
بسم الله الرحمن الرحيم
رب اوزعني ان اشكر نعمتك التي انعمت علي وعلى والدي
وان اعمل صالحا ترضيه وادخلني برحمتك في عبادك الصالحين


نشكر لسيادتكم
حضوركم الكريم

BODY COMPOSITION RESPONSE TO SELECTED PHYSICAL THERAPY PROGRAM IN RENAL TRANSPLANT PATIENTS

By

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استجابة تكوين الجسم لبرنامج علاج طبيعى مختار فى مرضى زراعة الكلى

رسالة مقدمة من
احمد عادل على حمدى مرسى
توطئة للحصول على درجة الماجستير
فى العلاج الطبيعى

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"First and foremost, thanks are due to ALLAH, in the name of Allah, the beneficent and merciful of all"

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Introduction

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There is a change in body composition after renal transplant the recipients had a weight gain of approximately 3 kg within 1 yr of kidney transplantation. This change was primarily due to an increase in fat mass. Muscle mass decreased soon after transplantation (Hsu et al., 2006).

Introduction

Physical activity may have an influence on body composition. Physical activity plays a major role in preventing weight gain. In general, by increasing the physical activity level, fat free mass (FFM) will increase and fat mass (FM) will decrease. In addition, in subjects who exercise regularly, less adipose tissue appears to accumulate in the upper, central body regions as they get older (Kohrt et al., 1992).

Introduction

Statement of the Problem:

Can selected physical therapy program including aerobic and strengthening exercises affects body composition in renal transplant patients?

Purpose of the Study:

The purpose of the study was to investigate the effect of selected physical therapy program consisted of aerobic and strengthening exercises on body composition including fat mass, muscle mass and bone mineral density in renal transplant patients.

Hypothesis

It was hypothesized that selected physical therapy program including aerobic and strengthening exercises for 3 months may affect body composition including fat mass, muscle mass, and bone mass density (BMD) after renal transplantation.

SUBJECTS, MATERIAL AND METHODS

Groups of study:-

Group(A)- Study Group

The group that received selected physical therapy program including aerobic and strengthening exercises.

Group(B)- Control Group

The group that did not received physical therapy exercise program.

•All patients had a kidney transplantation.

Criteria of Patient Selection of study:-

Inclusion Criteria:

- All patients had a kidney transplantation.
- The patients ages was ranged from (20-40) years.
- All patients were assessed carefully by a physician before the starting of the study procedures.
- All patients were chosen in both sexes.
- All patients were clinically, medically and psychologically stable.

Exclusion Criteria:

The current study excluded the following patients:

- Patients with a transplant rejection.
- Evidence of a psychiatric disorder.
- Patients with a neurologic disorder that would preclude exercise testing or training.
- Patients with orthopedic limitations that preclude exercise testing or training.
- Patients who were unavailable for regular follow-up.
- Patients with any absolute contraindications to exercise training as established by the American Heart Association or the American College of Sport Medicine.

Exclusion Criteria:

- Patients with any medical complication that would have prevented regular participation.
- Patients with life threatening disorder as myocardial infarction.
- Patients who were suffering from acute viral disease and mental disorders.
- Hemoglobin level below 6.3 g/dL.
- Organ transplant other than kidney.
- Use of corticosteroids for other reasons than kidney transplantation.

Therapeutic equipment and tools:

Measuring tools

Multi-frequency bio-electrical impedance analysis (MF- BIA, BF 100, Germany)

Measurement of Body Composition by MF- BIA

Measurement of Muscle mass & Fat mass by MF- BIA

Measuring tools

DEXA

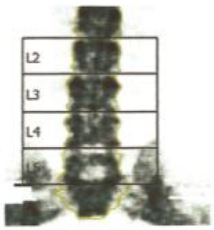
for Measurement

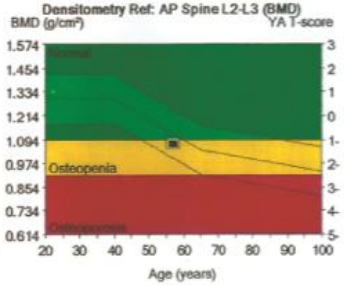
of Bone Mass

Density (BMD)

DEXA report for measuring BMD

Patient:	HUDA ALY AHMED,	**Facility ID:**	
Birth Date:	01/01/1982 33 years	**Referring Physician:**	
Height / Weight:	166.0 cm 95.0 kg	**Measured:**	08/01/2015 06:01:34 ã (13.60)
Sex / Ethnic:	Female	**Analyzed:**	08/01/2015 06:06:39 ã (13.60)

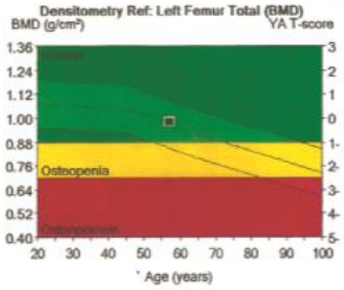




Region	BMD (g/cm²)	Young-Adult (%)	Young-Adult T-score	Age-Matched (%)	Age-Matched Z-score
L2	1.048	87	1.3-	94	0.6-
L3	1.091	90	1.0-	97	0.2-
L4	0.998	83	1.7-	90	0.9-
L2-L3	1.071	88	1.2-	96	0.4-
L2-L4	1.045	86	1.4-	94	0.6-
L3-L4	1.044	86	1.4-	93	0.6-

Matched for Age, Weight (females 25-100 kg), Ethnic
Spain (ages 20-40) AP Spine Reference Population (v112)
Statistically 68% of repeat scans fall within 1SD (± 0.020 g/cm² for AP Spine L2-L3)

Image not for diagnosis



Region	BMD (g/cm²)	Young-Adult (%)	Young-Adult T-score	Age-Matched (%)	Age-Matched Z-score
Neck	0.905	92	0.6-	99	0.1-
Upper Neck	0.719	-	-	-	-
Lower Neck	1.085	-	-	-	-
Wards	0.678	74	1.8-	91	0.5-
Troch	0.840	106	0.5	108	0.5
Shaft	1.119	-	-	-	-
Total	0.982	98	0.1-	102	0.1

Matched for Age, Weight (females 25-100 kg), Ethnic
Spain (ages 20-40) Femur Reference Population (v112)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Left Femur Total)

Image not for diagnosis

DEXA report for measuring BMD

Therapeutic Procedures:

Strengthening Exercises

Bench press exercise

Strengthening Exercises:

Shoulder press exercise

Strengthening Exercises:

Shoulder pull exercise

Strengthening Exercises:

Leg press extension exercise

Strengthening Exercises:

Quadriceps

Curl exercise

Strengthening Exercises:

Hamstring Curl exercise

Strengthening Exercises:

Abdominal crunch exercise

Strengthening Exercises:

Back extension exercise

Strengthening Exercises:

Arm curl & Elbow extension exercise

Strengthening Exercises:

Active assisted abdominal exercise

Strengthening Exercises:

Lateral pull exercise

Strengthening Exercises:

Lateral push exercise

Therapeutic Procedures:

Aerobic Exercises

Bicycling exercise

Aerobic Exercises:

Trunk twisting exercise

Aerobic Exercises:

