol, and the metabolic syndrome.[1,2,3] However, a reduction in visceral fat tends to reduce these complications thereby decreasing the risk for coronary heart disease. Population-based, cross-sectional,[4,5] and prospective.[6,7,8] studies clearly establish that body mass index (BMI) and waist circumference (WC) are predictors of cardiovascular disease and type 2 diabetes.

However, not only the amount of excess fat needs to be considered but where, in the body it is distributed is also of importance. The upper-body fat, and in particular that carried within the abdomen (intra-abdominal) carry a greater health risk than that stored elsewhere in the body. Thus, preferential reductions in abdominal fat during weight loss would seem necessary to reduce the health risks associated with obesity swiss ball and thera band abdominal exercises have been proven their efficacies in activating the abdominal muscles while performing these exercises have been proven their efficacies in activating the abdominal muscles while performing these exercises.

AIM OF THE STUDY

The main aim of the study is to compare the effects of swiss ball exercises versus thera band exercises on abdominal girth.

OBJECTIVE OF THE STUDY

The objectives of the study are

- To assess the effect of swiss ball exercises on abdominal girth
- To assess the effect of thera band exercises on

abdominal girth
- To compare the effect of swiss ball exercises versus thera band exercises on abdominal girth

RESEARCH DESIGN AND METHODOLOGY

An experimental study design was conducted with 40 patients who fulfilled the inclusion and exclusion criteria. The samples were divided into group A and Group B consisting of 20 samples each.

INCLUSION CRITERIA

- Age 30-40 years
- Only female participants
- Obesity
- Excessive amount of fat in the abdominal region

EXCLUSION CRITERIA

- Participants with any recent abdominal surgeries
- Spinal surgeries
- Degenerative joint condition
- Neuromuscular disorders
- Cardiovascular disorders

PROCEDURE

It is an experimental study where 40 subjects were selected according to the inclusion criteria and were randomly divided into 2 groups namely Group A and B. Group A consisting of 20 subjects were given swiss ball exercises and Group B consisting of 20 subjects were given thera band exercises for 6 weeks (3 days per week). Pre and post-test assessment was done and evaluated.

Group A: For Swiss ball exercise group

175-195cm medium size ball (or) 195cm+ large size ball was used. The exercises followed are:

1. Exercise ball abdominal curl up
2. Exercise ball abdominal oblique curl up in bridge
3. Curl up in bridge
4. Knee tuck on exercise ball
5. Back extension on exercise ball

Group B: For thera band group

Green theraband with a resistance of 5.01 lb and blue theraband with a resistance of 7.5 lb is used. The exercises followed are:

1. Theraband abdominal crunch in supine
2. Theraband abdominal oblique crunch in supine
3. Theraband abdominal crunch (lower abs)
4. Side bends

Data Analysis

The collected pre and post test data were analyzed and tabulated. For the descriptive statistics, the mean and standard deviation were calculated. The results were tabulated and the graphs were plotted accordingly.

Intra-Group Analysis (Within Group Analysis)

Testing the effect of Group A in decreasing the value of BMI

H_0: There is no significant effect of Group A in decreasing the value of BMI

H_1: There is significant effect of Group A in decreasing the value of BMI

The above hypothesis is tested by the use of Paired Sample t-test and the corresponding output is shown below:

t-Test: Paired Two Sample for Means		
	A_BMI_Pre	***A_BMI_Post***
Mean	**30.48**	**29.02**
SD	**3.48**	**3.42**
Variance	12.12	11.68
Observations	20.00	20.00
Pearson Correlation	0.99	
Hypothesized Mean Difference	0.00	
Df	19.00	
t Stat	**14.96**	
P(T<=t) one-tail	**0.000**	
t Critical one-tail	1.73	
P(T<=t) two-tail	0.000	
t Critical two-tail	2.09	

Result

Test Statistic: t = 14.96, **P-value** = 0.000 < 0.05

Since the p-value (0.000) of the test statistic is less than 0.05, we reject the null hypothesis at 5% level of significance (t = 14.96, p < 0.05). In addition, the mean BMI value is decreased from Pre-test (30.48) to Post-test (29.02) in Group A. Hence, the evidence is sufficient to conclude that there is significant effect of Group A in decreasing the value of BMI from Pre-test to Post-test.

