

3936403 SCEP/M: MAJOR: PHYSIOLOGY OF EXERCISE; M.Sc.

(PHYSIOLOGY OF EXERCISE)

KEY WORDS : BODY COMPOSITION / ATHLETES / THAI

SUPAPORN SILALERTDETKUL: CROSS VALIDATION OF BODY DENSITY EQUATIONS IN THAI MALE AGED BETWEEN 16-22 YEARS.

THESIS ADVISORS: CHUMPOL PHOLPRAMOOL, Ph.D., KALLAYA KIJBOONCHOO, Ph.D., PIPAT CHERDRUNGS, M. Sc., 97 p. ISBN 974-663-127-6

The present study aimed to investigate subcutaneous adipose tissue distribution and cross-validate Durnin and Womersley's, Pollock's, Jackson and Pollock's and Tahara's equations which estimate body density by using skinfold thickness for Thai males. One hundred and ten male volunteers aged between 16 to 22 years, both athletes and sedentary subjects, were recruited from freshmen at Mahidol University. Skinfold thickness was measured by using Harpenden calipers at eleven sites on the right side of the body. Body density was determined by underwater weighing using a load cell and an IBM compatible data processor while the residual volume was calculated from Chuan's equation. Skinfold thickness of the sedentary males had less triceps, mid-thigh and medial calf skinfold thicknesses than athletes. In contrast, body density of the athletes (1.064 ± 0.003 g/ml, mean \pm SEM) was greater than the sedentary controls (1.057 ± 0.002 g/ml). Percent body fat calculated by Brozek formula for the athletes group ($16.36 \pm 1.11\%$) was less than sedentary controls ($18.21 \pm 0.84\%$) while the lean body mass of sedentary controls (49.96 ± 0.82 kg) were less than athletes (54.76 ± 0.95 kg). Body density and fat distribution of Thai male subjects were different from those of the Caucasian and the Japanese. When the well established equations for Caucasian and Japanese were cross-validated on Thai males, the validity coefficients ranged from 0.21-0.54 where as the standard error of estimate and total error ranged from 0.0114-0.0125 and 0.1073-0.4570 g/ml, respectively. The results suggest that the existing equations derived from Caucasian or Japanese may not be accurate to predict body density in Thai males.