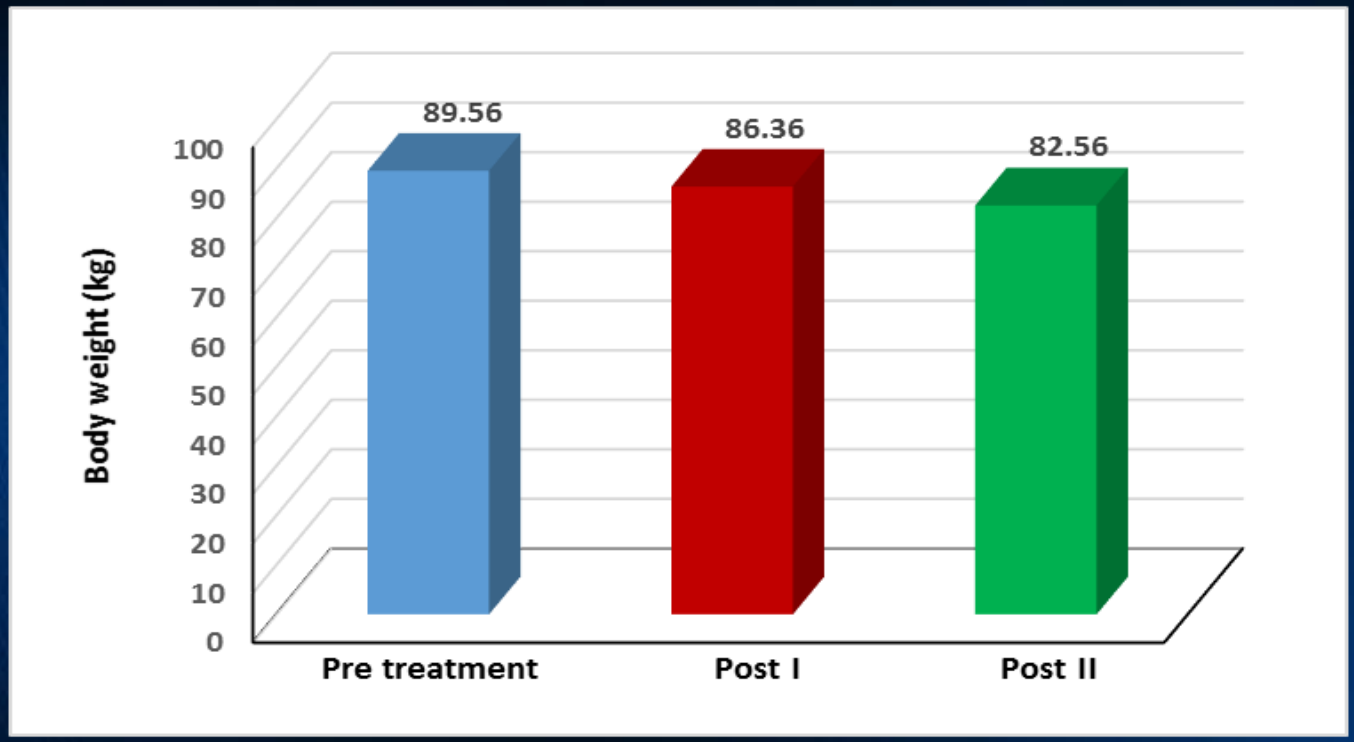
Walking on treadmill exercise

Aerobic Exercises:

Running on treadmill exercise

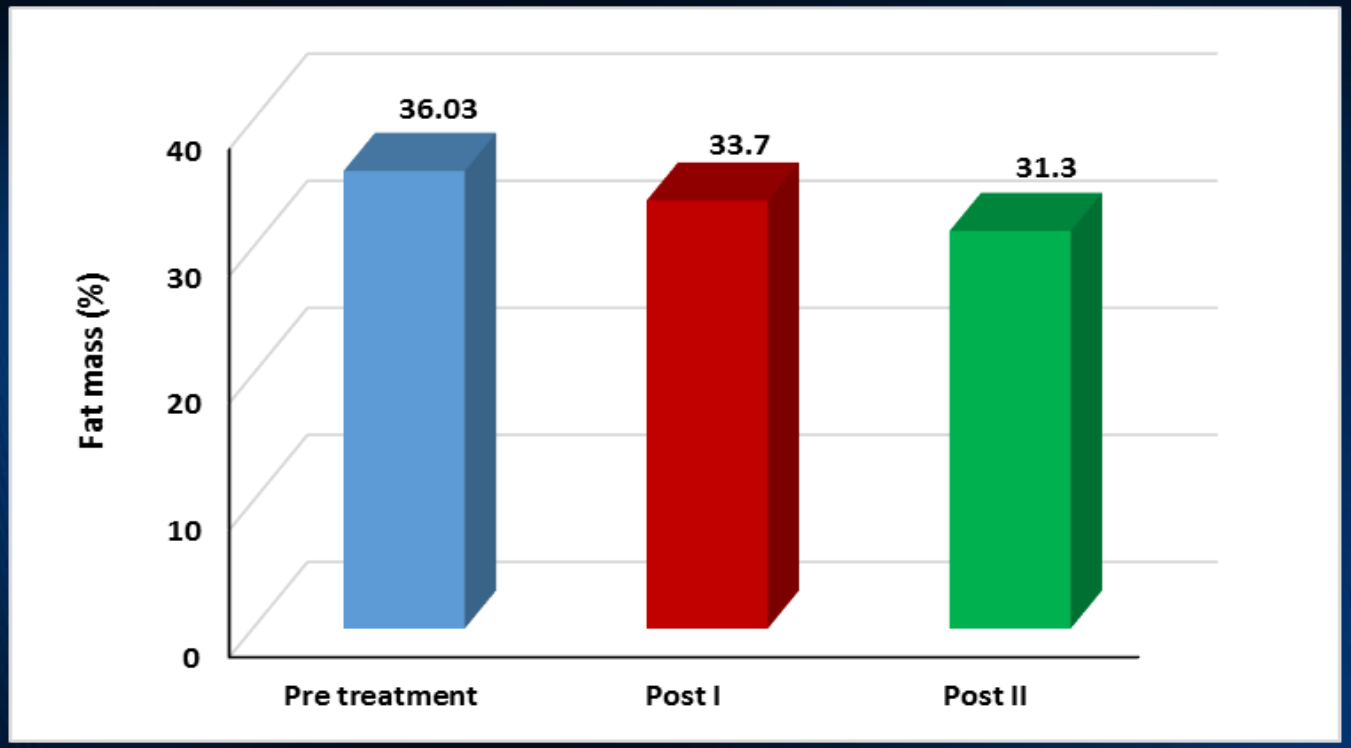
Results

Results of statistical analysis of group (A) (study group):



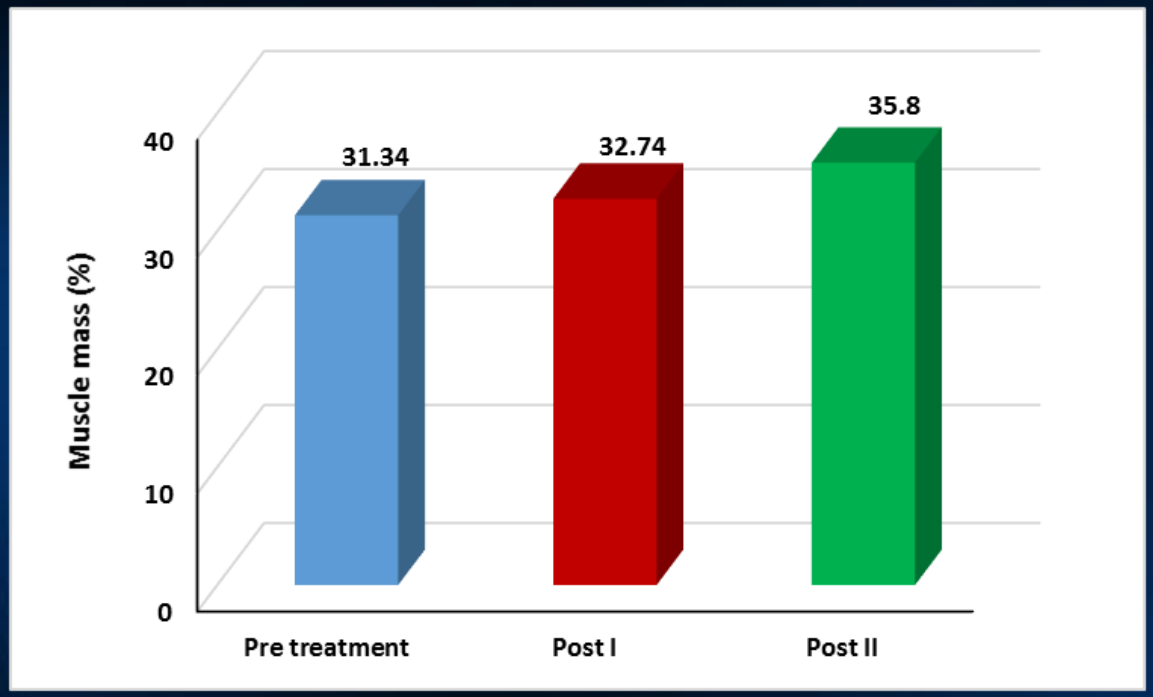
Pre treatment, post I, and post II mean values of body weight of group (A).

