
Exercise yourself thin – a myth?

EDITORIAL

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Less food and more everyday activity may be more important than physical exercise in terms of attaining weight loss.

Everyone knows what it takes to lose weight: eat less and exercise more. Academics, training experts and non-professionals alike all believe physical exercise to be an important aspect of weight reduction programmes. Aadland and Anderssen's review article in the current edition of the Journal will thus come as a somewhat unpleasant surprise to many: it concludes that scientific studies suggest prescribed physical activity to lead to only a very moderate reduction in body weight (1 – 3 kg) [\(1\)](#).

Obesity increases the risk of obesity related complications such as type 2 diabetes, high blood pressure, cardiovascular disease and sleep apnoea [\(2\)](#). Weight reduction can markedly reduce this risk and moreover reduce the morbidity of those who have such illnesses. Voluntary weight loss also leads to a better quality of life. The academic literature shows that in obese patients a weight loss of 5 – 10 % is sufficient for them to achieve meaningful health benefits, although in persons with obesity-related complications greater weight loss may be necessary [\(2\)](#).

Behavioural change based upon a daily reduction in energy intake of at least 500 kilocalories (kcal) over a period of 3 – 6 months can give a weight loss of 5 % or more. A simple calculation shows that 500 fewer kcals daily can give an initial weight reduction of 0.5 kg a week, although the effect reduces with time [\(2\)](#). This finding has also been corroborated by recently validated mathematical models which, amongst other things, show that if an 80 kg man were to reduce his kcal intake by 500 kcals a day then he would achieve a weight reduction of around 10 kg in the first year alone [\(3\)](#).

Physical activity consists of a series of movements performed by the skeletal musculature, which in turn leads to an increase in energy expenditure. Exercise itself can be defined as routinised physical activity which aims to either maintain or improve one's physical fitness or health. All other physical activity, whether performed at work or during leisure time, can be defined as «non-exercise activity», which hereafter shall be referred to as everyday activity. An increased energy expenditure of 500 kcal a day brought about by increased physical activity should give just as large a weight reduction as a corresponding calorie restriction.

Energy expenditure at rest (resting metabolic rate) can be calculated in a simple manner: 1 kcal per kg body weight per hour, otherwise known as the metabolic equivalent (MET) (5). The amount of energy expended by a long slow walk or light housework is double the amount of energy burned by sitting still (2 METs), whilst a fast walk burns 3 – 4 METs and a run burns 7 METs or more. A 100 kg man sitting and watching TV will burn around 100 kcal an hour. A one-hour fast walk will quadruple the amount of energy burned: an additional energy expenditure of 300 kcal. The same person would burn just as many calories with 2 – 3 hours' light housework/gardening. This means that increased everyday activity can, over time, provide just as large an energy expenditure as relatively short training exercises.

Differences in everyday working activity can also explain large differences in daily energy expenditure. Both an office worker and a couch potato have markedly lower everyday activity levels and energy expenditure (e.g. 300 kcal/day) than a manual labourer (e.g. 2 300 kcal/day).

The main explanation for the limited effect of physical activity on weight reduction (1 – 3kg) is that few of the trial participants increased their physical activity levels sufficiently. According to Aadland and Anderssen, the weekly increase in energy expenditure as a result of physical activity was only 1 000 – 1 500 kcal per week, nearly a third of the levels reached with moderate calorie restriction. A substantial weight reduction cannot therefore be expected in such circumstances. Questions can also be asked of the validity of the studies which form the basis of Aadland and Anderssen's analysis. Physical activity was defined as exercise of at least a moderate intensity, but did not take into consideration any possible changes in everyday activity. Participants took part in exercise of a moderate to high intensity (30 – 60 minutes), 3 – 5 days a week. This type of activity had an effect anywhere in between tripling and sextupling of energy expenditure in comparison to rest. For a person weighing 100 kg this could mean an extra 200 – 400 kcal energy burned per hour. The same person would have to perform daily more than an hour of very fast walking in order to reach the same weight reduction achieved by a daily reduction of 500 kcal. In cases where the routine exercise activity led to reduced everyday exercise and increased food intake, the effect on weight reduced accordingly.

Is there still a role for physical activity in weight reduction? The answer is a definite yes, although many obese subjects have never trained, and exercise itself is often negatively conceived as both strenuous and uncomfortable (7). Stressing the importance of exercise can also result in the obese developing unrealistically high ambitions and a self-obsessive view of their body, appearance and performance. Moreover, such an approach carries a high risk of failure. On the other hand, different types of more «pleasurable» everyday activities have a value in themselves, which

alone can make it easier to achieve lasting behavioural changes. Simple energy calculations support the theory that increased everyday activity can be both an effective protective measure against (as well as a treatment of) obesity.

All forms of physical exercise can lead to better sleep, mood, appetite control and quality of life, and given these improvements, can contribute to healthier eating patterns. In addition, as Aadland and Anderssen's review underlines, physical activity is associated with better weight maintenance, increased muscle mass, less visceral fat and better overall health.

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