WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 6, Issue 7, 1222-1229. Research Article ISSN 2277– 7105

EFFECT OF MAT EXERCISES AND RESISTANCE BAND EXERCISES ON OBESITY AMONG COMPUTER PROFESSIONALS –A COMPARATIVE STUDY

Reema Joshi*[1], Chaitanyaa Wani[2], Vishnu Vardan G.D.[3] and Tushar Palekar[4]

Dr. D. Y. Patil College of Physiotherapy, Dr.D.Y.Patil Vidyapeeth Pune.

Article Received on
08 May 2017,
Revised on 29 May 2017,
Accepted on 20 June 2017
DOI: 10.20959/wjpr20177-8805

***Corresponding Author**
Reema Joshi
Dr. D. Y. Patil College of Physiotherapy, Dr.D.Y.Patil Vidyapeeth Pune.

ABSTRACT

Background: The term obesity refers to the condition of having an excessive amount of body fat.[2] The World Health Organisation has described obesity as one of today's most neglected public health problems, affecting every region of the globe.[3] Obesity is the major contributor to the metabolic dysfunction involving cardiac, liver, intestinal, pulmonary, endocrine and reproductive functions. Working in software profession requires prolong time seating which causes poor fat metabolism which leads to obesity which also causes low back pain, neck pain, and reduces attention in work and hence work performance decreases. Abdominal strengthening can reduce abdominal fat and redevelop abdominal muscle strength, so we compared effect of both to find out results. **Aim and Objectives**: To compare the effect of mat exercises and progressive resistance band exercises on abdominal girth in Obese computer professionals. **Methodology**: Ethical clearance was obtained from institutional ethical committee. Female subjects between the age groups 21-35 having BMI > 25 was included in study. A written consent was obtained from all participants. The Pre and post assessment was done using following outcome measures (BMI, waist/hip ratio, abdominal circumference and skin-fold thickness measurements). After initial assessment the subjects were randomly allocated in 2 groups consisting of 15 subjects. A low calorie diet was instructed. Each group was given a set of exercises for duration of 5 days per week for 4 weeks. Group 'A' was given mat exercises; Group 'B' was given progressive resistance-band exercises. **Result**: •On comparison BMI Group A pre and post p value was 0.000 Group B 0.000, Whereas on comparison of BMI between group A and B p value was 0.006 which is statistically not significant •pre and post value of group A skin fold measurement p value was 0.000 and for group B is 0.054 which not statistically significant

whereas between two group shows p value 0.709 which not statistically significant. **Conclusion:** This study shows mat exercises are proven to be effective in abdominal fat reduction as compare to progressive resistive band exercises.

KEYWORDS: Mat exercises, resistance band exercises, BMI.

INTRODUCTION

Obesity can be seen as the first wave of a cluster of non-communicable diseases called "New World Syndrome".[1] The term obesity refers to the condition of having an excessive amount of body fat.[2] The World Health Organisation has described obesity as one of today's most neglected public health problems, affecting every region of the globe.[3] Obesity is an exaggeration of normal adiposity and is a central player in patho-physiology of diabetes mellitus, insulin resistance, and atherosclerosis due to its secretion of excessive adipokines. The necessary amount of stored fat is required for the process of metabolism whenever there is energy demand. In case of excessive consumption of food there are chances of excessive fat deposition, which eventually results in obesity.[4] [5] Obesity is the major contributor to the metabolic dysfunction involving cardiac, liver, intestinal, pulmonary, endocrine and reproductive functions.

Android obesity is associated with metabolic anomalies which also characterize the syndrome X: resistance to insulin, arterial hypertension and dyslipidemia. They are having more at risk of illnesses such as heart disease, diabetes, etc. Thus, preferential reductions in abdominal fat during weight loss would be necessary to reduce the health risks associated with obesity.[7] Abdominal obesity, also known as belly fat or clinically as central obesity is excessive fat around the abdomen.[8] The high prevalence of abdominal obesity is a characteristics feature of Asian Indians and all South Asians.[9] Gynecoid type of obesity is excessive amount of fat distribution somewhere at the hip and thigh areas. energy balance should be maintained to promote weight loss. Studies also suggest that addition of diet plan to a physical activity regimen provides added benefits with respect to weight loss, adipose tissue reduction, and the preservation of lean tissue.[10] Voluntary physical activity and exercise training are clearly beneficial to health in many ways. It has been known for some time that regular physical activity, through its influence on energy balance and migration of obesity, can decrease the risk of type 2 DM, cardio vascular diseases, and many other obesity related problems. It can also mitigate central and peripheral sympathetic activity, thereby plausibly reducing hypertension, heart failure, etc. More recently, convincing evidence has accumulated that

physical activity and regular exercise can reduce depression, reduce the decline in cognition associated with aging and toxic brain insults through influences on synaptic plasticity and axonal growth.[12]