Results of statistical analysis of group (A) (study group):



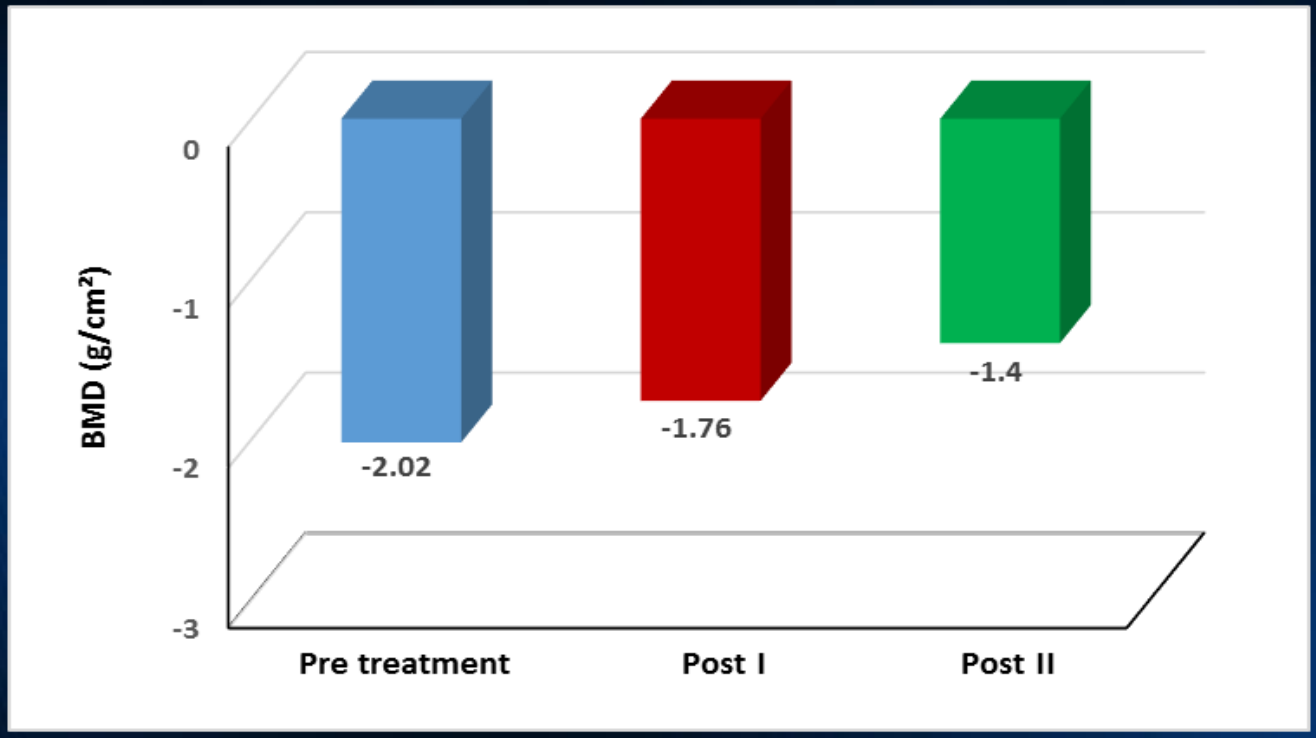
Pre treatment, post I, and post II mean values of fat mass of group (A).

Results of statistical analysis of group (A) (study group):



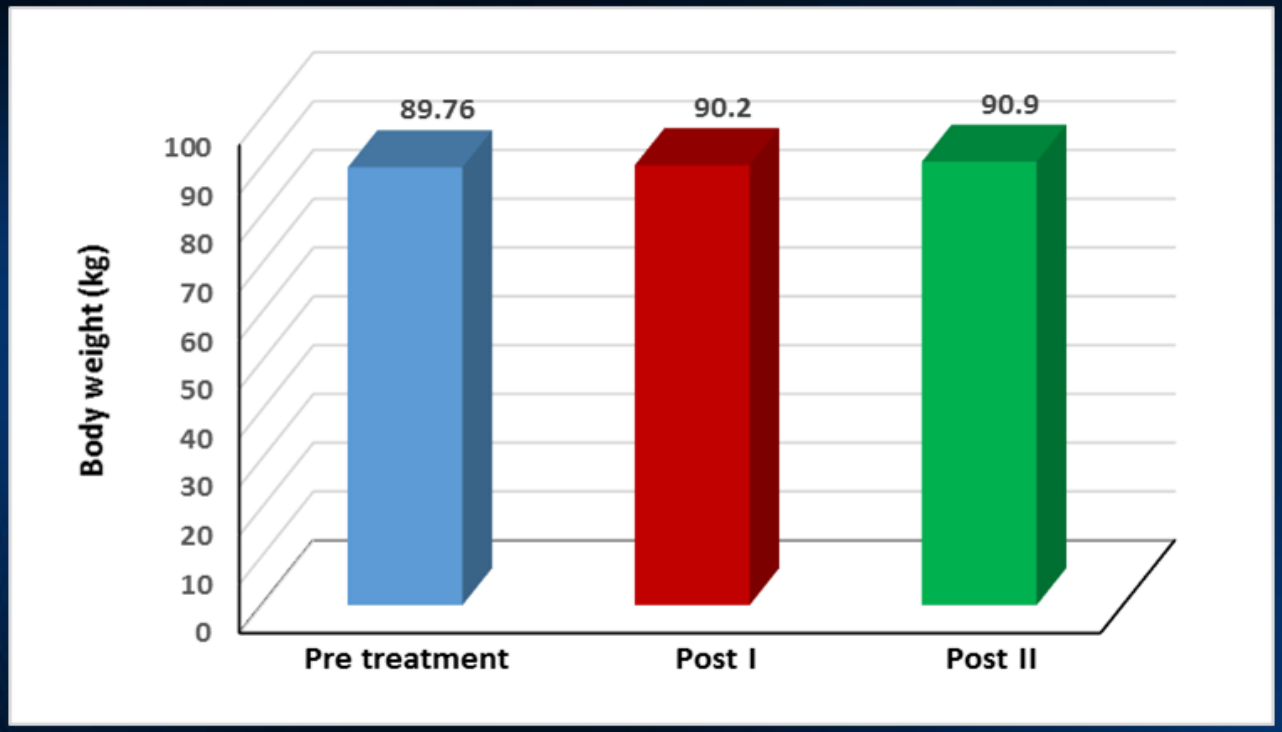
Pre treatment, post I, and post II mean values of muscle mass of group (A).

Results of statistical analysis of group (A) (study group):



