

Weight History Association with Current Cardiorespiratory and Muscular Fitness

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ABSTRACT

High cardiorespiratory and muscular fitness are often associated with lower body fat mass. Age-associated increases in body mass might be attenuated by maintaining a higher level of fitness into middle-age. **PURPOSE:** This study aimed to compare the cardiorespiratory and muscular fitness of individuals who have maintained body mass during adulthood to those who have had substantial increases and/or decreases in body mass in adulthood. **METHODS:** Obese, overweight, and non-obese adults were recruited to participate. Long-term health and weight history was collected retrospectively on 79 individuals. Total body composition, maximal oxygen consumption, grip strength, and maximal isometric knee extension strength were measured. Participants were subsequently categorized based on short term and long-term weight loss history, cardiorespiratory fitness, and muscle function for further analysis. **RESULTS:** Participants (31 Male, 45 female, aged 41.0 ± 12.3 years) were $29.2 \pm 10.1\%$ body fat having gained 9.3 ± 11.7 kg since 20 years of age. Current cardiorespiratory fitness as indicated by relative maximal oxygen consumption was 36.6 ± 12.0 ml*kg⁻¹*min⁻¹. No significant relationship existed between weight gain since age 20 and current cardiorespiratory fitness ($r = -0.12$). No differences in weight history were observed after classification of participants into high vs. low cardiorespiratory fitness nor high vs. low muscular fitness. **CONCLUSIONS:** Current cardiorespiratory and muscular fitness are independent of past body weight history. Despite the limitations of retrospective analysis of weight history and inability to determine previous levels of fitness, these results imply that high fitness might not be protective against age-associated body mass increases, but also that low fitness might not destine an individual to larger than normal gains in body mass.