

Strength Training Increases Insulin Action In Healthy 50 to 65 yr. Old Men

John P. Miller, Richard E. Pratley, Andrew P. Goldberg, Patricia Gordon, Michelle Rubin, Margarita S. Treuth, Alice S. Ryan, and Ben F. Hurley Division of Gerontology, Department of Medicine, University of Maryland at Baltimore, and Baltimore Geriatric Research, Education and Clinical Center, Baltimore Veterans Affairs Medical Center, Baltimore 21201; and Departments of Kinesiology and of Human Nutrition and Food Systems, University of Maryland, College Park, Maryland 21218.

OBJECTIVES:

To determine if strength training increases insulin action in older individuals, 11 healthy men, 50-65 years of age, underwent a two-step glucose test (low & high levels) and an oral glucose tolerance test. The researchers also measured the calories produced by the metabolism of food. These tests were performed before and after 16 weeks of strength training on Keiser equipment.

RESULTS:

The training program increased overall strength by 47%. Fat free mass increased and body fat decreased with training. Glucose levels in the blood after fasting and glucose levels during the oral glucose tolerance test were not significantly lower after training. In contrast insulin levels in the blood after fasting decreased significantly and insulin levels also decreased during the oral glucose tolerance test. Glucose infusion rates during the glucose tests increased 24% during the low infusion and increased 22% during the high infusion. These increases were accompanied by a 40% increase in nonoxidative glucose metabolism during the high insulin infusion.

SUMMARY:

These results demonstrate that strength training increases insulin action and lowers insulin levels in the bloodstream of middle-aged and older men. They also confirm the link with substantial increases in nonoxidative glucose metabolism. The more efficient use of insulin and metabolism of glucose has significant implications for prevention and management of diabetes in older adults.

KEISER PIECES USED:

Leg press, leg extension, chest press, lat. pull down, upper back, shoulder press.