

Promoting exercise after a cancer diagnosis: easier said than done

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There is a clear need to better understand the risks associated with the development and progression of cancer in order to design effective primary and secondary prevention strategies. However, it is important to remember that we have solid evidence supporting the putative relationship between certain common behaviours or conditions with risk, and therefore, specific interventions that modify these behaviours/conditions could be helpful. Certainly tobacco control represents a partial victory in the area of behavioural modification to lower the risk of many pathological conditions, including several types of cancer, and vaccines and medications can also prevent cancer but these rely on a traditional medical treatment-based approach. A closely related area focuses on other (non-tobacco) modifiable risk factors for the prevention of recurrence in curatively treated malignancies. In that regard, emerging evidence indicates that regular aerobic (endurance) exercise is associated with significant reductions in recurrence and cancer-specific mortality in patients with early breast, prostate, and colorectal cancers (Betof *et al*, 2013). If real, this suggests that there are a far greater number of factors that can influence tumour progression than just the genomic abnormalities, the major focus of current oncology research efforts. This means that research must also extend to the 'soil' (as opposed to the 'seed') in terms of metastasis and disease progression. That one intervention could potentially benefit so many different solid tumours suggests an overall pathophysiological effect on the host and multiple organ systems with nearly universal interactions despite the evidence that many cancers have diverse causation and molecular biology. Although scientifically challenging, the hypothesised mechanistic properties of aerobic exercise to inhibit recurrence appear biologically plausible (National Cancer Institute, 2013). As such, given the cost-effectiveness of this strategy, research to elucidate the effects, mechanism, and optimal biologically effective dose in conjunction with research on how to effectively promote, deliver, and maintain exercise would be a prudent investment.

Related to exercise, obesity is a growing public health problem in most Western countries and, increasingly, throughout the world including middle- and low-income nations. The factors behind this

unprecedented change in public health are myriad and include easier access to high-calorie, inexpensive food, possibly, changes in the nutritional content/composition of our diets, and increasingly sedentary lifestyles. Regardless of the cause, it is now clear that obesity and overweight are associated with increased risks of several of the most prevalent cancers, including breast (hormone receptor positive and triple negative), colon, high-grade prostate, and some non-Hodgkin's lymphomas among others. Recently, the NIH estimated that overweight and obesity would replace tobacco as the leading modifiable risk factor for cancer in Americans (Rock *et al*, 2012).

While our group and many others seek a deeper understanding of why this relationship exists, on a practical level the solution would seem to be simple: eat less and exercise more. This would move our patients into a more favourable energy balance state and should lower a multitude of health risks. However, as any clinician can report, this is far easier said than done and the experience with weight loss interventions of all types can be broadly summarised as showing some limited successes and a lot of frustration. It is, however, important to note that even modest weight loss, despite, in some circumstances, leaving a patient well above the threshold for obesity, can nonetheless yield physiological and presumed (and demonstrated in some cases) cancer-specific benefits.

The question remains: what can we do to effectively manage weight in our patients? Given the growing ease with which we now can become obese and the challenges associated with maintenance of a healthier weight and energy balance, what effective and evidence-based interventions for exercise behaviour (and possibly weight loss) can we endorse for our patients?

A recent issue of the *British Journal of Cancer* contains a Cochrane analysis of randomised trials of behaviour change strategies designed to promote exercise behaviour in cancer patients defined as sedentary (i.e., conducting ≤ 30 mins of self-reported aerobic exercise three times per week) (Bourke *et al*, 2014). A total of 14 RCTs met the eligibility criteria involving a total of 648 patients, mostly early breast cancer survivors. In terms of exercise behaviour change, the authors operationalised 'success' in which the

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