
بسم الله الرحمن الرحيم
«وَيَسْأَلُونَكَ عَنِ الرُّوحِ قُلِ الرُّوحُ
مِنْ أَمْرِ رَبِّي
وَمَا أُوتِيتُم مِّن الْعِلْمِ إِلاَّ قَلِيلا»
«الإسراء آية ٨٥»


نشكر سيادتكم على حضوركم الكريم

Title

EFFECT OF WEIGHT BEARING EXERCISES ON OSTEOPOROSIS AFTER RENAL TRANSPLANTATION

AL HUSSEIN IBRAHEM MOHAMED AHMED

Supervised by

Prof. Dr. Adel Abd El-Hamed Nossier

Prof. Emeritus of Physical Therapy for Surgery

Dean of Faculty of Physical Therapy

Delta University

Prof. Dr. Abd Monem Abdallah El-Hagagy

Professor of Urology

Faculty of Medicine

Assuit University

العنوان

تأثير تمرينات تحمل الوزن على هشاشه العظام بعد عمليات زرع الكلى

الحسين إبراهيم محمد أحمد

هيئة الإشراف

أ.د/عادل عبد الحميد نصير

أستاذ متفرغ بقسم العلاج الطبيعى للجراحة

عميد كلية العلاج الطبيعى- جامعة الدلتا

أ.د/عبد المنعم عبدالله الحجاجى

أستاذ المسالك البولية

كلية الطب - جامعة أسيوط

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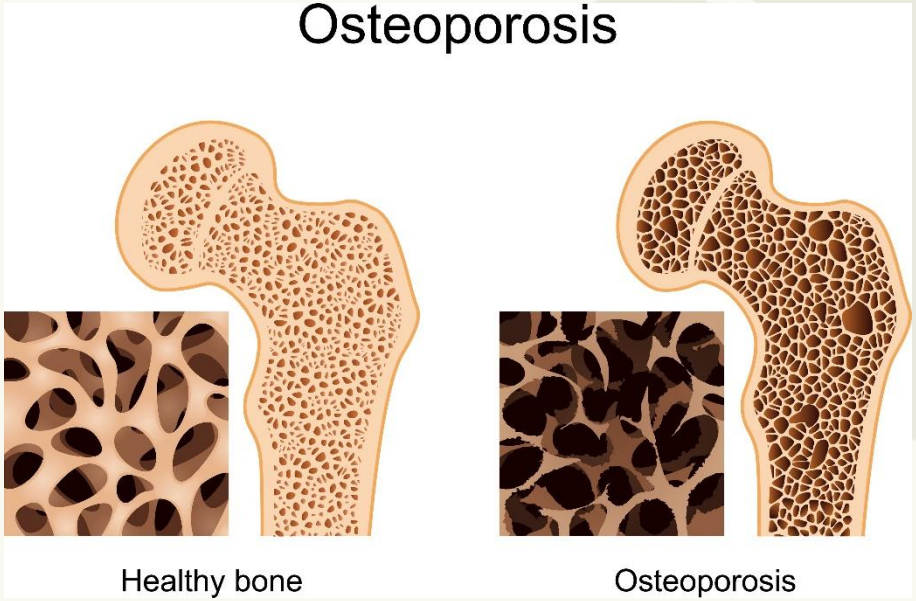
Introduction

Osteoporosis: It is characterized by a reduction in bone mass and micro structural changes that lead to increased fracture. **(Nordstrom et al., 2011).**



Introduction

Renal Transplantation: It is the organ transplant of a kidney into a patient with end-stage renal disease. **(Brook et al., 2003)**.

Introduction

Weight bearing exercise: A force-generating activity that provides loading to skeletal regions. Weight-bearing exercises can include aerobics, jogging, jumping, volleyball **(MacKelvie et al., 2002).**

Statement of the problem

"**Does** weight bearing exercises have an effect on osteoporosis after renal transplantation? "

The Purpose of this study

To evaluate efficacy of the treadmill weight bearing exercise on bone mineral density (BMD) in cases of osteoporosis after renal transplantation.

