

PHYSICAL ACTIVITY FOR METABOLIC EFFECTS IN OVERWEIGHT AND OBESITY

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Overweight and obesity increase with aging and successful weight maintenance is difficult. Lifestyle rehabilitation changes such as physical activity and nutritional therapies are advocated for the treatment of obesity and chronic diseases, and our research suggests that these treatments are beneficial, in part, due to their metabolic and tissue effects. We have identified some of the mechanisms in skeletal muscle by which these and other effective therapies reduce insulin resistance and improve mitochondrial function thereby enhancing metabolic flexibility in aging. Our data indicate that older overweight individuals with impaired glucose tolerance are metabolically inefficient, with the inability to switch from fat to carbohydrate utilization in response to exercise and insulin. We also report that insulin activation of skeletal muscle glycogen synthase increases after calorie restriction and exercise training in impaired glucose tolerant older adults. Furthermore, exercise training can enhance activity of key skeletal muscle enzymes involved in lipid partitioning and fatty acid metabolism in older adults. We have examined body composition and metabolic changes during a follow-up after intentional weight loss in older women. Multiple factors are associated with the ability to sustain weight loss over a long period of time with predictors of weight regain in older women. There is evidence that the addition of aerobic exercise training to weight loss is critical to altering the metabolic components of skeletal muscle for advancement of healthy aging and are important in overweight and obesity.

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