

The Effect of Abdominal Muscle Endurance Exercise in obese Subjects on Endurance Field Test

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BACKGROUND AND PURPOSE OF THE STUDY: To compare the effect of endurance exercise in obese subjects on Endurance field test. Obesity has been recognized by the WHO as the most visible and at the same time, the most ignored problem of public health worldwide. Obesity has a far ranging – negative effect on health. Each year obesity- related conditions cost is 150 billion dollars and cause an estimated 30, 0000 premature death in US. Obesity is when your body has too much fat obesity which can cause a lot of damage to the body. People with severe obesity are more likely to have other disease which includes type 2 Diabetes, high blood pressure, sleep apnea and many more. These diseases may lead people to have a lower quality of health in some cases which can lead to disability or early death. The purpose of this study is to investigate the effect of two difference training endurance and strengthening and specifically abdominal adipose tissue. Specific training programs have shown to change body composition which is why endurance training is needed to improve body composition by decrease fat mass.

METHOD: Comparative study will be done using 30 subjects at A.C.S MEDICAL COLLEGE OUT PATIENTS PHYSIOTHERAPY DEPARTMENT and fitness Centre. Random sampling will be done and the duration of study is 4 weeks. The exclusion criteria were subjects with severe cardiovascular disease and with respiratory problem (COPD, TB).

RESULT: On comparing pre- test and post -test within Group A and Group B on endurance field test (Timed Front Plank Test, Angle Sit Test and One Minute Sit up Test) shows highly significant difference in mean values at $p < 0.001$.

CONCLUSION: the study shows that abdominal muscles endurance exercise training is effective in increase the endurance of abdominal muscle of overweight and obese subjects. However abdominal endurance exercise was better effective on overweight subjects than obese subjects.

KEYWORDS: Abdominal muscles. Resistance training, Endurance field test

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Obesity is characterized by excess fat storage in adipose tissue is a major risk factor for chronic disease, specifically cardiovascular disease and diabetes. Obesity is defined by the use of body mass index (BMI), which is calculated as weight (kg) divided by height squared (m²). Despite the benefits of using BMI as it is simple measure to characterize individual's body composition it does not provide a good indication of the location of fat deposition, which has been found to be more closely related to cardiovascular health risk than total fat mass; specifically, excess accumulation of adipose tissue within the abdominal cavity.

Obesity in older adults is becoming a serious public health problem in the United States. The number of obese adults is increasing markedly. Currently approximately 20% of adults 65 years of age or older are obese, and the prevalence will continue to rise as more baby boomers become senior citizens.

It has been suggested that it may be difficult to achieve successful weight loss in older adults because of lifelong diet and activity habits. Moreover, there is major concern that weight loss could worsen frailty by accelerating the usual age- related loss of muscle that leads to sarcopenia. We reported that a combination of weight loss and exercise may ameliorate frailty in obese older adults.

It is well documented that endurance training decreases body weight, BMI, waist circumference and body fat in obese children and adolescents Exercise in the low to moderate intensity domain will maximize fat oxidation, and are thought to decrease lipid storage and increase fat mass loss. The amount of fat used as a substrate also increases with the duration of exercise.

PROCEDURE: 30 subjects will be selected and divided into two groups based on selection criteria with age group of (18-25)

Pretest will be done using endurance field test preceding with the treatment protocol.

Group A with over weight (BMI 25-29.9kg\m²) will receive endurance exercise.

GROUP B: Subjects with obesity will receive endurance exercise.

Group A with overweight subjects (BMI 25-29.9kg\m²) were receive endurance exercise.

Bend and lift progression: -

Hip bridge- The subjects was instructed to lie on the floor with knees bent and feet flat lift the hips into the air and keep the arms on the floor.

This exercise was performed by subjects thrice a day 10 times repetition for 12 weeks for about 5 session per week.

Squat up and down from bench while holding TRX (Total body resistance exercise): -

Subjects was instructed to Hold TRX straps while sitting on a bench, and was asked to Lift the body into an upright position while using the TRX for support. Return to the standing position.

This exercise was performed by subjects twice a day 10 times repetition for 12 weeks for about 5 session per week.

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TRX Squat: -

The subjects were instructed to squat with elbow under the shoulders. Hold the TRX handles and stand upright. And was asked to lower the hips into a squat position with elbow extension, Return to the starting position.

This exercise was performed by subjects twice a day 10 times repetition for 12 weeks for about 5 session per week.

Body- weight squat: -

The subjects were instructed to stand with arms at shoulder height in front of the body, and Lower the hips into a squat position and return to center.

This exercise was performed by subjects 5 times a day and 5 days in a week for 12 weeks.

GROUP B: Subjects with obesity will receive endurance exercise.**Static lunge-**

The subjects were asked to assume a lunge stance. Then subjects were instructed to lower the back knee toward the ground. And Return to the starting position and repeat.

This exercise was performed by subjects twice a day 10 times repetition for 12 weeks for about 5 session per week.