METHODOLOGY

Subjects:

Forty patient of both sex (23 males ,17 females) with ages ranged from 30-40 years with osteoporosis after renal transplantation had participated in this study; they were randomly divided into two groups selected from police hospitals.

METHODOLOGY

Group (A)

Treadmill weight bearing exercises group

included 20 patients (11 males , 9 females) received weight bearing exercise on treadmill 30 minutes 3 times per week for 8 weeks and drug therapy (Vitamin D supplements and calcium).

METHODOLOGY

Group (B)
Control group (Vitamin D supplements and calcium).

included 20 patients (12 males, 8 females) who received only drug therapy (Vitamin D supplements and calcium).

METHODOLOGY

Equipment used

Measurement equipment

- **DEXA device (Dual energy X-ray absorpometry).**

METHODOLOGY

Equipment used

Therapeutic equipment

- **Electrical treadmill (as form of weight bearing exercises).**

METHODOLOGY

Procedure of the study

Measurement procedures (Measurement of bone mineral density)

- **(a) Initial evaluation procedures (Initial phase)**
- To exclude any abnormal medical problems.
- To determine any functional, social, psychological problems.
- **(b) Technical measurements phase**
- DEXA device (Dual energy X-ray absorpometry).

Therapeutic procedures

- **Electronic treadmill treatment protocol: 30 minutes**
- **A-Warm up phase :** 5 minutes
- **B-Active phase :** 20 minutes
- **C-Cool down Phase:** 5 minutes

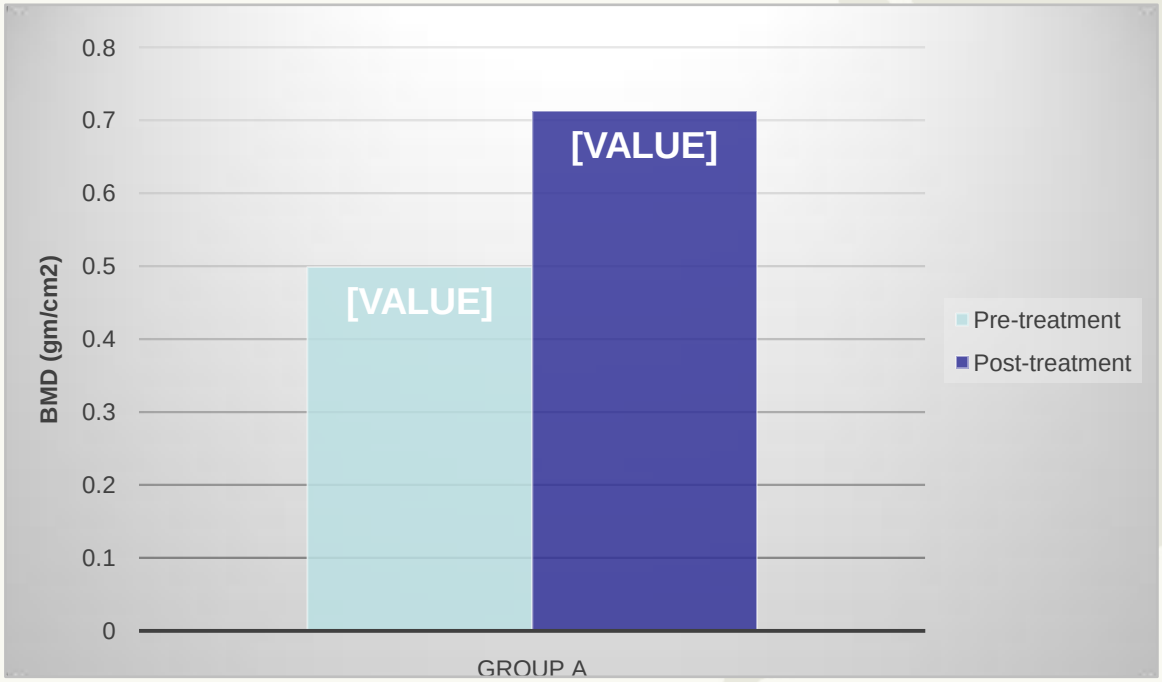
RESULTS

Comparison between pre-treatment and post-treatment mean values of BMD in the Treadmill weight bearing exercise group (group A):

Item	BMD (gm/cm2)	
	Pre-treatment	Post-treatment
Mean	0.4991	0.713250
Standard deviation±	0.097319	0.055164
Mean difference	0.214150	
% of improvement	42.97%	
T- value	7.47	
p-value	0.0001	
Level of significance	Significant increase	

RESULTS

Mean values of BMD at pre-treatment and post treatment of Treadmill weight bearing exercise group (group A).



