INTRODUCTION. Hindlimb denervation produces alterations in skeletal muscle and bone similar to those observed in animals exposed to microgravity. The objective of this experiment was to determine the effects of dopamine (DOP) and a beta agonist on the hindlimb denervated hindlimb muscle and bone. METHODS. Adult male Sprague-Dawley rats (n=14) underwent unilateral sciatic nerve transaction on the right hindlimb. After surgery, rats were randomly assigned to either control (SAL) or DOP treatment groups. Each animal received two intraperitoneal injections per day, given approximately one hour apart, for 11 of the 12 days. Blood pressure measurements were made at the maximal (PMB) and the minimal (PMB) periods from both the innervated (INNDR) and denervated (DEN) hindlimbs of each rat were measured by a bone densitometer (SP-2 Lunar). Muscle weights of the soleus (SOL) and plantaris (PLT), and citrate synthase (CS) enzyme levels of the SOL muscle were examined. RESULTS. ANOVA and Tukey’s post hoc tests (p<0.05) indicated a significant reduction in wet weight of the SOL and PLT muscles in the DEN group compared with their INNDR counterparts. BMC of the PT and PS of the SOL and CS levels of the SOL were also significantly reduced in the DEN group that received SAL. Although animals which received DOP treatment did have decreases in muscle mass, BMC and CS in the DEN hindlimbs, these decreases were not significant when tested against their INNDR values. DOP treatment appeared to be less effective in bone where the decrease in BMC produced by DEN was almost entirely eliminated in rats receiving the drug. CONCLUSION. It can be said that exposure to moderate LBNP decreases in systolic myocardial function at high levels of LBNP. In 7 subjects. Subjects with ST segment depression had greater reductions.