

Testosterone, Growth Hormone and IGF-I Responses to Acute and Chronic Resistive Exercise in Men Aged 55-70 Years

B.J. Nicklas, A.J. Ryan, M.M. Treuth, S.M. Harman, M.R. Blackman, B.F. Hurley, M.A. Rogers, Department of Kinesiology, University of Maryland, College Park, MD 20742, Endocrinology Section, Gerontology Research Center, Baltimore, MD 21224.

OBJECTIVES:

The investigators tested the responses of a variety of anabolic hormones to a single bout of heavy strength training and to a 16 week strength training program, in 13 men aged 55-70. Body composition and muscle strength were assessed before and after the training program. Fasting blood samples were taken on 2 consecutive days prior to training and again on 2 consecutive days after the last day of exercise. To determine single bout responses, blood was also drawn immediately before and 10 minutes after a single exercise session during the last week of training.

RESULTS:

The training program resulted in a 37% increase in upper body strength and a 39% increase in lower body strength. Lean body mass increased and percent fat decreased. In response to the single bout of exercise, testosterone levels remained unchanged but growth hormone levels increased 18-fold immediately after training. The baseline levels of testosterone, growth hormone, and insulin like growth factor I were unaffected by the 16 week training program.

SUMMARY:

Results indicate that a single bout of strength training causes a substantial human growth hormone response in older men, but 16 weeks of progressive resistive training does not affect beginning concentrations of growth hormones or any other anabolic hormones. This confirms the results of other studies which show that the immediate increases in growth hormone levels after training are not maintained or built upon. Instead these levels return to beginning levels shortly after each training bout.

KEISER PIECES USED:

Leg press, chest press, leg curl, lat pull down, leg extension, shoulder press, hip abductor & adductor, upper back, triceps press, lower back, and abdominal machines.

Published in International Journal of Sports Medicine, vol. 16 pgs.445-450, 1995 Abstracts #7 & 8 - Bone Density also refer to hormonal responses.