RESULTS

Comparison between pre-treatment and post-treatment mean values of T-SCORE in the Treadmill weight bearing exercise group (group A)

Item	T-score (gm/cm2%%)	
	Pre-treatment	Post-treatment
Mean	-2.20410	-1.07120
Standard deviation ±	0.67905	0.66957
Mean difference	1.1329	
% of improvement	51.39%	
T- value	11.40	
p-value	0.0001	
Level of significance	Significant increase	

RESULTS

Mean values of T-SCORE at pre-treatment and post treatment of Treadmill weight bearing exercise group (group A).

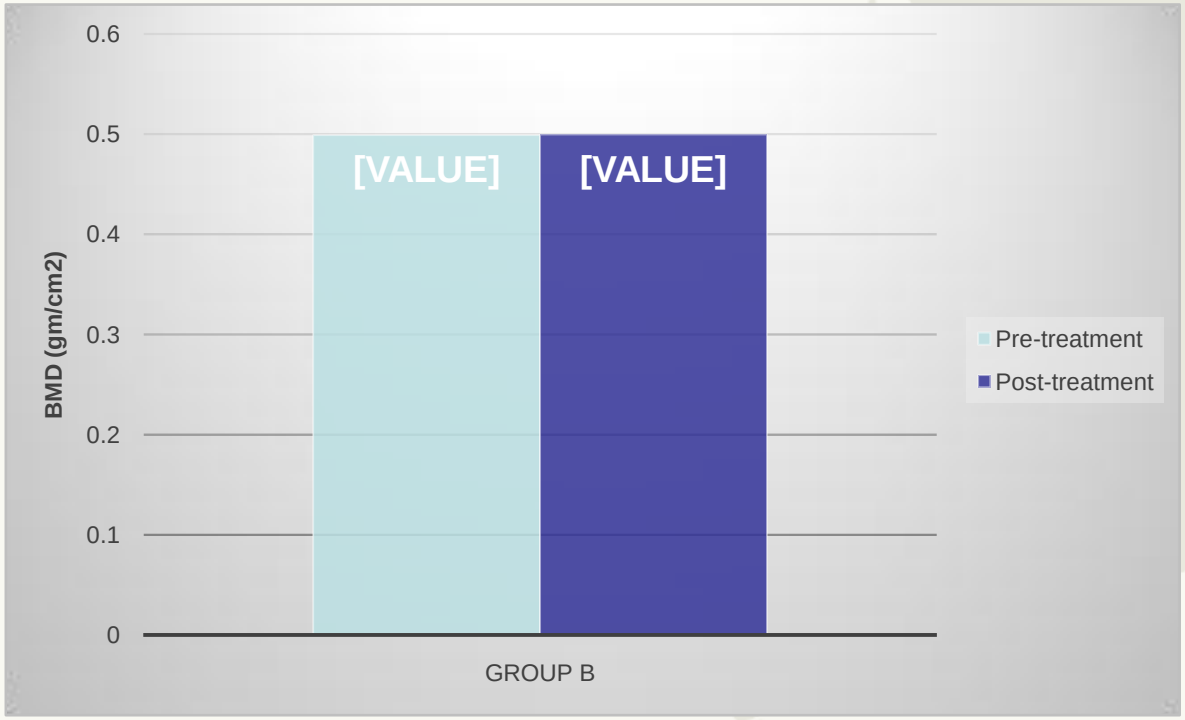
RESULTS

Comparison between pre-treatment and post-treatment mean values of BMD in the control group (group B):

Item	BMD (gm/cm2)	
	Pre-treatment	Post-treatment
Mean	0.499000	0.499650
Standard deviation ±	0.097181	0.096986
Mean difference	0.000650	
% of improvement	0.13%	
T- value	1.58	
p-value	0.131	
Level of significance	Non-Significant	

RESULTS

Mean values of BMD at pre-treatment and post treatment of control group (group B).



