Thesis title	The Correlation and Prediction of Body Composition from Dual Energy X Ray Absorptiometry and Anthropometric Measurements in Thai women Aged 30 to 39 years
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ABSTRACT

In recent years, tools to assess obesity are mainly developed for Western populations. In this research, body composition of 46 apparently healthy Thai women, was measured by Dual photon x ray absorptiometry (DEXA), the triceps, biceps, subscapular and suprailiac skinfolds and body mass index (BMI).
The aim of the research is (1) to establish the correlation between body composition and their estimators and (2) to test if body composition prediction equations using skinfolds and BMI, developed for Caucasian females can be used for Thai females.

The group of Thai women can be described with the following statistics : mean height : 1.55(standard deviation 0.05): mean weight 50.6 kg (6.8) and BMI 20.9 (2.9); percent body fat 31.9 (6.1) fat mass (FM) 16.4 kg (4.9) and fat free mass (FFM) 34.2 kg (3.1).

The correlation coefficients between the BMI and the percent body fat and between BMI and FM were 0.76 and 0.87 respectively. The correlation coefficients between triceps skinfold and percent body fat and FM were 0.83 and 0.87 respectively. The correlation coefficients between biceps skinfold and percent body fat and FM were 0.69 and 0.70 respectively. The correlation coefficients between subscapular skinfold and percent body fat and FM were 0.75 and 0.79 respectively. The correlation coefficients between suprailiac skinfold and percent body fat and FM were 0.76 and 0.74 respectively. The correlation coefficients between the sum of the four skinfolds and percent body fat and FM were 0.84 and 0.86 respectively. The correlation coefficients between weight and percent body fat and FM were 0.75 and 0.91 respectively.

When percent body fat, FM and FFM were predicted from the equation of Durnin and Womersley (11) for skinfolds, the difference with the measured value was not significant. In the equations of Deurenberg et al (30), based on BMI, sex and age, and Black et al (38), based on BMI, the difference was significant.

Four models were tested (1) percent body fat = 1.56 x BMI-0.81 mean difference -0.02 (standard deviation ± 3.9%) (2) : percent body weight = 0.52 x triceps + 0.63 x BMI +7.85 mean difference -0.13 (±3.2%) (3) : Fat mass = 0.29 x triceps +0.43 weight -11.2 mean difference -0.23 (± 1.6 kg) (4) Fat mass = 0.66 x weight (DEXA)-16.8 mean difference -0.16 (± 2.1 kg). All models tend to overestimate in the lower range of percentage body fat and fat mass and overestimate in the higher range of these parameters. They might be influenced by age and sex.

It can be concluded that based on the sample the correlation between FM and weight is greater than 0.80. The equation of Durnin and Womersley (11) seems to estimate percent body fat well in Thai females. The equations of Deurenberg (30) and Black et al (38), which use BMI, might not be suitable for prediction of body composition for Thai females.