Energy expenditure in physical activity

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Abstract

Biological entities obey physical laws, and, in this regard, humans and other mammals obey the laws of thermodynamics. Body energy stores can only increase and obesity can only occur when food intake exceeds energy expenditure (or metabolic rate). Similarly, energy stores can only be depleted when energy expenditure exceeds food intake. Thus, the balance between food intake and energy expenditure determines the body's energy stores. The quantity of energy stored by the human body is impressive; lean individuals store 2–3 months of their energy needs in adipose tissue whereas obese persons can carry a year's worth of their energy needs. The cumulative impact of energy imbalance over months and years can result in the development of obesity. The factors that regulate appetite and food intake are discussed elsewhere. In this chapter we will discuss the importance of physical activity as a component of energy expenditure.

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Physical activity was determined by the Seven Day Physical Activity Recall (SDPAR). Results: Leisure-time physical activity was strongly associated with energy expenditure on occupational physical activity in men and women. Among men who expended 4000 kcal/week or more on occupational physical activity, the risk of inactivity at leisure was 1.5 times higher than in men whose weekly energy expenditure on occupational activity did not exceed 4000 kcal (adjusted OR = 1.33, 95% CI. For subjects in the upper range of physical activity, total energy expenditure plateaued, supporting a Constrained total energy expenditure model. Body fat percentage and activity intensity appear to modulate the metabolic response to physical activity. Models of energy balance employed in public health [1-3] should be revised to better reflect the constrained nature of total energy expenditure and the complex effects of physical activity on metabolic physiology. Discover the world's research. 15+ million members. For example, energy expenditure from physical activity is the most variable (Ravussin et al., 1986). The primary component of total energy expenditure comprising 60–70%, basal metabolism, is defined by the Webster's Medical Dictionary as "the turnover of energy in a fasting and resting organism using energy solely to maintain vital cellular activity, respiration, and circulation as measured by the basal metabolic rate" (BMR). Energy intake and expenditure have been investigated in PD patients in several studies albeit in small number of patients. In early stage young age patients the investigation reveals no difference in energy intake as compared to the healthy controls (Vikdahl et al., 2014).