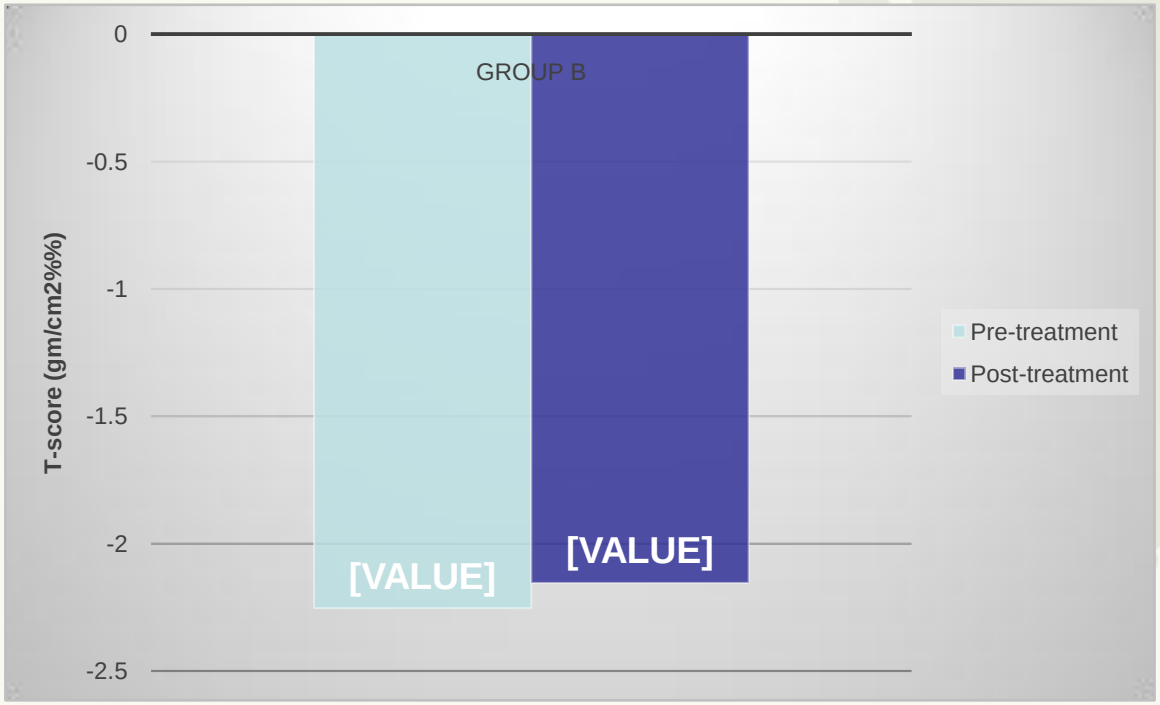
RESULTS

Comparison between pre-treatment and post-treatment mean values of T-SCORE in the Control group (group B):

Item	T-score (gm/cm2%%)	
	Pre-treatment	Post-treatment
Mean	-2.25410	-2.15425
Standard deviation ±	0.65969	0.65863
Mean difference	0.099850	
% of improvement	4.43%	
T- value	1.45	
p-value	0.163	
Level of significance	Non-Significant	

RESULTS

Mean values of T-SCORE at pre-treatment and post treatment of Control group (group B).