Mat are routine conventional exercises focuses mainly upon the core muscles, eg. Abdominals, back, hips and shoulder girdle. The movements rely upon correct positioning of the body relative to gravity as well as lever (limb) length alterations to develop the core musculature[14] Resistance-band does not rely on gravity to provide resistance hence it is possible to change the emphasis placed on muscles during certain exercises. This is made possible by changing the direction of resistance band. The linear variable resistance provided by elastic band mimics the strength curves of most muscles. A strength curve refers to the way a muscle or a group of muscles strength changes over a range of motion. Many individuals report a strong burn in muscles and greater fatigue, this is because a greater number of muscle fibres are into action. In this study we compared the effect of both the method to see amount of abdominal fat reduction.

METHOD AND METHODOLOGY

Ethical clearance was obtained from college ethical committee. Subjects fulfilling the inclusion and exclusion criteria were included. A written consent was obtained from all participants and procedure was well informed.30 female subjects whoever has BMI above 25 were included The Pre and post assessment was done using following outcome measures (BMI, waist/hip ratio, abdominal circumference and skin-fold thickness measurements). A low calorie diet was instructed. Each group was given a set of exercises for duration of 5 days per week for 4 weeks.

Group 'A' received the following exercises.

Sr. No.	EXERCISE DETAILS	FIRST WEEK	SECOND WEEK	THIRD WEEK	FOURTH WEEK
1	Warm Up Exercises for 5 min.				
2	Plank with 5 second hold	2 sets of 10 repetitions each	3 sets of 10 repetitions each	3 sets of 15 repetitions each	3 sets of 15 repetitions each
3	Wall pushups				
4	V-up 5 second hold				
5	Lunges				
6	Oblique crunches				
7	Chair dips				
8	Abdominals crunches				
9	Scissor kicks				
10	Cool Down Exercises for 5 min.				

Group 'B' received the following exercises.

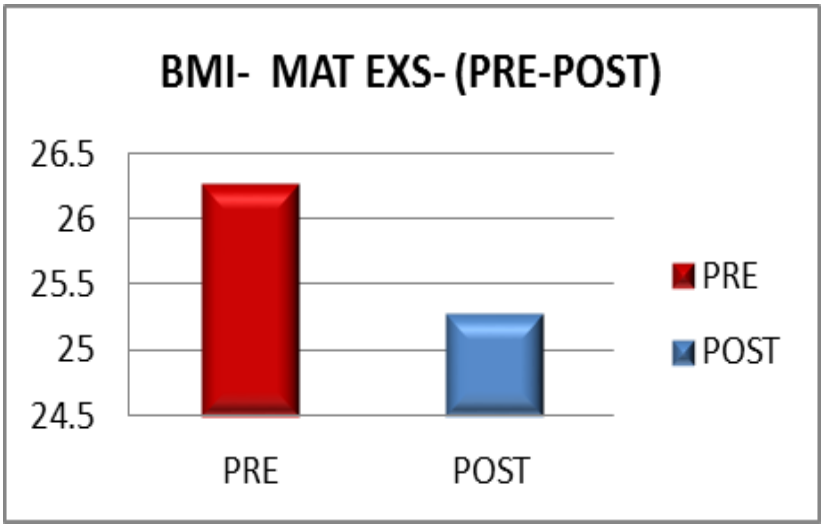
Sr. No.	EXERCISE DETAILS	FIRST WEEK	SECOND WEEK	THIRD WEEK	FOURTH WEEK
1	Warm Up Exercises for 5 min				
2	Resistance-band abdominal crunch (lower abs)	2 sets of 10 repetitions	3 sets of 10 repetitions	3 sets of 15 repetitions	3 sets of 15 repetitions
3	Resistance-band Diagonal lift				
4	Resistance-band V-up 5 second hold				
5	Resistance-band Lunges				
6	Resistance-band abdominal oblique crunch in supine				
7	Resistance-band abdominal crunch in supine				
8	Resistance-band internal/ external rotation of shoulders				
9	Resistance-band Side bends				
10	Cool Down Exercises for 5 min				

DATA ANALYSIS AND INTERPRETATION

Statistical analysis of the present study was done using primer of biostatistics so as to verify the results. Comparison of the pre and post intervention outcome measures within the group was done using paired t- test where as unpaired t- test was done to compare the difference between the two groups.