Forward weight shift-

Subjects was instructed from standing position, step forward, and load the front foot with weight and step back to center.

This exercise was performed by subjects thrice a day 10 times repetition for 12 weeks for about 5 session per week.

Forward alternating lunges-

Subjects was instructed to stand with feet hip-distance apart. And Lunge one leg forward while maintaining good upper-body posture and then return to the starting position, and then the Alternate legs.

This exercise was performed by subjects twice a day 10 times repetition for 12 weeks for about 5 session per week.

Stand-up with hip flexion-

The subjects were instructed to stand with one foot on flat surface step up and raise the opposite leg to a 90-degree angle.

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This exercise was performed by subjects 5 times a day and 5 days in a week for 12 weeks

STUDY DESIGN:

Comparative study.

STUDY TYPE:

Comparative pre and post- test type.

STUDY SETTING:

Outpatient physiotherapy department ACS medical college and hospital, fitness center.

SAMPLE SIZE:

30 subjects both male and female will be included.

STUDY SAMPLING METHOD:

Simple randomized sampling

STUDY DURATION:

12 weeks (5 days\week)

- **INCLUSION CRITERIA:**

Grade 1- overweight

(BMI-25-29.9kg\m²)

Grade 2- obese

Commonly called obesity (30-39.9kg\m²)

Subjects between age of (18-25) both male and female

- **EXCLUSION CRITERIA:**

Subjects with severe cardiovascular disease

Respiratory disorder (COPD, TB)

Grade 3- overweight

Commonly called severe or morbid obesity

BMI greater than or equal to 40kg\m²

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MATERIALS USED:

Couch\ Floor

Stop watch

TABLE - 1**COMPARISON OF TIMED FRONT PLANK TEST SCORE BETWEEN GROUP - A AND GROUP - B IN PRE AND POST TEST**

#TFPT	#GROUP - A		#GROUP - B		t - TEST	df	SIGNIFICANCE
	MEAN	S.D	MEAN	S.D			
PRE TEST	51.46	6.67	50.80	.774	.384	28	.704*
POST TEST	68.80	.941	64.30	.617	15.37	28	.000***

(*- $P > 0.05$), (***- $P \leq 0.001$)**TABLE - 2****COMPARISON OF ANGLE SIT TEST SCORE BETWEEN GROUP - A AND GROUP - B IN PRE AND POST TEST**

#AST	#GROUP - A		#GROUP - B		t - TEST	df	SIGNIFICANCE
	MEAN	S.D	MEAN	S.D			
PRE TEST	21.73	1.48	21.53	.990	.434	28	.668*
POST TEST	36.20	1.42	32.13	1.12	8.67	28	.000***

(*- $P > 0.05$), (***- $P \leq 0.001$)

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TABLE - 3
COMPARISON OF ONE MINUTE SIT UP TEST SCORE BETWEEN
GROUP - A AND GROUP - B IN PRE AND POST TEST

#OMST	#GROUP - A		#GROUP - B		t - TEST	df	SIGNIFICANCE
	MEAN	S.D	MEAN	S.D			
PRE TEST	23.86	1.84	23.60	1.88	.392	28	.698*
POST TEST	35.46	.915	26.06	1.16	24.59	28	.000***

(* - $P > 0.05$), (** - $P \leq 0.001$)

TABLE - 4
COMPARISON OF TIMED FRONT PLANK TEST SCORE WITHIN GROUP - A &
GROUP - B BETWEEN PRE & POST TEST VALUES

#TFPT	PRE TEST		POST TEST		t - TEST	SIGNIFICANCE
	MEAN	S.D	MEAN	S.D		
GROUP- A	51.46	6.67	68.80	.941	-10.26	.000***
GROUP- B	50.80	.774	64.30	.617	-57.25	.000***

(*** - $P \leq 0.001$)

TABLE - 5
COMPARISON OF ANGLE SIT TEST SCORE BETWEEN GROUP - A AND
GROUP - B IN PRE AND POST TEST

#AST	PRE TEST		POST TEST		t - TEST	SIGNIFICANCE
	MEAN	S.D	MEAN	S.D		
GROUP- A	21.73	1.48	36.20	1.42	-26.68	.000***
GROUP- B	21.53	.990	32.13	1.12	-23.81	.000***

(*** - $P \leq 0.001$)

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TABLE - 6
COMPARISON OF ONE MINUTE SIT UP TEST WITHIN
GROUP - A & GROUP - B BETWEEN PRE & POST TEST VALUES

#OMST	PRE TEST		POST TEST		t - TEST	SIGNIFICANCE
	MEAN	S.D	MEAN	S.D		
GROUP- A	23.86	1.84	35.46	.915	-23.86	.000***
GROUP- B	23.60	1.88	26.06	1.16	-4.87	.000***

(***- $P \leq 0.001$)

Conclusion:

Conclusion of the study shows that abdominal muscles endurance exercise training is effective in increase the endurance of abdominal muscle of overweight and obese subjects. However abdominal endurance exercise was better effective on overweight subjects than obese subjects.

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