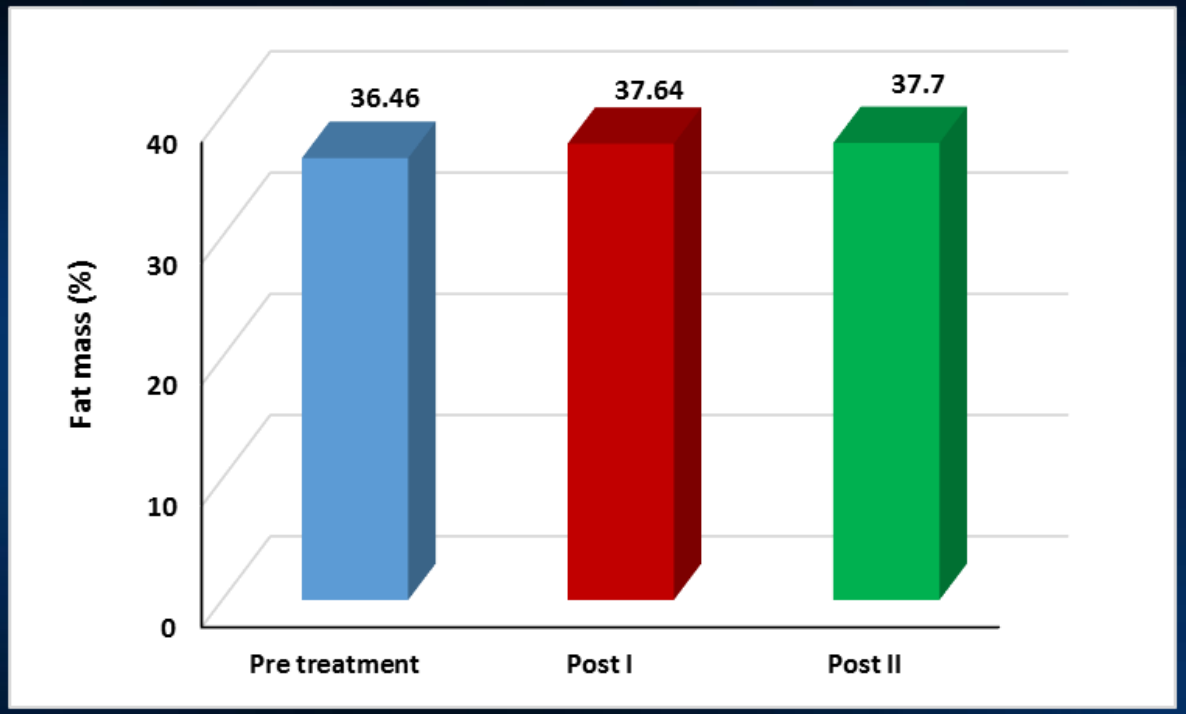
Pre treatment, post I, and post II mean values of BMD of group (A).

Results of statistical analysis of group (B) (control group):



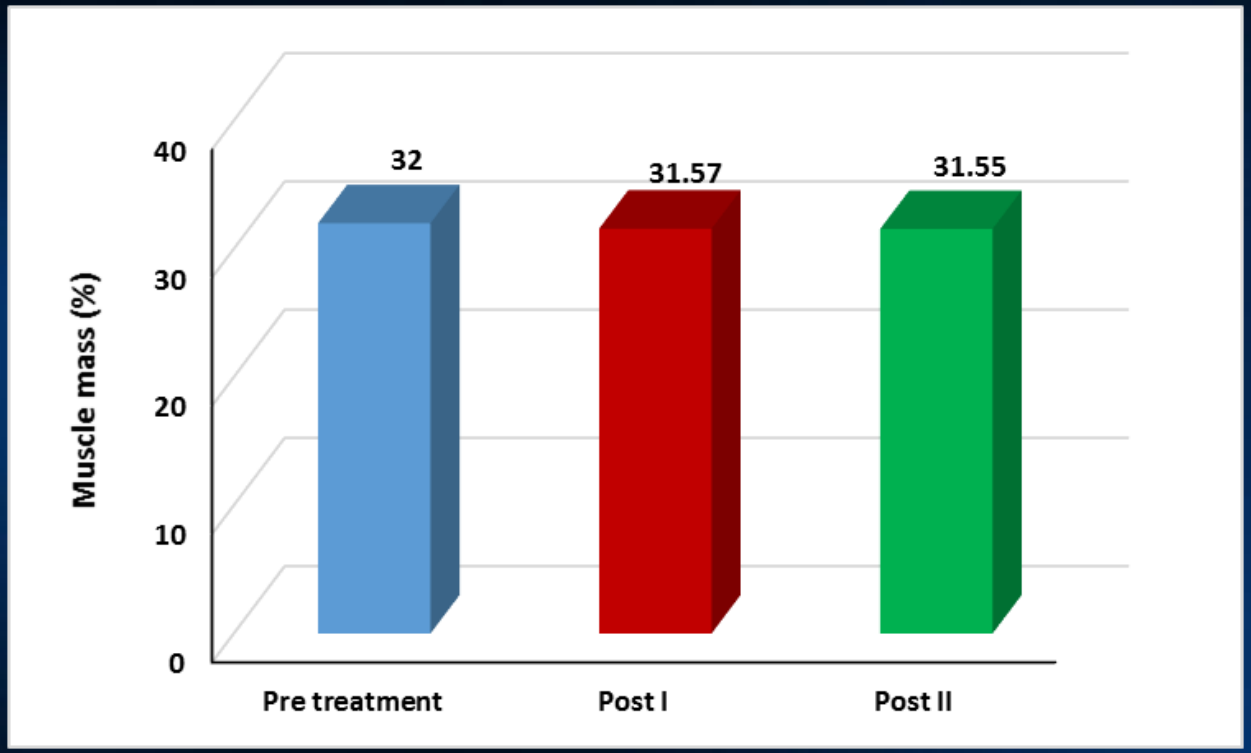
Pre treatment, post I, and post II mean values of body weight of group (B).

Results of statistical analysis of group (B) (control group):



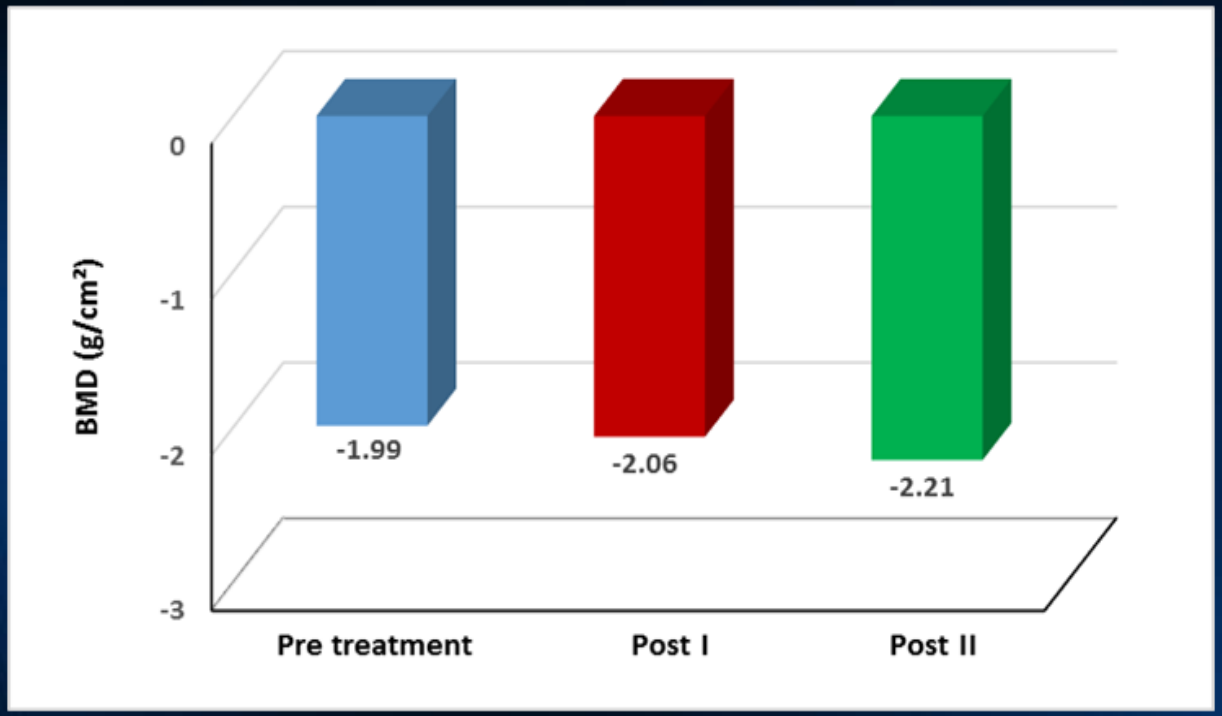
Pre treatment, post I, and post II mean values of fat mass of group (B).

