They have to be supplemented with rigid application instructions to avoid severe mistakes which might influence safety and comfort in the construction and evaluation process. Application instructions for new functional measures will be discussed from a practical point of view and compared with the standardization of traditional anthropometric data.

**Body density and total body potassium in Japanese young women**

Mogi K., Tahara Y., Takemoto T., Aoyagi K., Okumura H.
Nagasaki University, Nagasaki, Japan

Percentage fat estimated from concentration of body potassium 40 (%Fat-K) was compared with that from underwater densitometry (%Fat-BD) in 90 Japanese women age between 22 and 25 years old. Potassium 40 was measured by using a whole-body human counter, and total body potassium (TBP) was calculated for each subject. The subjects were nurse-students in a post-graduate one-year course for public health nursing. Their mean height, weight, body mass index were 158.8 cm, 52.1 kg, and 20.6 kg/m², respectively.

Mean total body potassium was 85.1 gram with standard deviation of 8.3 gram (range; 62.3–113.8 gram). This value was lower than reported values for Caucasian women (100 gram, Ellis), and also lower than a reported value for Japanese women in 1969s (94.1–100 gram).

Correlation coefficient between %Fat-K and %Fat-BD was 0.691 (p<0.01).

Mean %Fat-K values calculated by equations of Forbes, Garrow, Behnke were 35.0%, 29.8%, and 27.7%, respectively. Whereas, mean %Fat-BD was as low as 24.4%. Fat free mass estimated from densitometry (FFM-BD) was 39.4 kg.

Total body potassium per FFM-BD of Japanese young women seemed lower than Caucasian women. The TBP/FFM conversion factor for Japanese young women was estimated as low as 55.3 mEq/kg.

Then, factors associated with difference between %Fat-K and %Fat-BD were studied by using multiple regression analysis. Proportion of difference between the two variables ((%Fat-K−%Fat-BD)/%Fat-BD) was used as the dependent variable. Stepwise multiple regression selected residual volume (Beta=0.440, p<0.001) alone. Adjusted R square was 0.185. This means that if residual volume of a subject was large, the discrepancy between %Fat-K and %Fat-BD became also large. Measurement of residual volume is supposed to be the major source of error in measurement of %Fat from underwater densitometry.

**Assessment of excessive leanness in Japanese young women based on allometry**

Takasaki Y.*, Watanabe Y.**, Kurosawa T.***
* Akita University, Akita, Japan
** Takasaki University of Health and Welfare, Takasaki, Japan
*** Seirei Women's Junior College, Akita, Japan

A desire for slenderness has been increasing among Japanese young women and they have been interested in methods for weight reduction such as a diet. Under the condition of extreme diet, however, anorexia nervosa, irregular menstruation, hypotension and prospective osteoporosis may be caused especially in adolescent girls around twenty years old. In this study, we clarify the degree of slenderness desired by recent Japanese young women using questionnaires. Then an evaluation method to distinguish the excessively lean from the others was proposed using allometry.

Questionnaires on desired physique were distributed to 710 female college students living in Akita and the suburbs of Tokyo. Data for 578 of these respondents, aged 18 to 21 years old, were analysed. The questionnaire asked to show their real and ideal body build and to assess their fitness levels for themselves. The result revealed that young women have a tendency to misunderstand their body images and to regard them as fatter than they really are. It was shown that the desire for slenderness has continued to increase.

Meanwhile, border lean body mass (LBM) between the excessively lean and the others was determined using allometry. There have been few methods to evaluate leanness, although obesity has been often discussed in many studies. We originally defined leanness as a state of insufficient LBM against height that stands for body size. As is often the case with statistical tests, a border line to separate unusual values from usual ones is commonly 5% for both tails of the normal distribution, that is, 2.5% for each tail. Thus the criteria of excessive leanness were established according to this practical procedure. Assuming that individual LBM normally distributes around the allometric line of LBM on height.