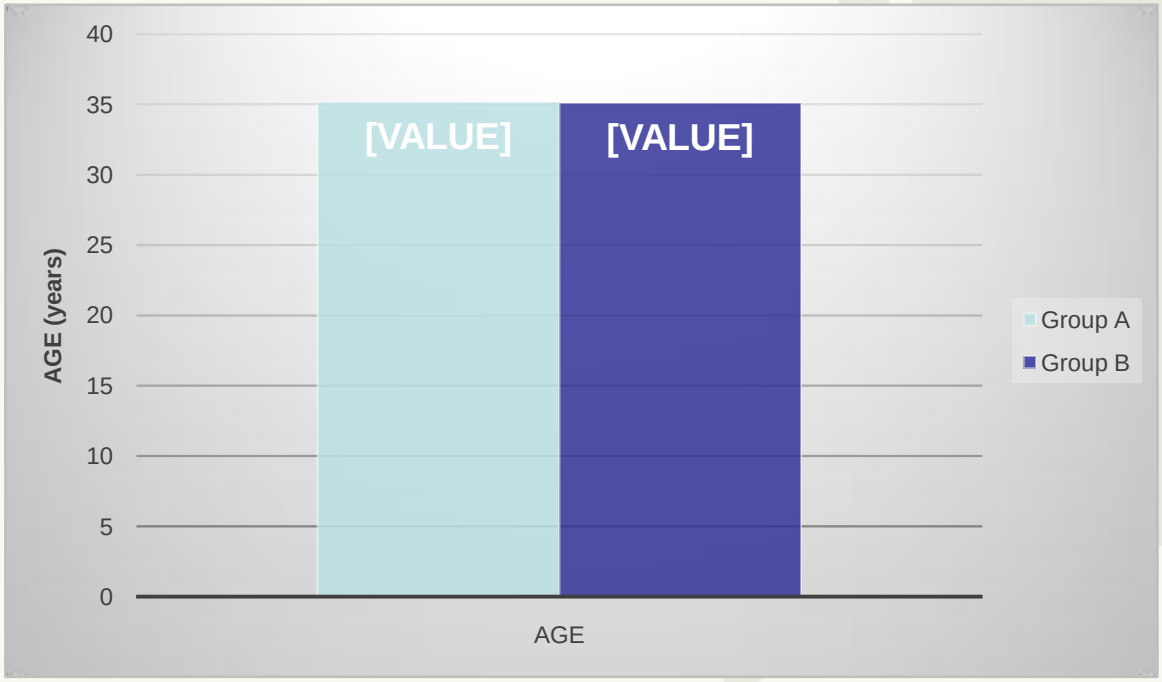
RESULTS

Comparison of patient demographic data (age) in both groups of the study (A and B):

Item	Age	
	Group A	Group B
Mean	35.1500	35.1000
Standard deviation ±	3.3760	3.0933
Mean difference	0.050000	
T-value	0.08	
p- value	0.937	
Level of significance	Non-significant	

RESULTS

Mean values of patient's age of both groups (A and B).