Table -1: Comparison of Pre and Post BMI values in group A

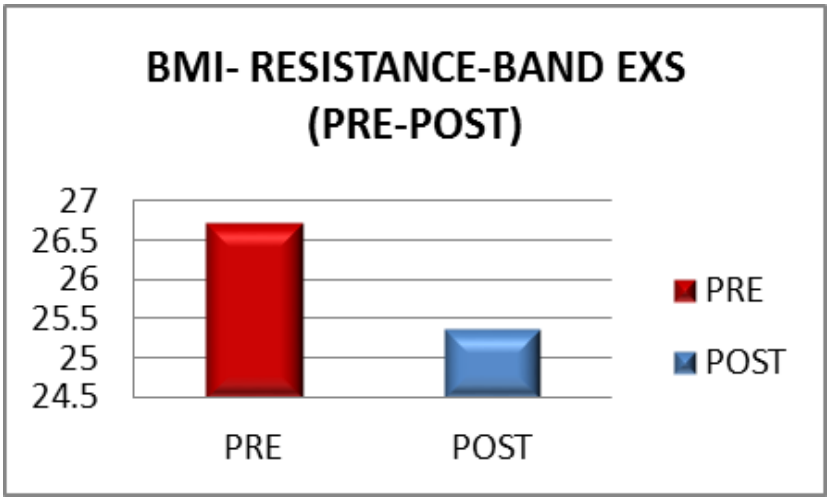
GROUP- A	MEAN		
PRE	26.27	t=13.74	p=0.000
POST	25.28		



Graph-1: Comparison of Pre and Post BMI values in group A

Table- 2: Comparison of Pre and Post BMI values in group B

GROUP- B	MEAN		
PRE	26.73	t=14.28	p=0.000
POST	25.38		



Graph 2- Comparison of Pre and Post BMI values in group B

Table 3: On comparison of Body density with (3SFK) in group A

MEAN- DIFF	MEAN		
PRE	26.15	t= 21.500	p= 0.000
POST	25.87		

Table 4: On comparison of Body density (3SFK) in group B

MEAN- DIFF	MEAN		
PRE	26.97	t= -0.174	p= 0.863
POST	26.67		

Table 5: On comparison of body density between two groups

GROUP-	MEAN		
A	25.87	t=-0.381	p=0.709
B	26.67		

RESULTS

On comparison of BMI within group A for pre & post measures‘t’ value was 13.74 and ‘p’ value obtained was 0.000 , group B for pre & post measures ‘t’ value was 14.28 and ‘p’ value obtained was 0.000 which was statistically significant On comparison of skin fold measures within pre & post values of group A, ‘t’ value was -7.55 and ‘p’ value obtained was 0.000 which is statistically significant, On comparison of skin fold measures within pre & post values of group B, ‘t’ value was -2.10 and ‘p’ value obtained was 0.054.

DISCUSSION

The present study was conducted to compare the effect of 4 week training program between In obese software professional individuals. They were divided in 2 groups and mat exercises and resistance band exercises were given to them.

Mat exercises focus upon the core musculature, eg. Abdominals, back, hips and shoulder girdle. The movements rely upon correct positioning of the body relative to gravity as well as lever (limb) length alterations to develop the core musculature.[14]

For all the outcome measures of group A (Mat) & group B (Resistance Band) showed significant difference when compared to their pre and post interventional values except the hip to waist ratio pre and post values.

