

EFFECTS OF RESISTANCE EXERCISE TRAINING ON BONE MARKER IN HEMODIALYSIS PATIENTS

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INTRODUCTION

Abnormalities in mineral and bone metabolism are frequent among chronic kidney disease (CKD) patients, who frequently present disorders in calcium and potassium metabolism, decreased vitamin D activation and increased parathyroid hormone (PTH). Physical exercise can improve many indicators of physical functioning. In addition, exercise can improve bone mineral density (BMD) due to bone adaptation that occurs during exercise.

OBJECTIVES

This study aimed to investigate changes in bone markers and body composition in hemodialysis (HD) patients after resistance exercise (RE).

METHODS

Thirteen patients were divided in exercise group (EG; n=6, 50% men, 72.3 ± 13.8 years, BMI, 27.0 ± 8.7 kg/m²) and control group (CG; n=7, 43% men, 70.2 ± 17.3 years, BMI, 28.4 ± 7.1 kg/m²). EG patients underwent 24 sessions of supervised RE program (3 times/wk, per dialytic) with elastic bands and bilateral ankle loads. Blood was collected in fasting state and bone alkaline phosphatase (BAP) and parathyroid hormone (PTH) plasma levels were measured before and after 8 weeks of RE.

RESULTS

Table 1. Biochemical parameters of HD patients before and after RE

Biochemical Parameters	Exercise Group		Control Group	
	Before	After	Before	After
BAP (U/L)	11.4 ± 6.5	14.7 ± 7.0*	13.0 ± 7.0	14.9 ± 7.0
PTH (pg/mL)	123 (54 – 205)	145 (117 – 220)	196 (103 -390)	252 (106 – 421)
Body Composition				
Lean Body Mass (%)	41.5 ± 13.5	41.7 ± 11.9	31.3 ± 10.8	29.6 ± 10.8
Body Fat (%)	42.1 ± 9.8	41.7 ± 9.1	49.1 ± 9.1	50.2 ± 9.4

*P<0.05

There was no difference in PTH levels in both groups, BAP plasma levels increased significantly after exercise .

CONCLUSION

In conclusion, RE appears to be a good option for stimulating BAP production in HD patients and this may prevent bone loss and stimulate bone formation.

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