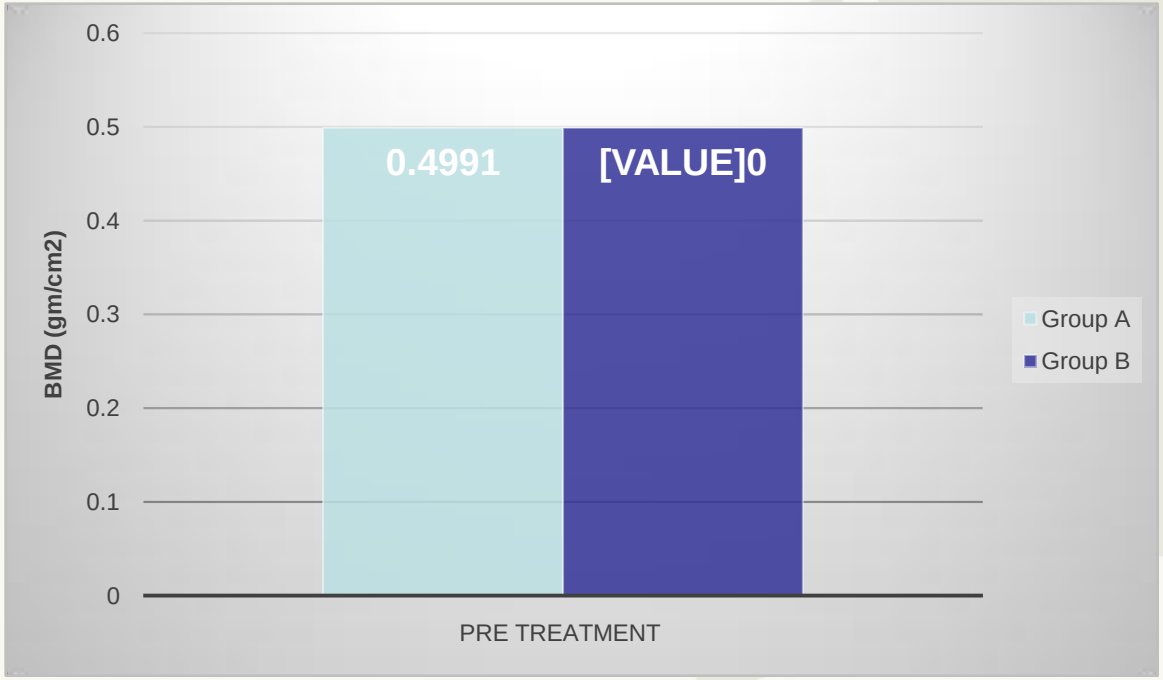
RESULTS

Comparison of pre treatment values of BMD between both groups (A and B):

Item	Pre values	
	Group A	Group B
Mean	0.4991	0.4990
Standard deviation ±	0.0973	0.0972
Mean difference	0.000100	
T-value	0.00	
p- value	0.997	
Level of significance	Non significant	

RESULTS

Mean values of BMD pre-treatment of both groups (A and B).



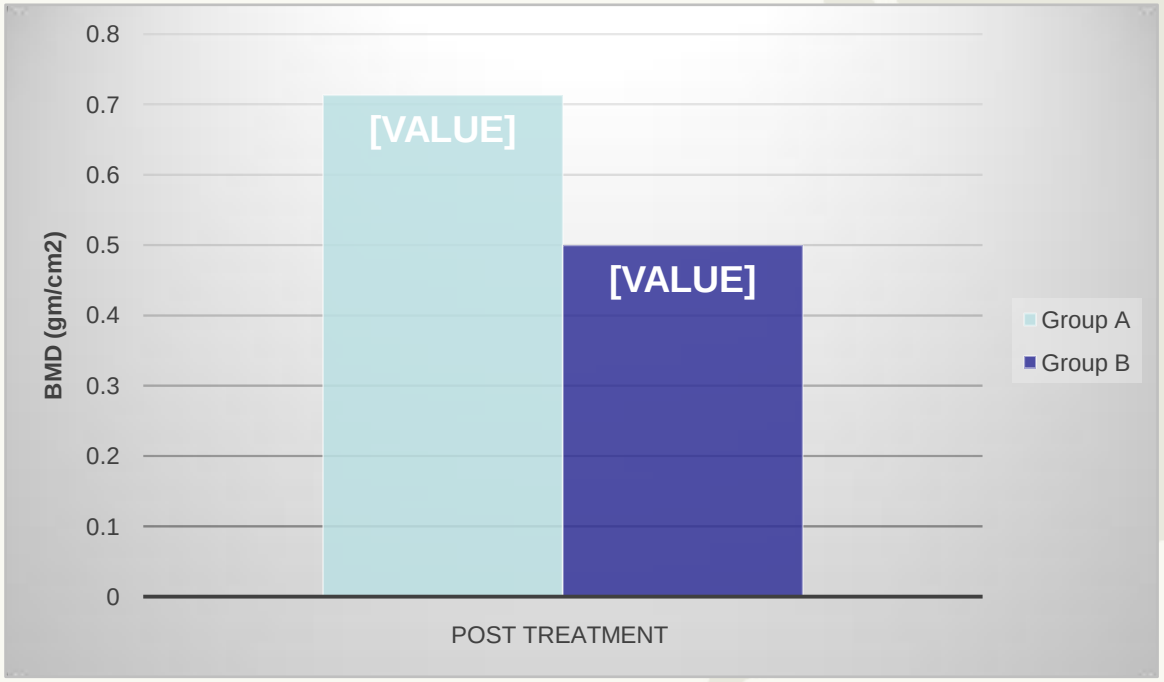
RESULTS

Comparison of post values of BMD between both groups (A and B):