Results of statistical analysis of group (B) (control group):



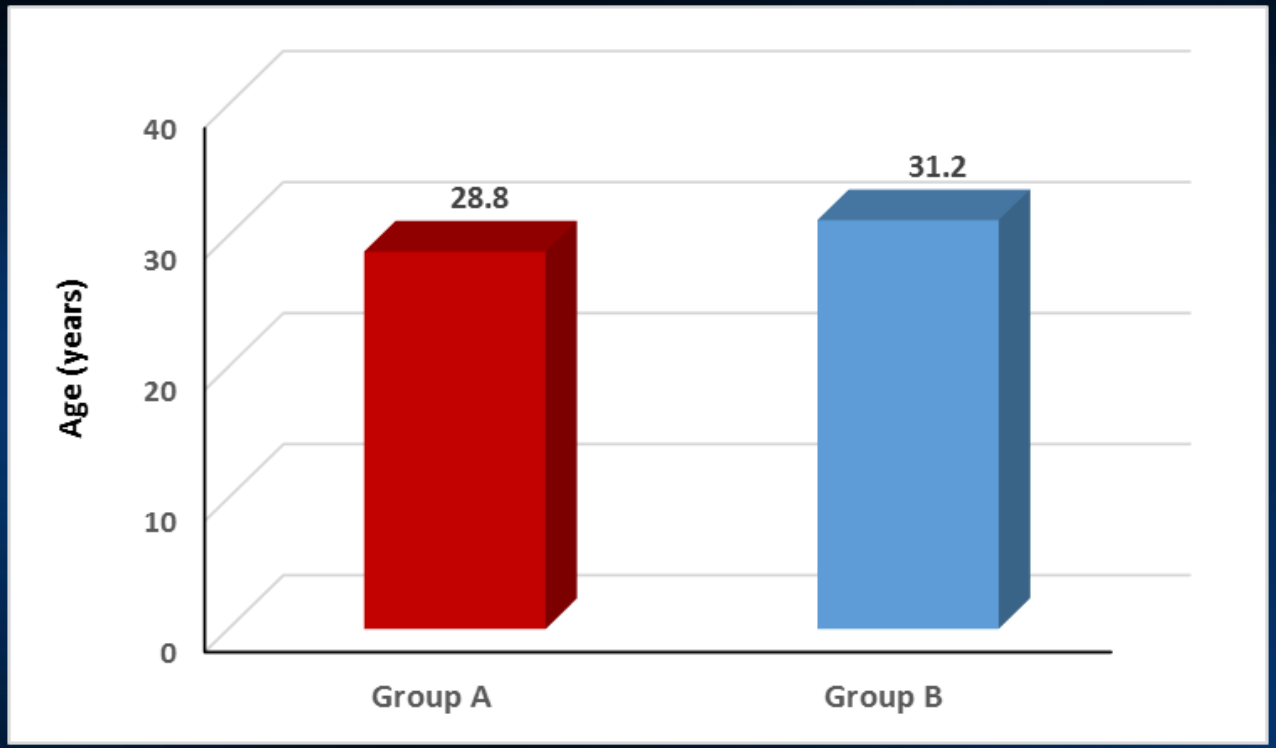
Pre treatment, post I, and post II mean values of muscle mass of group (B).

Results of statistical analysis of group (B) (control group):



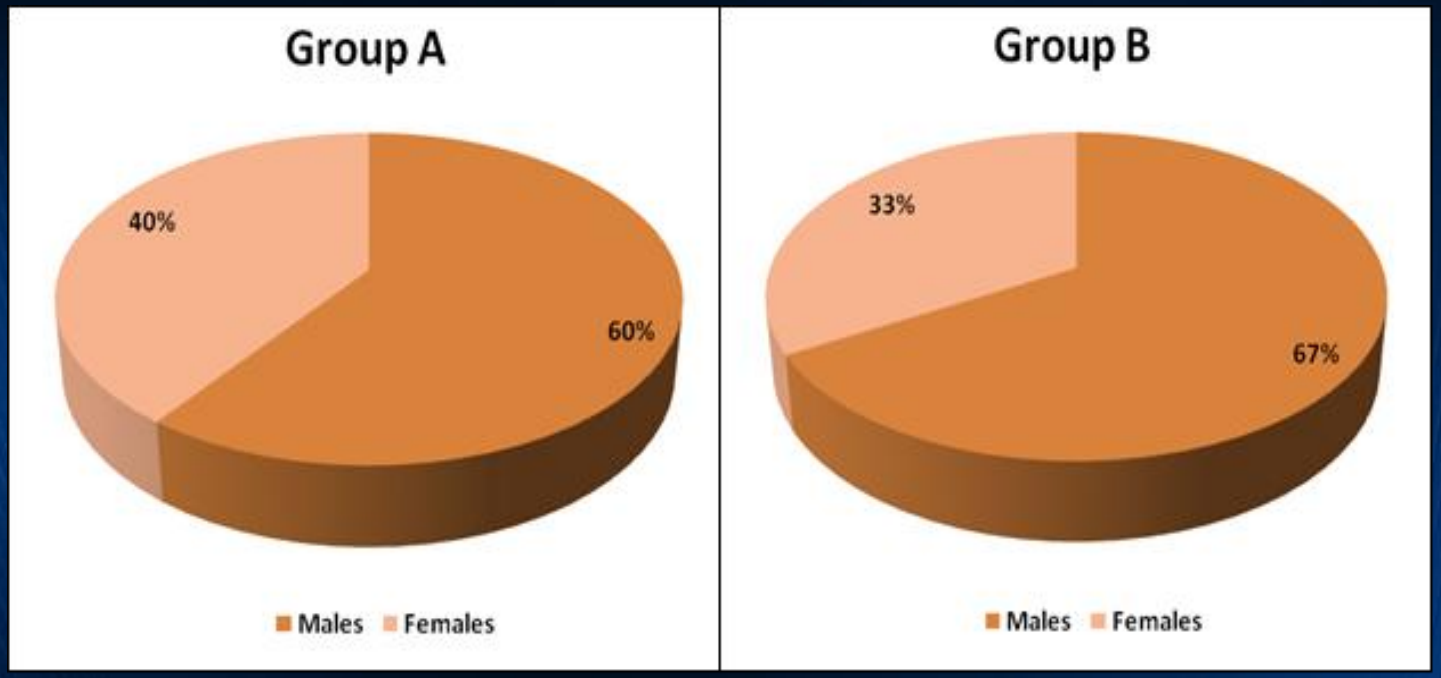
Pre treatment, post I, and post II mean values of BMD of group (B).

Comparison between both groups of the study (group A and B):



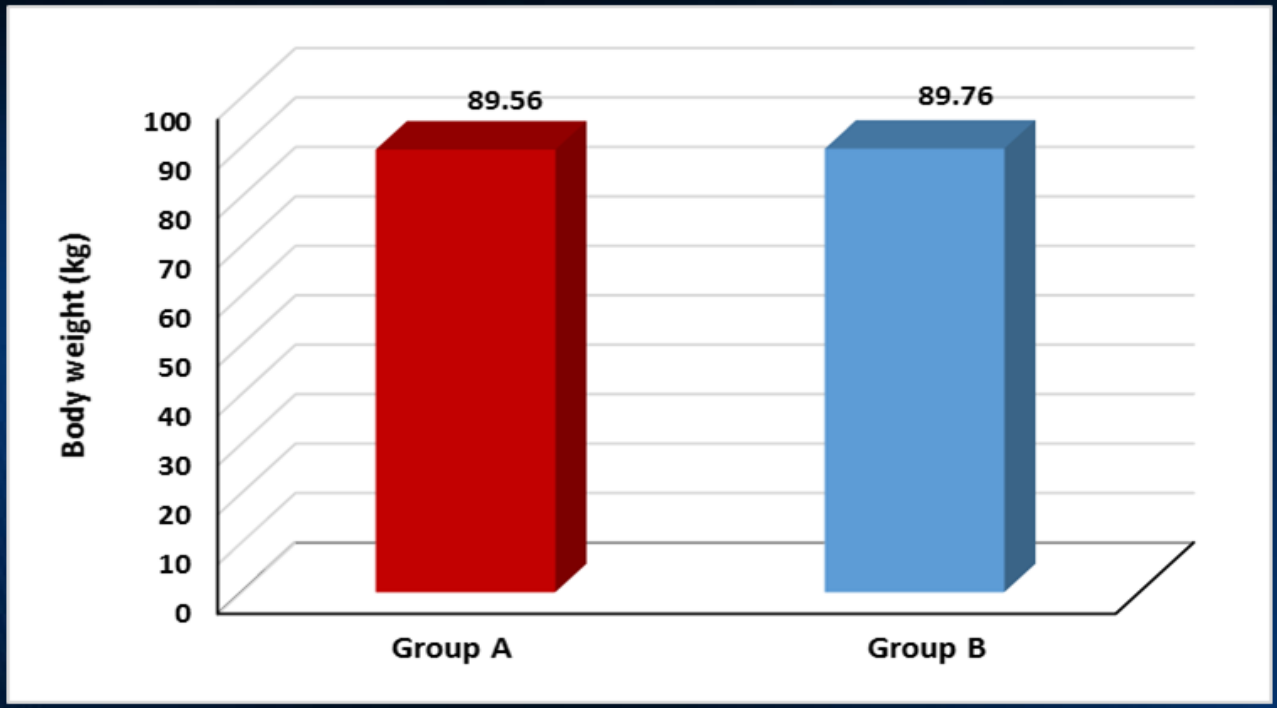
Mean age (years) of group (A and B).