In the present study, the subjects in group A (Mat) showed reduction in the values of BMI, abdominal girth and skin fold thickness. This could be because of the improved strength of abdominal muscles resulting in toned waist line and the other exercises which helped in improving posture. The overall result being slight trimmer in appearance.[15] Secondly a low calorie diet was maintained by the subjects. The effective results with mat exercise could also be because of higher activity of abdominal muscles.[16] [17]

The group B (Resistance-band) individuals displayed improvement on abdominal circumference. Resistance-band does not rely on gravity and provides elastic resistance. This resulted in continuous tension to the muscles being trained. Another unique benefit could be that elastic resistance offers a linear variable resistance. The principle is that ‘as the range of motion of the exercise increases, the resistance of resistance-band increases’. As the resistance of resistance-band increases, the number of muscle fibers that are being engaged in the exercising muscle increases. These changes can be associated with strength gains and thus helping in building lean body mass and therefore resulting in reduction of fat. Resistance training requires more energy expenditure. As a result, it helps in reducing and breaking down fat[18] providing the desired effect.

In the present study both the exercises has shown effect in fat reduction whereas Body density improvises more with mat exercises. Mat exercises helps in fat reduction by co-contraction of oblique and core muscles because strengthening of abdominal muscles and helps in tightening the waist line which improvises posture, and results in trimmer shape

appearance along with this low calorie diet intake maintained by subjects helped in overall weight reduction.[11]

In this study resistance band exercises were also found effective in fat reduction ,as resistance band exercises doesn't rely on gravity and it provides continuous tension to muscle ,it also offers linear variable resistance which helps to improvise range of motion and toning of muscles which takes time hence it fails to improve body density in 2 weeks period of time. Thus all together effect of exercises and diet helps to balance between negative energy and positive energy to promote weight loss.

CONCLUSION

The results of this study conclude that a 4 week exercise program was effective in reducing overall body fat, whereas mat exercises were more effective than the resistance band exercises.

REFERENCES

1. Kalra S, Unnikrishnan A. Obesity in India: The Weight of Nation, Journal of Medical Nutrition and Nutraceuticals 2012; 1(1): 37-41.
2. Haslam DW, James WP. Obesity. Lancet 2005; 366: 1197-1209.
3. WHO. Technical Report Series 894: Obesity: Preventing and Managing the Global Epidemic. Basel, Switzerland: WHO; 2000; 16-1.
4. Spiegelman BM, Flier JS. Obesity and the regulation of energy balance. Cell. 2001; 104: 531-543. (PubMed).
5. Seeley RJ, Woods SC. Monitoring of stored and available fuel by the CNS: Implications for obesity. Nat Rev Neurosci. 2003; 4: 901-909. (PubMed).
6. Android- type obesity & gynecoid- type obesity. January 1997; 85(49): 1578-83.
7. Bray G. ACE Statement on the Prevention, Endocrine Practice 1998; 4(5): 297-330.
8. Deepa M, et al. European Journal of Clinical Nutrition. 2009; 63: 259-67.
9. Mayo, Exercise-induced Weight Loss Preferentially Reduces Abdominal Fat, Journal of Physical Education and Sports Science. Oct 2001; 9: 207-213.
10. Ross R. Imaging Journal of Clinical Nutrition. 1995; 61(11): 79-85.
11. Emil S. International Journal of Sports Physical Therapy. August 2010; 372-376.
12. Rod K. Dishman, Carl W. Cotman, et al. Neurobiology of exercise. March 2006.

13. Vikram NK, Pandey RM, et al. Non-obese (body mass index <25 kg/m2) Asian Indians with normal waist circumference have high cardiovascular risk. Nutrition 2003; 19(6): 503-9.
14. Cozen, D.M., Use of piltes in foot and ankle rehabilitation. Sports Med. Arthrosc., 2000; 8(Suppl 4): 395-403.
15. Slentz CA, Kraus WE. Exercise, abdominal obesity, skeletal muscle, and metabolic risk: evidence for a dose response. Obesity. 2009 Dec; 17 Suppl 3: S27-33.
16. Brian A. et al. Effect of exercise training intensity on abdominal visceral fat and body composition. Med Sci Sports Exerc. 2008 November; 40(11): 1863-1872.
17. Ludmila M. Effects of Physioball and Conventional floor exercises on early phase adaptations in Back and Abdominal Core Stability and Balance in Women, Journal of Strength and Conditioning Research. 2003; 17(4): 721-725.
18. Carolyn Kisner, Therapeutic Exercise; Jaypee Brothers; 5th edition 2007; 216-2.