The Effect of an Endurance or Strength Training Program on Strength and Endurance Measures of the Supraspinatus and Infraspinatus

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INTRODUCTION: The most common diagnosis of shoulder pain is rotator cuff (RC) disease which affects nearly 30-50% of the population over the age of 50.[3] The evaluation and rehabilitation of RC tears alone cost 3 billion dollars in the United States each year.[4,5] Rehabilitation of the RC includes increasing both muscle endurance and strength of the RC. The purpose of the study was to determine the effects of an endurance or strength training program on RC muscles.
Subjects: 60 healthy graduate students were enrolled, while 52 completed the 12 weeks training program.

METHODS: Participants were divided into three groups: control (n = 20), endurance (n = 15), strength (n =17). Each participant was assigned a treatment arm and assessed before and after a 12-week program. Strength was assessed via handheld dynamometer for shoulder flexion, abduction, external (ER) and internal rotation (IR). Endurance was assessed using a timed endurance test. To test the overall hypothesis a repeated-measures ANOVA was used to examine each intervention group separately.

RESULTS: There was no significant differences found in the control group. The endurance training group significantly improved in shoulder endurance. Significant strength differences were found for shoulder abduction, ER, and IR in the treated arm of the strength training group.

CONCLUSION: There were no significant increases in strength or endurance measures for the control group. As predicted, the endurance training resulted in the greatest endurance increases, and strength training yielded the greatest strength increases. The increases in abduction and ER strength were expected due to the emphasis on posterior shoulder muscles. While no IR specific exercises were included in the groups, IR strength improvement could result from enhanced dynamic shoulder stability. Both endurance and strength training were able to produce improvements in their respective parameters.