

Establishing Lean Mass Index Percentiles for Adult Males

MEREDITH MCKENZIE, VICTORIA JARZABKOWSKI, PHILIP R. STANFORTH

Fitness Institute of Texas; University of Texas; Austin, TX

Category: Undergraduate

Advisor / Mentor: Jarzabkowski, Victoria (vjarzabkowski@austin.utexas.edu)

ABSTRACT

PURPOSE: Lean mass is indicative of an individual's overall health, as low levels are associated with issues including sarcopenia and increased hospital length of stay. Converting lean mass to a lean mass index (LMI) allows for comparison of individuals of different heights. Four population-based studies have been done to establish fat free mass index (FFMI) percentiles. However, none have had American subjects, with the exception of a small study that utilized an uncommon body composition method. Therefore, the purposes of this study were: 1) to establish a LMI for American adult males, 2) to compare the results to previous studies, and 3) to compare LMI between age categories of this population. **METHODS:** Subjects were 642 men, 18 to 75 yrs of age ($x = 29.6 \pm 12.4$ yrs), who had DXA body composition testing at the Fitness Institute of Texas. LMI was calculated as lean mass/height². Cumulative relative frequency analysis was performed to create indices for three age categories: 18-22 (G1), 23-39 (G2), and 40+ (G3) yrs of age. LMI values for each age category were compared using ANOVA. To compare the results to those of existing studies, FFMI percentiles were calculated using age groups of 18-34 and 34-59 yrs. **RESULTS:** Age group LMI percentile graphs were created. Mean LMI was higher in G2 (19.6 ± 2.3 kg/m²) and G3 (19.8 ± 2.3 kg/m²) than in G1 (18.5 ± 2.1 kg/m²) ($P < 0.05$), but there was no difference between G2 and G3 ($P > 0.05$). FFMI percentile results from this study were similar to previous studies, except the FFMI values above the 50th percentile were greater in the 35-59 yr olds in the current study, as shown in Figure 1. **CONCLUSIONS:** The LMI percentile graphs, generated from a large cohort, provide a validated reference for health care professionals and clients. Contrary to expectations, FFMI did not decrease with age for this population. The FFMI percentile values were similar to those of previously published studies.

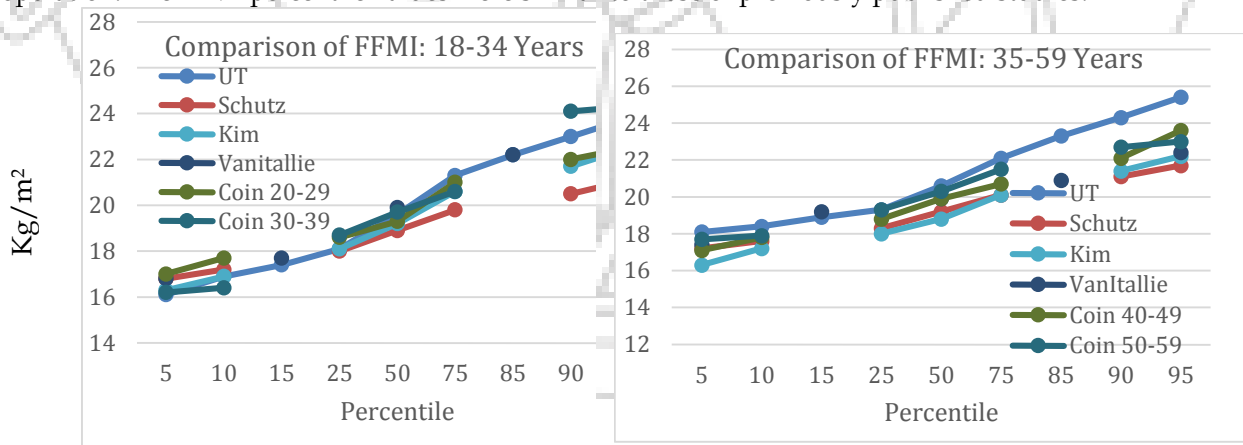


Figure 1: Comparison of FFMI among five studies with male subjects, ages 18-59.