

Energy expenditure in obesity.

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Energy expenditure of obese subjects living in a respiration chamber is higher than that of lean controls; this is due to a greater basal metabolic rate in the obese. Groups of obese subjects with a family history of obesity and/or a childhood onset of obesity have a reduced thermogenic response after glucose or meal ingestion. However, this defect in diet-induced thermogenesis is not a uniform finding, since only a third of an unselected group of obese women exhibit a reduced response. Moreover, obese subjects with reduced thermogenesis have a higher overall energy expenditure than lean people, even in situations in which a thermogenic response is produced. After inducing loss of weight with a hypocaloric diet, the thermogenic defect does not disappear. Since basal metabolic rate decreases with weight loss, the postprandial energy expenditure of some 'post-obese' subjects can be lower than that of lean controls. It is concluded that a thermogenic defect can contribute to the development of obesity in some predisposed subjects. The mechanisms of the thermogenic defect in the obese are presently unknown; insulin resistance and/or a blunted response of the sympathetic nervous system have been reported, but this topic remains controversial. After weight loss, energy expenditure decreases by about 84 kJ/24 h (20 kcal/24 h) per kg of weight loss in all patients. The need to reset energy intake to a lower level than the previous maintenance food consumption represents a major difficulty in the treatment of obesity; failure to adjust energy intake to the new requirements contributes to the frequent relapse of body weight gain in the obese after completion of a period on a hypocaloric diet.

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