The extrapolation from the lack of evidence that changes in PA are an important behavioural driver of the global obesity epidemic to the need for fundamental economic, democratic and legal reform seems like a long and untenable bow to draw. But join the dots and see the deep connections driving the relentless march of obesity, climate change, resource depletion and loss of democracy.  

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References


Commentary: Physical activity and weight control

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Luke and Cooper titled their paper ‘Physical activity does not influence obesity risk: time to clarify the public health message’. Rather than dwell on refuting each point made by the authors, we want to comment on the intent of the paper.

Food and physical activity both affect body weight

It is difficult to believe that two accomplished researchers really do not understand the first law of thermodynamics or they are not aware of decades of exercise science showing the impact of physical activity on all components of energy balance and on every aspect of human physiology. This is not a literature review but rather a personal opinion stated with sweeping claims supported by a few selective references. For example, they failed to cite studies of bed rest showing that reductions in physical activity can lead to rapid metabolic changes favouring accumulation of body fat. They mention neural control of food intake but fail to cite many studies showing that exercise can have important effects on how the brain regulates energy balance. Many studies they cite for the lack of impact of physical activity actually
demonstrated a positive impact. For example, they cite reference 24 in their paper (a study by Donnelly et al.) as showing lack of weight change with supervised exercise. In fact this study is frequently cited to demonstrate the positive impact of exercise on weight. Exercising men lost weight as compared with non-exercising controls who did not change weight and exercising women failed to gain weight compared with non-exercising controls who did gain weight.

Cross-country studies

The cross-country energy expenditure literature cited by the authors is confounded by the fact that the studies do not measure actual physical activity, but rather measure the energy expenditure of activity (AEE). If two subjects have the same AEE but differ substantially in body weight it can only mean that the heavier individuals actually move less because their energy cost of activity is greater. For example, Bassett et al. measured the activity levels among Amish men and women using pedometers and found that Amish men get 18 000 steps/day on average and Amish women accumulate 14 000 steps per day. (Other national surveys indicate that the average American gets only 5500 steps per day.) The Amish population lives in a manner that resembles what the typical American lifestyle was 100 years ago, although they do not have a food-restricted environment. The obesity rate in the sample studied by Bassett was 4% among women and 0% among men.

The authors conclude that there is limited evidence that physical activity can blunt the surge in obesity. The absurdity of this statement is mind boggling. Let's first look at exercise and weight gain. One of us (J.H.) performed the following study for his dissertation. Male and female rats were given a cafeteria diet ad libitum with half of each group also getting exercise. Rats that exercised gained significantly less weight than those who did not. Similar results were published from many other laboratories, including studies in humans using a whole-room calorimeter. When people were given a high-fat diet, they ate more and were in very positive energy and fat balance. Those who exercised were in significantly less positive energy and fat balance. This is clear evidence that exercise mitigates weight gain produced by energy-dense diets. Want to see more evidence – just go to PubMed and search for exercise and weight gain prevention. There are over 2000 papers in the past 5 years, most showing positive results.

Physical activity in obesity treatment

The authors also argue that exercise makes very little difference in weight loss. We have previously argued that exercise produces exactly the effect it should dependent on how much negative energy balance it produces. Sure, adding 30 min of exercise to a calorie deficit of 1000 kcal/day is not going to show much additional benefit. Robert Ross and colleagues have clearly demonstrated that when the energy deficit is matched, food restriction and exercise produce the same amount of weight loss.

Finally, physical activity has been repeatedly shown by a number of investigators to be effective in reducing weight gain after weight loss. In the National Weight Control Registry, declines in physical activity over time predict weight regain.

Physical activity and energy flux

The authors cite a Swinburn paper describing an energy balance flipping point where the level of activity influences food intake. In fact, this concept was first put forth in the 1950s by Jean Mayer and has been discussed over the years by us, by John Blundell and by many other researchers. This is not a new idea. Evidence supporting this concept is provided by several publications from John Blundell and colleagues. The concept here is that above a certain level of physical activity, appetite and food intake are pulled by activity. The more you expend the more you eat. Below this level of physical activity, appetite and food intake are not pulled by energy expenditure and the body is in what John Blundell calls the unregulated zone. Most of America is in the unregulated zone so that it appears that food intake is driving body weight. What this means is that addressing food intake is likely to have no real impact without first getting people into the regulated zone by increasing physical activity.

Strangely, the authors actually contradict the main premise of their paper by conceding that activity has an impact on long-term energy balance but that too few people do enough activity to have a meaningful effect on obesity at a population level. This is a question of behavioural adherence and should not be
confused with the question of whether physical activity has any effect on body weight control. Following the authors’ logic, we could easily make the same statement about food intake. Extremely small proportions of our society engage in energy restriction at a sufficient level to impact on long-term energy balance. We have decades of research showing that food restriction is not sustainable. If their conclusion is that it seems unlikely that a public health effort could get enough people to increase activity levels enough to make a difference for obesity, we would argue the same is true of restricting food intake.

We do not have proven strategies for reducing the population prevalence of obesity at this time. Given this situation, choosing to ignore physical activity as a tool to influence energy balance is tantamount to taking on the battle against obesity with one hand tied behind our backs.

Finally, let’s consider why the authors felt the need to write this paper. It is not a balanced and inclusive literature review. It does not explore new concepts that might drive new research or new intervention strategies. It does not offer any feasible strategy for reducing obesity. We live in a world where people distinguish themselves with the sensational or controversial. We embrace open dialog and debate but we must be true to the science when doing so. So much science is missing here and it is difficult to believe the paper was reviewed by anyone with expertise in exercise science. Why not?

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References