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Research article

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2014**Age-Related, Site-Specific Muscle Loss in 1507 Japanese Men and Women Aged 20 to 95 Years**Citations in
ScholarGoogleTakashi Abe¹,  Mikako Sakamaki¹, Tomohiro Yasuda¹, Michael G. Bemben², Masakatsu Kondo³, Yasuo Kawakami⁴, Tetsuo Fukunaga⁵

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[Author Information](#)[Publish Date](#)[How to Cite](#)[Email link to this article](#)**ABSTRACT**

We investigated the relationship between age and muscle size in both the appendicular and trunk regions of 1507 Japanese men and women aged 20 to 95 years. Seven hundred twenty-two men (young [aged 20-39 years], $n = 211$; middle-aged [aged 40-59 years], $n = 347$; and old [aged 60-95 years], $n = 164$) and 785 women (young, $n = 207$; middle-aged, $n = 341$; and old, $n = 237$) were recruited for this cross-sectional study. Muscle thickness (MTH) and subcutaneous fat thickness (FTH) were measured by ultrasound at 8 sites on the anterior and posterior aspects of the body. MTH was expressed in terms relative to limb length (MTH/L) or height (MTH/Ht). Percent body fat was estimated from FTH, and fat-free mass (FFM) was calculated. In men, a graded decrease in FFM was found in all age groups. In women, FFM was similar in the young and middle-aged groups, but was lower in the oldest group. Age was significantly and inversely correlated with FFM in men ($r = -0.358$, $p < 0.01$), but not in women ($r = -0.08$). On the other hand, age was strongly and inversely correlated with quadriceps MTH/L (men, $r = -0.529$; women, $r = -0.489$; both $p < 0.001$) and abdomen MTH/Ht (men, $r = -0.464$; women, $r = -0.446$; both $p < 0.001$) in both men and women, while there were only weak correlations between age and other lower limb and trunk sites. Our results indicated that sarcopenia is observed as a site-specific loss of skeletal muscle mass, especially for the quadriceps and abdominal muscles, in Japanese men and women aged 20 to 95 years.

Key words: Sarcopenia, muscle distribution, daily physical activity

Key Points

- It is not fully understood whether age-related changes in muscle size differ between the appendicular and trunk muscles and/or between muscle groups located in the anterior and posterior aspects of the body in a large population.
- Age-related muscle loss is observed as a site-specific, especially of the quadriceps and abdominal muscles, in Japanese men and women aged 20 to 95 years.
- The age-related muscle losses are not supported by the muscle activation pattern of normal daily activities evaluated by EMG activity.

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