Comparison between both groups of the study (group A and B):



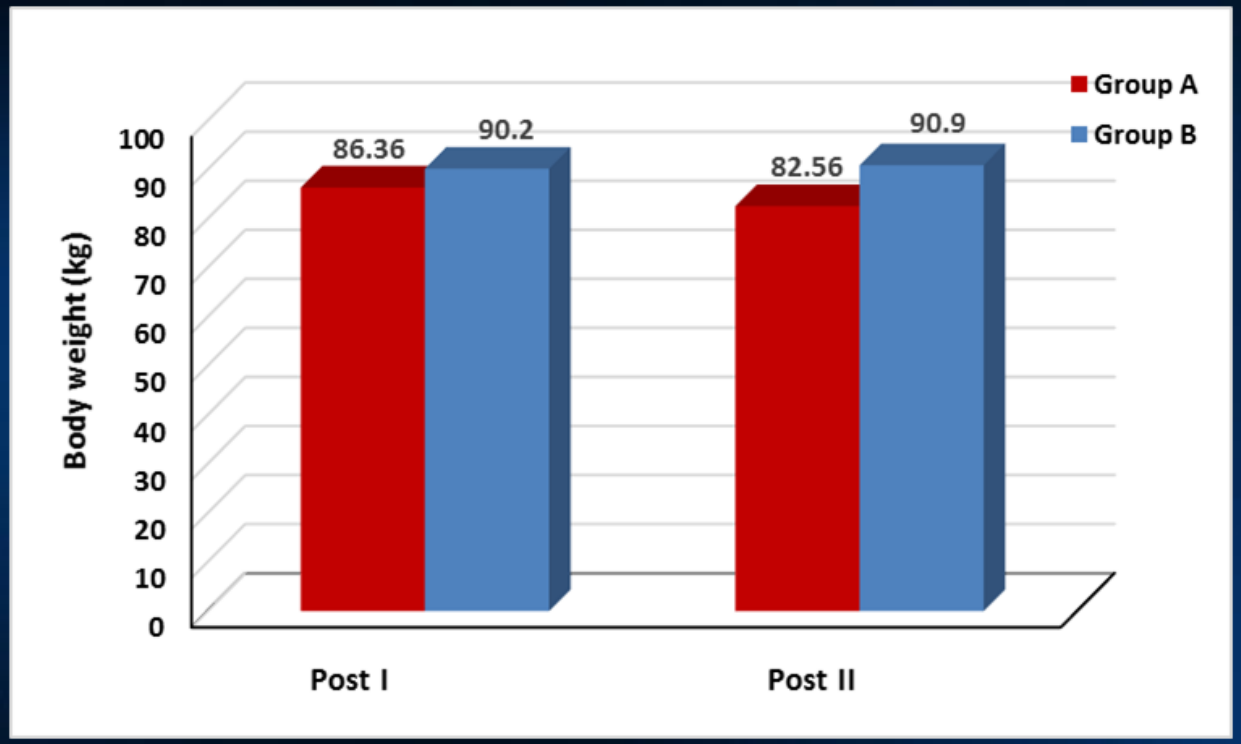
Sex distribution in group (A and B).

Comparison between both groups of the study (group A and B):



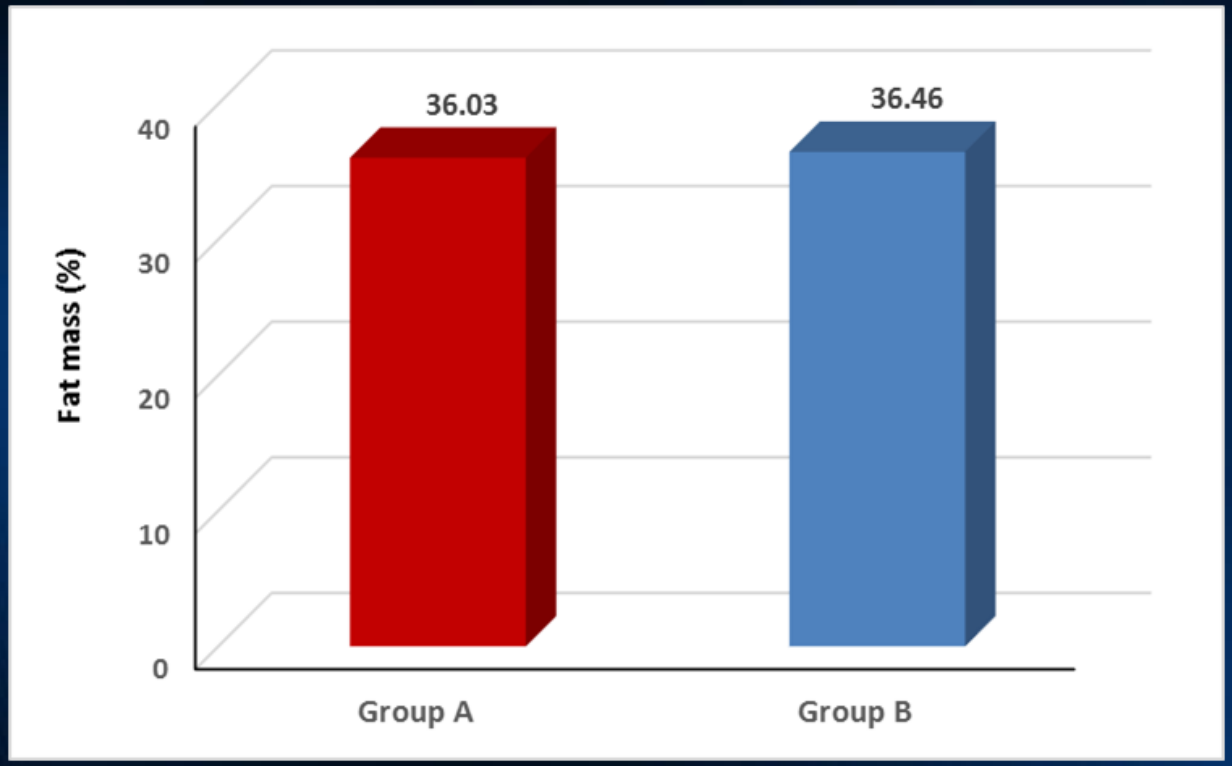
Pre treatment mean values body weight of group (A and B).