Item	Post values	
	Group A	Group B
Mean	0.7133	0.4997
Standard deviation ±	0.0552	0.0970
Mean difference	0.213600	
T-value	8.56	
p- value	0.0001	
Level of significance	Significant	

RESULTS

Mean values of BMD post treatment of both groups (A and B)



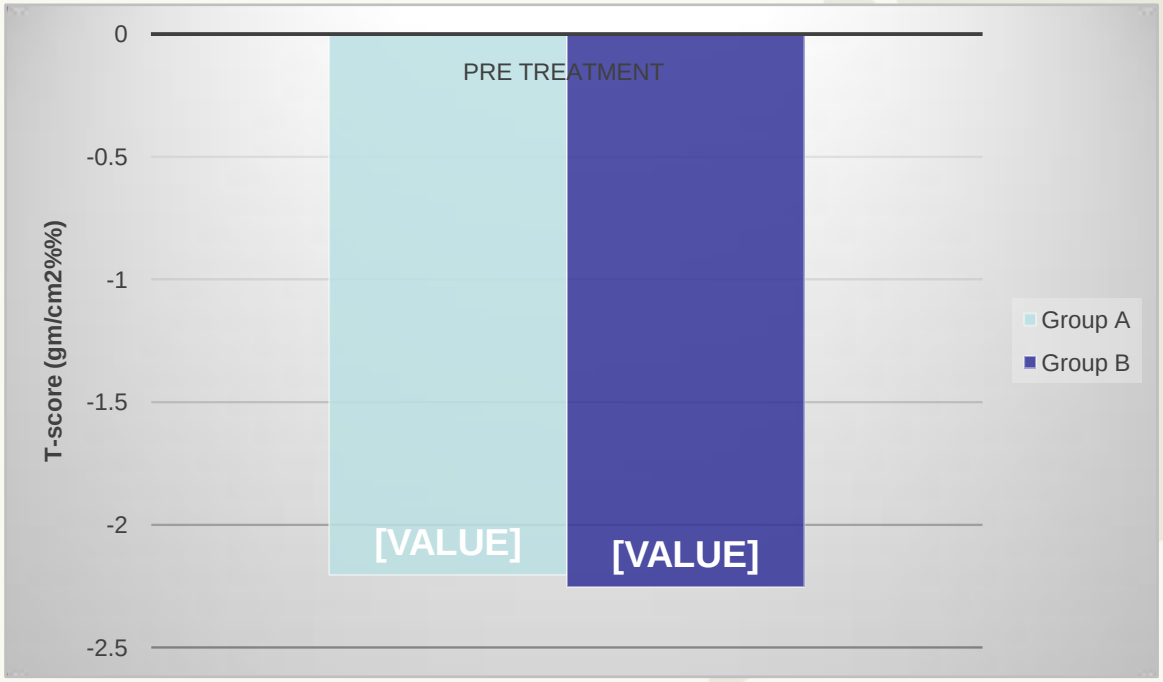
RESULTS

Comparison of pre-treatment values of T-SCORE between both groups (A and B):

Item	Pre values	
	Group A	Group B
Mean	-2.204	-2.254
Standard deviation ±	0.679	0.660
Mean difference	0.050000	
T-value	0.24	
p- value	0.815	
Level of significance	Non significant	

RESULTS

Mean values of T-SCORE pre-treatment of both groups (A and B).



