

THE RELATIONSHIP BETWEEN RELATIVE SITTING HEIGHT AND BODY FAT  
DISTRIBUTION IN CAUCASIANS

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The body mass index (BMI) has been extensively used as an indicator of obesity. It is a simple, rapid field technique of assessing energy reserves i.e., body fat. However, Garn et al. (1986) have suggested that BMI is influenced by body proportions i.e., relative sitting height (RSH). Furthermore, work on the Aborigines of Australia by Abbie (1957), has shown that the body proportions of these people are quite different from those of Caucasians, with a low RSH i.e., long legs and a comparatively short trunk. Rutishauser (1987) found, that for a given BMI, Aboriginal women have more subcutaneous fat than Caucasian women, as assessed from 4 skinfold sites (triceps, biceps, subscapular and suprailiac). The subcutaneous fat also tends to be concentrated more centrally on the body, and this appears to be important in relation to some diseases (eg. coronary heart disease). The purpose of this study was to assess whether a low RSH is associated with a similar centralised fat distribution, in a Caucasian population.

Data on adults of Caucasian origin, living in Geelong and of average age 44 years (Tienboon et al. 1988), was analysed using Minitab. The 332 adults (139 males and 193 females) were categorised on the basis of their RSH into quartiles, and the lower and higher quartiles were compared for both sexes. The results are shown in the Table and are expressed as mean  $\pm$ sd.

RSH quartile	Male		Female	
	1	4	1	4
Number in quartile (n)	35	34	49	48
RSH (%)	51.2(0.85)	54.8(1.39)	52.1(0.82)	55.8(1.23)
BMI	26.5(2.67)	27.2(3.53)	25.9(4.82)	26.3(5.53)
Sum 4 skinfolds (mm)	65(16.5)	68(18.5)	81(30.8)	84(34.0)
Waist/hip ratio	0.96(0.046)	0.93(0.048)	0.83(0.084)	0.81(0.072)

Waist/hip circumference ratio, as a measure of centralised fat distribution, was significantly higher ( $P < 0.05$ ) in the lowest quartile for males, but not for females. There was no significant difference for BMI and sum of 4 skinfolds between the two groups for males or females.

Thus for men, RSH may be an important factor in determining centralised fat distribution, since men with a low RSH have a significantly higher waist/hip circumference ratio than those with a high RSH. For women, although there was a trend for a low RSH to be associated with a higher waist/hip circumference ratio, this did not reach significance. Thus it is possible that RSH might be a useful predictor of centralised fat distribution.

ABBIE, A.A. (1957). *Oceania* 27: 221.

GARN, S.M., LEONARD, W.R. and HAWTHORNE, V.M. (1986). *Am.J.Clin.Nutr.* 44: 996.

RUTISHAUSER, I.H.E. (1987). 'Nutrition and Health in the Tropics'. (Menzie's School of Health Research : Darwin).

TIENBOON, P., WAHLQVIST, M.L., and RUTISHAUSER, I.H.E. (1988). These proceedings.

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