Comparison between both groups of the study (group A and B):



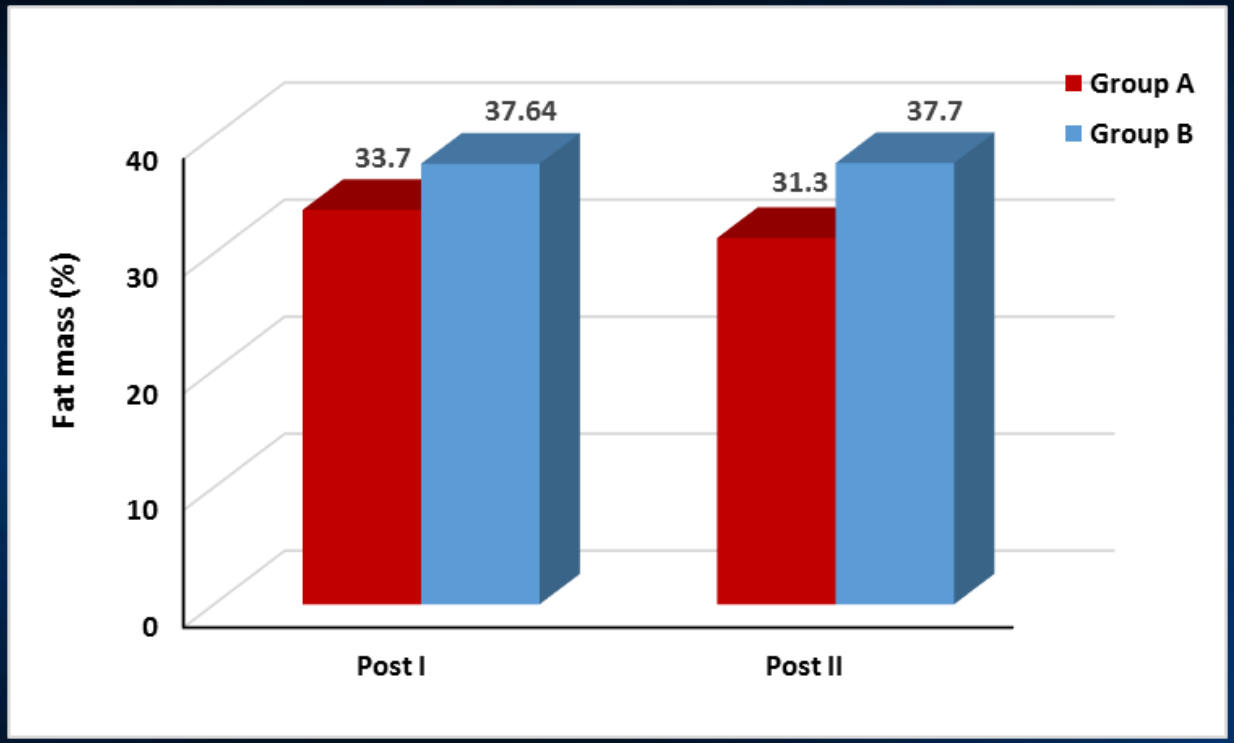
Mean body weight of group (A and B) at post 1 and post II.

Comparison between both groups of the study (group A and B):



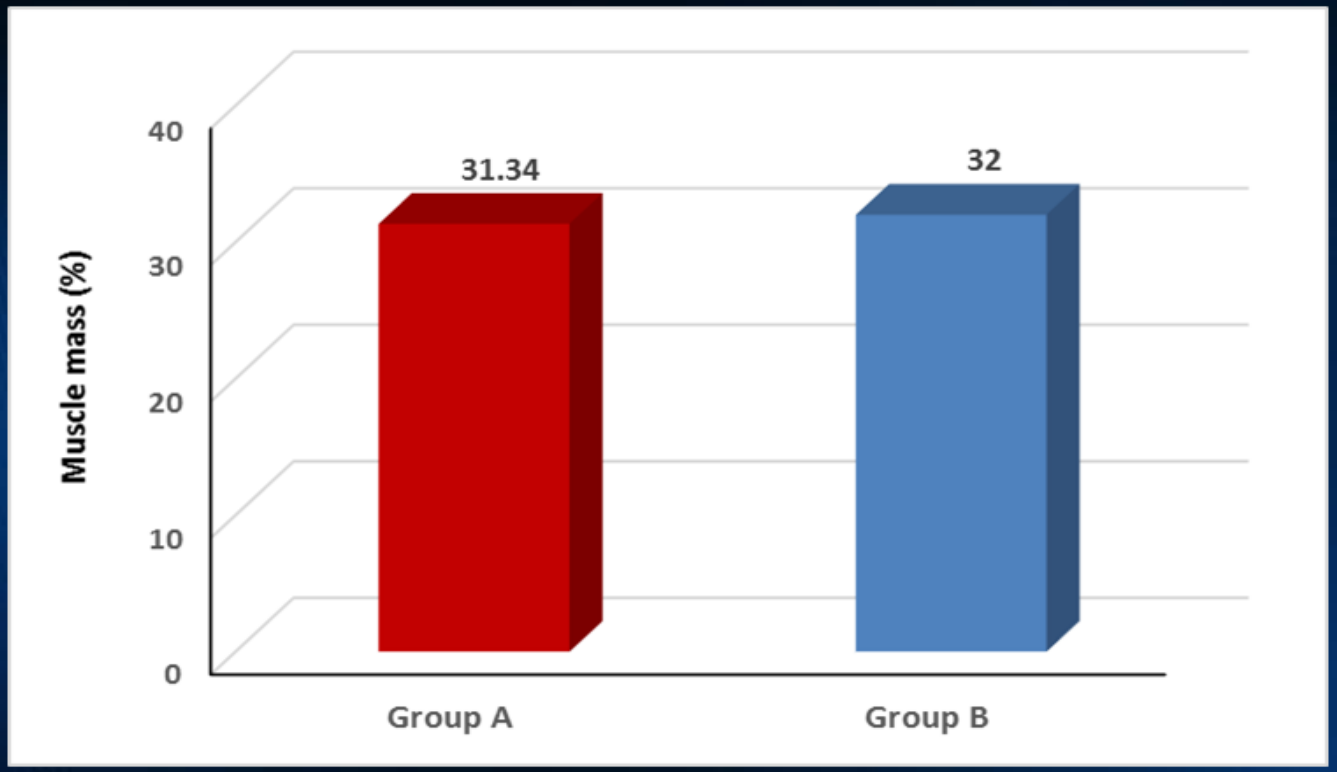
Pre treatment mean values fat mass of group (A and B).

Comparison between both groups of the study (group A and B):



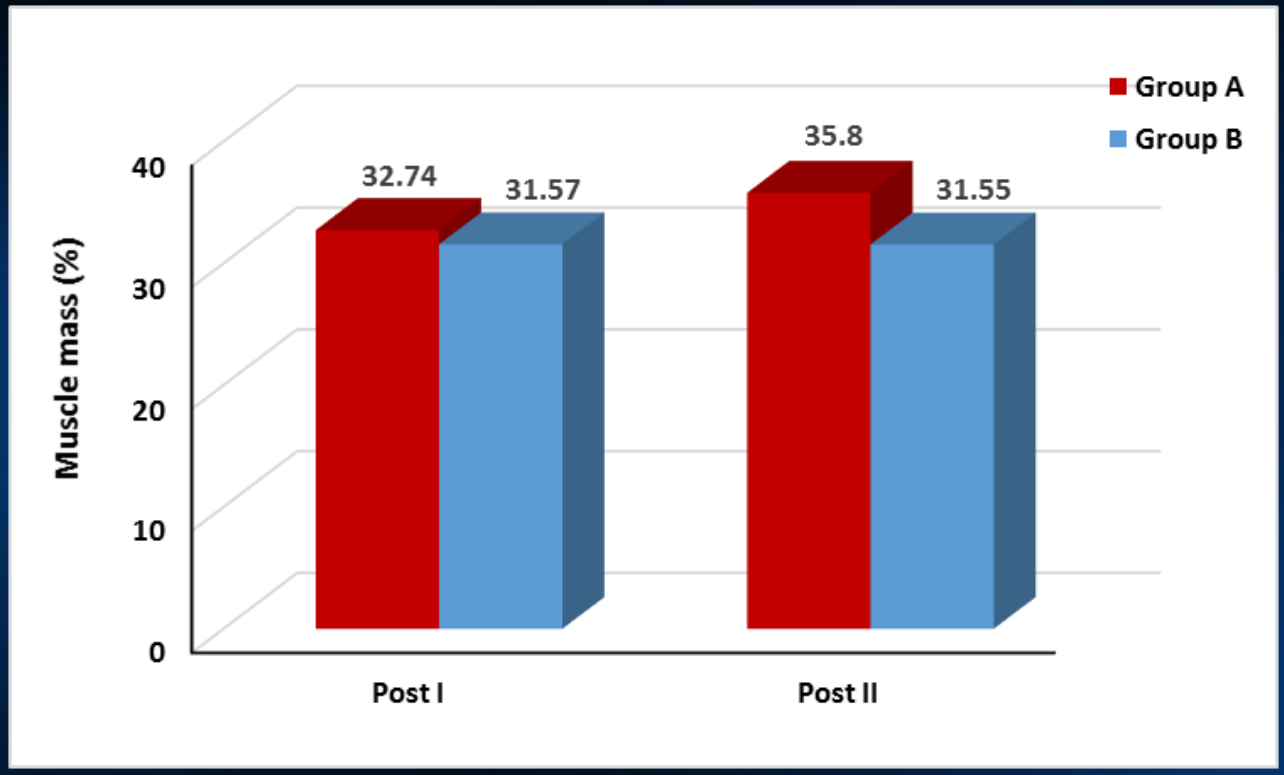
Mean fat mass of group (A and B) at post 1 and post II.

