

# Effects of Strength Training On Muscle Hypertrophy and Muscle Cell Disruption In Older Men

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## **OBJECTIVES:**

To determine the effectiveness of, and risk of injury from heavy strength training, 15 healthy, untrained, older men, aged 50-69 years, were studied before and after a 16-week strength training program. Magnetic Resonance Imaging (MRI) was used to assess increases in muscle size. To assess injury to the muscle cells (muscle cell disruption) blood levels of a substance called serum creatine kinase were tested before and after training. A group of five men who did not strength train were also pre and post tested as a control group.

## **RESULTS:**

The strength training program resulted in a 44% increase in strength and a 7% increase in mid-thigh muscle area. Mid-thigh subcutaneous fat decreased by 8%. Muscle and fat areas were unchanged in the group of five inactive controls. After 16 weeks of strength training, the indicator of muscle cell injury (serum creatine level) was 37% lower at the same relative work load and remained lower when measured 24 & 48 hours later. Ratings of perceived soreness recorded during these same time periods revealed that muscle soreness was almost non-existent after training.

## **SUMMARY:**

This data indicates that healthy older men can participate in a strength training program intense enough to substantially increase muscle strength and size without exhibiting symptoms of muscle injury. It also shows that regular training appears to result in a reduction of muscle cell injury after single bouts of heavy strength exercise. This study provides reinforcement for the message that older adults do not have to expect muscle soreness or injury when participating in strength training. Please note that Keiser's pneumatic resistance is very low-impact and may be responsible for the lack of soreness and muscle cell injury. Similar studies done on weight stack equipment may not produce the same results.

## **KEISER PIECES USED:**

Chest press, lat. pull down, shoulder press, upper back, leg extension, and leg press.

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