

EDITORIALS

Physical activity for cancer survivors

Beneficial in the short term, but longer term outcomes are lacking

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In 2008, more than 12 million people worldwide were diagnosed with cancer (<http://globocan.iarc.fr/>). Because of improvements in early diagnosis and the introduction of more aggressive treatments over the past 20 years, cancer survivors are now living longer.¹ However, treatment often leads to a range of undesirable and debilitating adverse effects.

In the linked meta-analysis (doi:10.1136/bmj.e70), Fong and colleagues assess the effects of physical activity after treatment for cancer on 48 separate health related outcomes.² The potential for exercise interventions to benefit survivors of cancer is a burgeoning area of research, and systematic reviews and meta-analyses have reported that exercise can reduce fatigue and improve functional outcomes and health related quality of life.³⁻⁵ These reports have also called for larger trials that have a greater focus on study quality and adverse events and longer follow-up.

Fong and colleagues' meta-analysis reviewed 34 randomised trials (of which 22 were dedicated breast cancer studies) that assessed the effects of aerobic exercise, and in some studies also resistance training, after cancer treatment over a median duration of 13 weeks (range 3-60 weeks). Their meta-analysis aimed to surpass the methodological quality of previous reviews by assessing heterogeneity and publication bias, and they included nine new studies not included in the most recent update.⁵ The results show significant low to moderate benefits of physical activity interventions on body mass index, body weight, fatigue, depression, peak oxygen consumption, peak power output, the six minute walk test, upper body strength, and health related function. Significant improvements were also reported for lower limb strength and right hand grip strength, but with significant heterogeneity between studies.

Consideration of publication bias did not alter their conclusions.

The authors recommended that more research was needed in cancer types other than breast cancer. Although this may be true, the meta-analysis omitted three randomised controlled trials in men with prostate cancer that seem to meet the inclusion

criteria.⁶⁻⁸ This might have been because the search strategy was missing key nomenclature from exercise science ("aerobic" and "resistance" as forms of exercise training). In this respect, the search strategy differed from that of a previous systematic review.³

Despite the evidence of improved functional and quality of life outcomes, the key question remains: does habitual exercise reduce cancer specific mortality? Evidence from observational studies implies that increased exercise results in improved survival.⁹⁻¹¹ However, there are caveats: conclusions from these observational studies are limited by assumptions about causality and cannot rule out bias as a result of occult recurrence—physically active patients might reduce or stop their physical activity as a result of occult recurrence and subsequently be wrongly classified as currently sedentary at the time of death. None of the randomised trials in Fong and colleagues' review assessed mortality or cancer recurrence, but insulin-like growth factor was reduced by 12.0 ng/mL (95% confidence interval 23.3 to 0.5) in four studies of patients with breast cancer. The insulin-like growth factor axis might be a useful pathway to target in the treatment of breast cancer, but evidence of benefit is far from conclusive.¹² In the absence of reliable surrogates, data from randomised controlled trials with cancer specific recurrence and mortality outcomes would provide a more robust scientific basis for advocating habitual exercise to reduce the risk of dying from cancer.

So where do we go from here? There is clear evidence supporting the short term positive benefits of regular exercise in cancer survivors. However, evidence on longer term interventions is needed to assess possible adverse events and compliance rates. It is also unclear whether physical activity should be self directed or provided as part of a therapeutic intervention—is it sufficient to tell people with cancer to exercise more or should exercise be considered a deliverable treatment?

To know whether regular exercise improves cancer survival, more information is needed in several areas. Firstly, a dose-response curve for different cancers and patient groups—which identifies the frequency, duration, and intensity of exercise that confers benefit would be useful. Secondly, a better understanding of the cognitive determinants of behaviour change, how to support long term healthy lifestyle behaviours, and some appreciation of how the inability to comply with exercise recommendations might affect wellbeing is needed. Thirdly, it would be useful to know how exercise interventions fit into the debate on the availability and allocation of healthcare resources in an economic climate of shrinking healthcare budgets. These questions can be answered only through adequately powered long term randomised controlled trials, with cancer specific mortality or recurrence and cost effectiveness as primary outcomes. UK research infrastructure (such as the ProtecT network in prostate cancer) and expertise in both oncology and exercise science are excellent, so high quality studies are deliverable. National funding bodies need to provide financial support for well designed trials in a range of cancer populations.

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