日常測定に基づく日本人女子アスリートの初経発来前後における体組成の特徴

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日常測定に基づく日本人女子アスリートの初経発来前後における体組成の特徴

（Characteristics of body composition before and after menarche Based on daily measurements of Japanese young female athletes）

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Abstract

The purpose of this study was characterizing the body composition of young female athletes before and after menarche based on daily measurements over a 5-year period, and to examine the relationships among peak height velocity (PHV), lean body mass (LBM), and bone mass. Subjects were selected from 29 who had been measured daily for 5 years. Then, there were 16 participants (age 10.2 ± 1.0 at the beginning of the study): those with fast height growth and confirmed PHV of at least 7 cm/year, 12 with menarche, and 4 without menarche (NM). Measurements included height, weight, body fat, muscle mass, estimated bone mass, BMI, fat mass, LBM, and percentage of height attained relative to predicted height (%PH) based on parents' height. Observation points were PHV age (PHA), 6 months before menarche (B6M), at menarche, 6 months (6M) and 12 months (12M) after menarche. For NM, observations were made at PHA and last measurement during the study (LM). Height, weight, muscle mass, estimated bone mass, LBM, and %PH increased significantly from B6M to menarche and from menarche to 6M, but not body fat, BMI, or fat mass. All except body fat and BMI increased significantly from PHA to menarche and from PHA to the LM for NM. From these results they increased in height, muscle mass, estimated bone mass, and LBM from B6M to 6M, with height reaching approximately 95% of %PV at menarche. Body fat did not play a significant role in the increase in bone mass, suggesting that LBM may be influential.