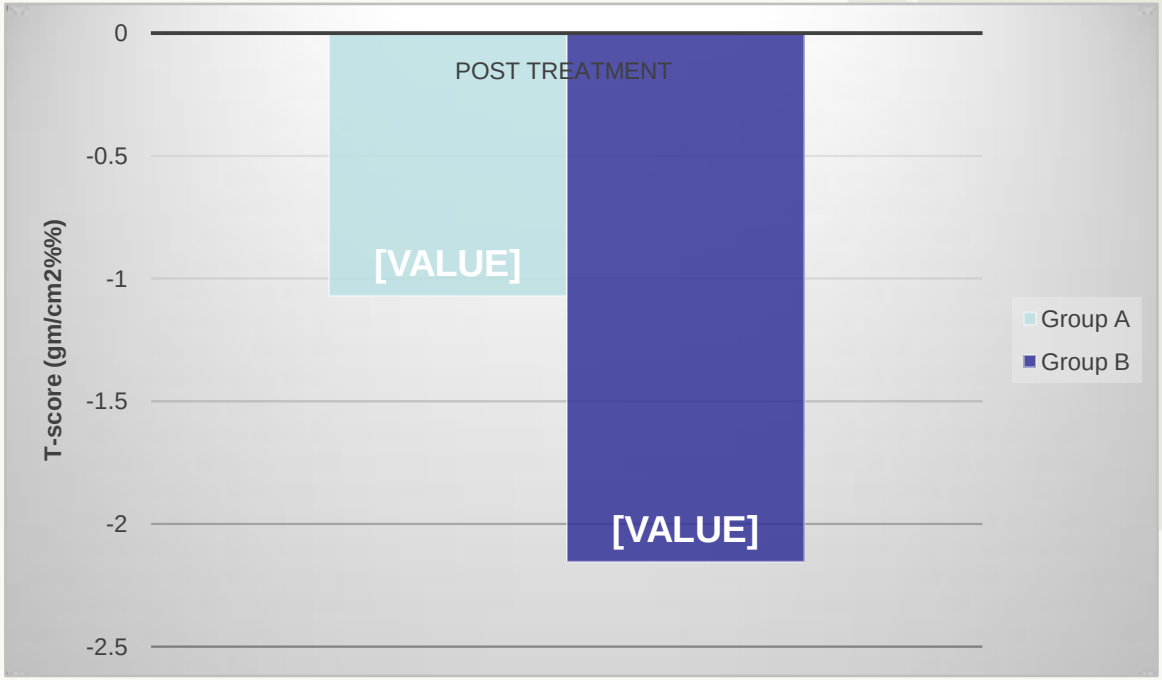
RESULTS

Comparison of post values of T-SCORE between both groups (A and B):

Item	Post values	
	Group A	Group B
Mean	-1.071	**-2.154**
Standard deviation ±	0.670	**0.659**
Mean difference	1.08300	
T-value	5.15	
p- value	0.0001	
Level of significance	**Significant**	

RESULTS

Mean values of T-SCORE post treatment of both groups (A and B).



DISCUSSION

In agreement with the results of the current study **Marchese et al. (2012)** who evaluated the effect of weight-bearing exercise training played 3 times a week can have benefits on bone mineral density and neuromuscular function in women with a diagnosis of osteopenia.

Summary

There was a highly significant increase between the means of the second record BMD (2) and the first record BMD (1) ($P < 0.0001$).

These significant differences, between the first experimental (Treadmill weight bearing exercises application) and the second experimental only drug therapy (Vitamin D supplements and calcium) groups, which were in the form of a highly significant increase in the BMD and T-score mean.

Conclusion

Within the limitation and from the obtain data of the present study, the most notable conclusions are:

(1)Treadmill weight bearing exercises had valuable effects in improving bone mineral density of hip in cases of osteoporosis after renal transplantation on evidenced by the highly significant increase in BMD and T-score mean.

(2)Application of both modalities treadmill weight bearing exercises and only drug therapy had favorable effect in improving bone mineral density incases of osteoporosis after renal transplantation with more advantage to the treadmill weight bearing exercises approach.

Recommendation

(1)The treadmill weight bearing exercises and drug therapy (vitamin D supplements and calcium) should be recommended in cases of osteoporosis after renal transplantation are needed.

(2)A similar study should be conducted with other physical therapy modalities for patients with osteoporosis after renal transplantation.

Recommendation

(3) Further studies should be undertaken on serum calcium level after renal transplantation.
(4) Further studies should be undertaken to a large number of patients providing better statistical analysis of data.
(5) Further researches should be extended for a longer period than 2 months

Thanks

Discussion??