Testing the effect of Group B in decreasing the value of BMI

H_0: There is no significant effect of Group B in decreasing the value of BMI

H_1: There is significant effect of Group B in decreasing the value of BMI.

The above hypothesis is tested by the use of Paired Sample t-test and the corresponding output is shown below:

t-Test: Paired Two Sample for Means		
	A_BMI_Pre	***B_BMI_Post***
Mean	**31.12**	**30.51**
SD	**2.85**	**2.77**
Variance	8.14	7.68
Observations	20.00	20.00
Pearson Correlation	0.99	
Hypothesized Mean Difference	0.00	
Df	19.00	
t Stat	**7.48**	
P(T<=t) one-tail	**0.000**	
t Critical one-tail	1.73	
P(T<=t) two-tail	0.000	
t Critical two-tail	2.09	

Result

Test Statistic: t = 7.48, **P-value** = 0.000 < 0.05

Since the p-value (0.000) of the test statistic is less than 0.05, we reject the null hypothesis at 5% level of significance (t = 7.48, p < 0.05). In addition, the mean BMI value is decreased from Pre-test (31.12) to Post-test (30.51) in Group B. Hence, the evidence is sufficient to conclude that there is significant effect of Treatment B in decreasing the value of BMI from Pre-test to Post-test.

Inter-Group Analysis

Comparing the effect of Group A and B in terms of change in BMI

H0: There is no significant difference between Group A and B in terms of average change in BMI

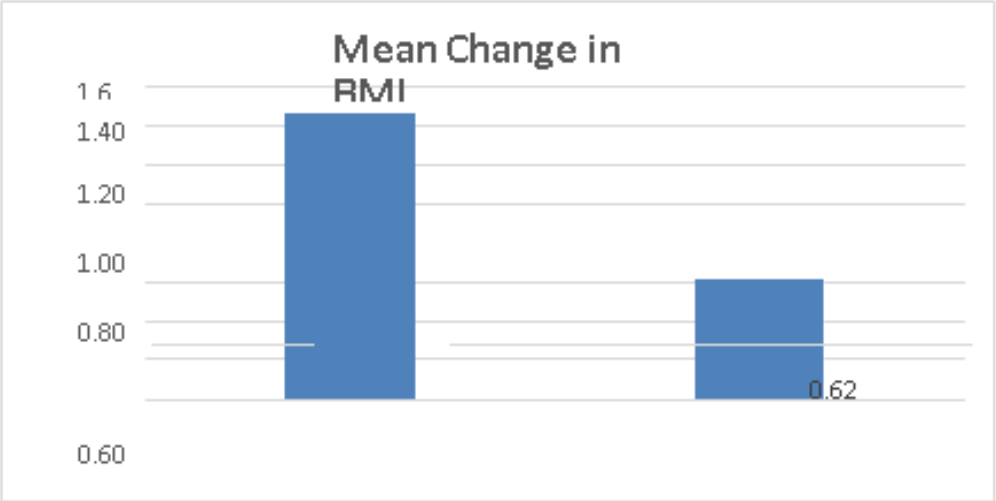
H1: There is significant difference between Group A and B in terms of average change in BMI

The above hypothesis is tested by the use of Independent Samples t-test.

t-Test: Two-Sample Assuming Equal Variances		
	A_BMI_Diff	***B_BMI_Diff***
Mean	**1.47**	**0.62**
SD	**0.44**	**0.37**
Variance	0.19	0.14
Observations	20.00	20.00
Pooled Variance	0.16	
Hypothesized Mean Difference	0.00	
Df	38.00	
t Stat	**6.65**	
P(T<=t) one-tail	0.000	
t Critical one-tail	1.69	
P(T<=t) two-tail	**0.000**	
t Critical two-tail	2.02	

Result

Test Statistic: t = 6.65, **P-value** = 0.000< 0.05



Since the p-value (0.000) of the test statistic is less than 0.05, we reject the null hypothesis at 5% level of significance ($t = 6.65$, $p < 0.05$). In addition, the mean reduction in the value of BMI by Group A (1.47) is more than that of Group B (0.62). Hence, the evidence is sufficient to conclude that the Group A is effective than Group B in decreasing the value of BMI.

CONCLUSION

The study concluded that both the group have a significant effects on abdominal girth in reducing fat, however it is, the group A subjects who were treated with swiss ball exercises have proved to have significant effects on abdominal girth in reducing fat than comparative to group B who were treated with theraband exercises.

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