Comparison between both groups of the study (group A and B):



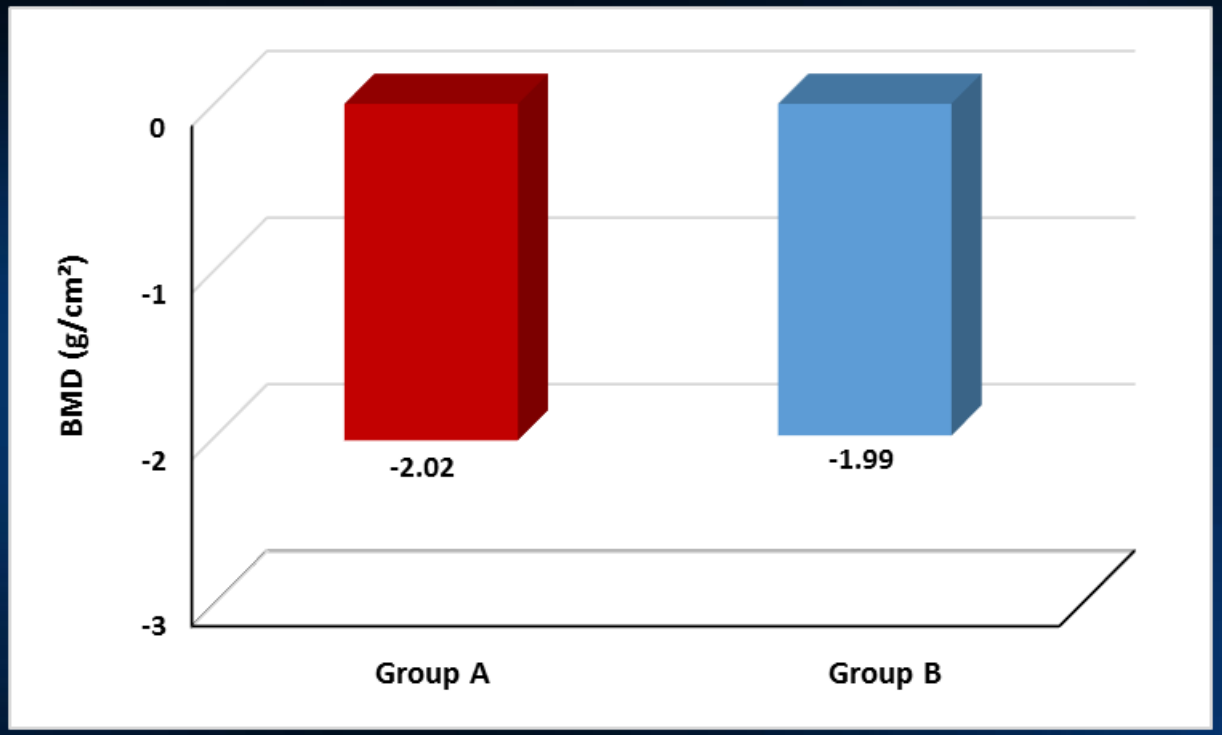
Pre treatment mean values of muscle mass of group (A and B).

Comparison between both groups of the study (group A and B):



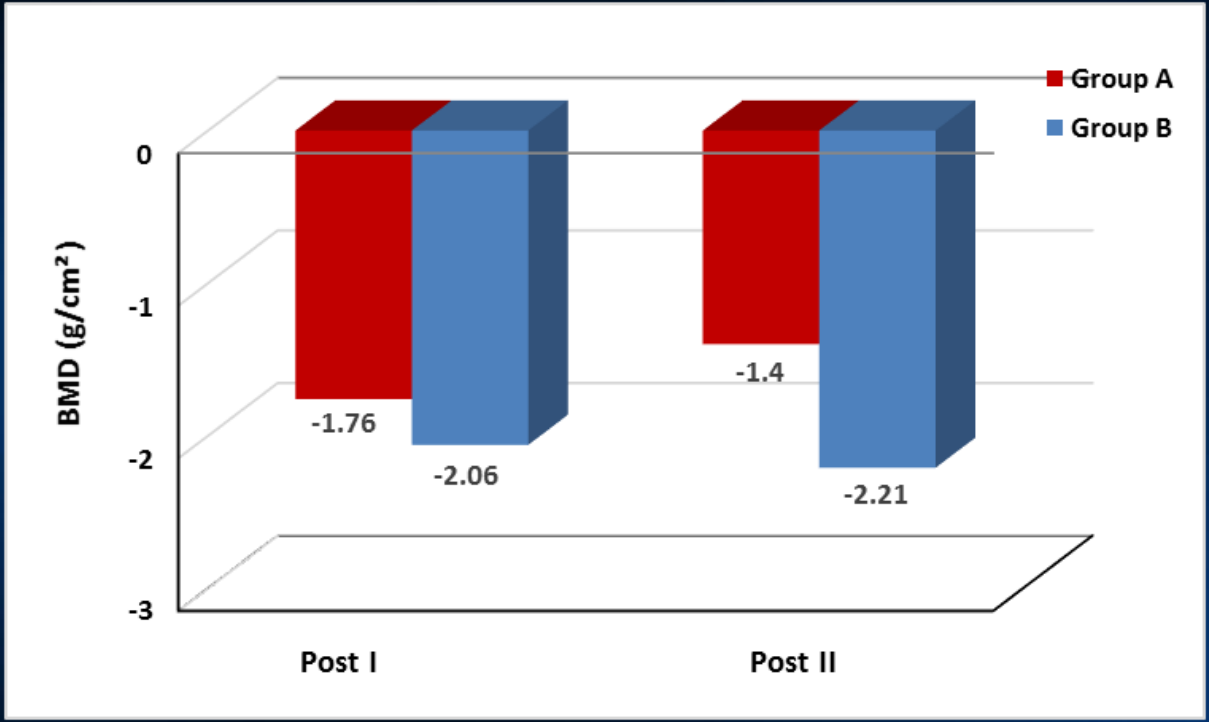
Mean muscle mass of group (A) and (B) at post 1 and post II.

Comparison between both groups of the study (group A and B):



Pre treatment mean values BMD of group (A) and (B).

Comparison between both groups of the study (group A and B):



Mean BMD of group (A) and (B) at post 1 and post II.

conclusion

- **According to the results of this study, it can be concluded that selected physical therapy program consisted of aerobic and strengthening program is effective in changing body composition positively as it can increase muscle mass and bone mass density (BMD), and decrease fat mass in renal transplant patients.**

Recommendations

According to the gained results from this study, the following points are highly recommended

- Further studies assigning the efficacy of physical therapy training program on renal transplant patients with greater number of subjects, of different ages, and for a longer period of time.
- More studies are needed to address the following question:
  - Does the physical therapy exercises improve the immunity of the renal transplanted patient, and decrease the need for high immune-suppressive dose so that the patient accepts the transplanted kidney safely?
- Further studies using other types of exercises for these patients should be conducted.
- Further studies to decide at which time physical therapy program should be started should be constructed.

According to the gained results from this study, the following points are highly recommended

- Finally, more studies are needed to know the intensity of exercise program should be conducted.


Thank you.