

# SARCOPENIA IN UKRAINIAN WOMEN: ASSESSMENT AND DETERMINATION OF LEAN BODY MASS DEFICIENCY

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SARCOPENIA IN UKRAINIAN WOMEN: ASSESSMENT AND DETERMINATION OF LEAN BODY MASS DEFICIENCY  
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**Key words:** sarcopenia, muscle mass, appendicular skeletal mass index, cutoff, women

**Introduction.** Sarcopenia is been defined as an age-related reduction in muscle mass, strength and performance. Muscle mass peaks by fourth decade and then decreases at the rate of 1% after the age of 50 years. Prevalence of sarcopenia varies widely (5-70%) according to age, sex, ethnicity and the criteria used for its definition [Marwaha R. et al., 2014].

**The aim of this study** was to evaluate the normative data of lean mass in the healthy Ukrainian women.

**Materials and methods.** 301 women aged 20-87 years (mean age – 57.6±0.9 yrs; mean height – 1.62±0.004 m; mean weight – 63.5±0.5 kg, body mass index – 24.2±0.2 kg/m<sup>2</sup>) were examined. No subject had any systemic disorders (endocrine, renal, hepatic et al.) or took medications known to affect the skeletal and muscle metabolism. The women were divided into the following age-dependent groups: 20-29 yrs (n=25), 30-39 yrs (n=27), 40-49 yrs (n=22), 50-59 yrs (n=62), 60-69 yrs (n=91), 70-79 yrs (n=59), 80-87 yrs (n=15). The lean and fat masses, bone mineral density (BMD) were measured by the DXA method (Prodigy, GEHC Lunar, Madison, WI, USA). Appendicular skeletal mass (ASM) was measured at all the four limbs with DXA. We've also calculated the appendicular skeletal mass index (ASMI) according to the formula: ASM/height (kg/m<sup>2</sup>). Low muscle mass values conform to the following definitions: European guidelines (ASMI <5.5 kg/m<sup>2</sup>) [Cruz-Jentoft A.J. et al., 2010], less than 20% of sex-specific normal population and two SD below the mean of the young adult Ukrainian females (20-39 yrs). "Statistika 6.0" ©

StatSoft, Inc. was used for data processing purposes.

**Results.** We observed a significant decrease of ASM with age (20-29 yrs – 16.5±0.4 kg, 30-39 yrs – 16.4±0.3 kg, 40-49 yrs – 17.0±0.5 kg, 50-59 yrs – 16.9±0.3 kg; 60-69 yrs – 16.5±0.2; 70-79 yrs – 15.8±0.3; 80-87 yrs – 15.3±0.3; F=2.7; p=0.01). The ASMI values corresponding to a cutoff of low muscle mass by the definitions used were as follows: <5.5 kg/m<sup>2</sup> (European guidelines), <5.7 kg/m<sup>2</sup> (<20<sup>th</sup> percentile of sex specific population), <4.8 kg/m<sup>2</sup> (two SD below the mean of young Ukrainian females aged 20-39 yrs). The prevalence of low muscle mass in women aged 65 yrs and older based on the above three criteria was 12%, 16% and 1.7%, respectively. ASM was positively correlated with the total fat mass (r=0.20, p=0.0006) and BMD at all sites (BMD of spine (r=0.22, p=0.0002), BMD of femoral neck (r=0.29, p<0.0001)).

**Conclusion.** Peak muscle mass among the Ukrainian women is achieved in the fifth decade. The cutoff value of ASMI (<4.8 kg/m<sup>2</sup>) defined as two SD below the mean of reference young population was lower in this study compared with the Rosetta Study (<5.5 kg/m<sup>2</sup>). As for the sex specific cutoff (ASMI <5.7 kg/m<sup>2</sup>), this index was similar to the data of the Health ABC study (<5.67 kg/m<sup>2</sup>) [Cruz-Jentoft A.J. et al., 2010]. Appendicular skeletal mass was positively correlated with total fat mass and BMD at all sites.

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## **SARKOPENIA W POPULACJI UKRAIŃSKICH KOBIET: OCENA ORAZ OKREŚLENIE NIEDOBORU BEZTŁUSZCZOWEJ MASY CIAŁA**

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**Słowa kluczowe:** sarkopenia, masa mięśniowa, appendicular skeletal mass index, punkt odcięcia, kobiety