

EXERCISE AND CANCER

HOW DOES EXERCISE HELP PEOPLE WITH CANCER/CANCER SURVIVORS?

More than 134,000 Australian men and women are diagnosed with cancer each year, and 68% will be disease-free five years after their diagnosis (1). Exercise plays an important role in the treatment of, and recovery from, cancer, from diagnosis to recovery or end-of-life.

Before treatment: If time is available, exercise prior to surgery or the commencement of other treatments (“prehabilitation”) can optimise baseline function, reduce the rate of complications, and enhance recovery (2).

During treatment: Exercise can minimise the number, duration and severity of side-effects (see table of benefits below).

After treatment completion: Exercise can reduce the duration of the recovery period and help manage long-term side effects (e.g. fatigue or “chemo brain”). Exercise post-cancer can reduce the risk of cancer returning or another primary cancer, as well as reduce risk of other chronic disease including obesity, osteoporosis, cardiovascular disease, and diabetes (3, 4, 5).

Palliation: Exercise is safe and can help maintain function and improve quality of life, even if the cancer is no longer responding to treatment. For individuals who have transitioned to palliative care, exercise recommendations will depend on the goals of the person as well as the family/friends, a person’s abilities and preferences and may focus more on physical activity or function, rather than a structured exercise program.

The evidence in support of integrating exercise into all phases of cancer (that is, pre-treatment through to palliation) is consistent and overwhelming; exercise now represents an evidence-based cancer treatment.

TABLE 1: Benefits of exercise during and following treatment for cancer:

PRESERVATIONS OR IMPROVEMENTS	REDUCTIONS
• Muscle strength, mass and power • Quality of life • Body composition and bone health • Physical functioning and fitness • Immune function • Cancer treatment adherence • Body image, mood and self esteem • Cognition • Sleep quality	• Duration of hospitalisation • Psychological and emotional stress • Depression and anxiety • Number and severity of treatment-related symptoms and side effects (e.g. pain, fatigue, lymphoedema, and nausea) • Sexual dysfunction • Risk of cancer recurrence and mortality



IS EXERCISE SAFE AND FEASIBLE FOR PEOPLE WITH CANCER/CANCER SURVIVORS?

Exercise is considered safe and feasible when commenced at an appropriate level and progressed gradually. Pre-exercise screening (e.g. a paper-based screening form such as the Adult Pre-exercise Screening Tool (6), or a referral to a Physiotherapist/Accredited Exercise Physiologist for a clinical assessment (7)) may be valuable in triaging the level of supervision required to maximise the safety of exercise (e.g. unsupervised, group-based sessions, or individual supervised sessions). General exercise prescription guidelines should be followed (e.g. for people who have heart and lung problems), particularly as cancer treatment can increase risk of cardiovascular events.

Extra caution may be necessary with regard to:

- choosing activities for certain survivors (e.g. those with balance concerns may need to walk on a treadmill rather than on uneven sidewalks);
- exercise locations for survivors with weaker immune systems (e.g. public exercise environments may increase the chance of infections); and
- support and supervision for people experiencing fluctuating treatment-related side effects and new side effects, and for those who have little or no history of exercising.



Exercise is contraindicated for cancer survivors when experiencing symptoms like fever, low blood cell count and/or a recent adverse change in treatment-related symptoms. With worsening symptoms or side effects, individuals should be advised to consult their doctor, remain as active as symptoms allow, and to gradually return to exercise when symptoms resolve. Exercise professionals, such as Accredited Exercise Physiologists and Physiotherapists, have the necessary skills and expertise to prescribe and monitor exercise to cancer survivors.

Cancer survivors may experience typical exercise-related barriers (e.g. those faced by the general population such as time constraints, weather, and lack of interest/enjoyment), as well as unique barriers to exercise as a result of disease- and treatment-related side effects (e.g. pain, nausea, and fatigue) and associated issues (e.g. the discomfort of exercising in a wig, and restricted time-availability due to multiple medical appointments). The degree of support or exercise prescription-modification required will vary depending on the individual and situation. Importantly, all health care professionals should encourage and support cancer survivors to incorporate exercise as part of cancer care. More specifically, formal referral of a patient to exercise professionals (e.g. an Accredited Exercise Physiologist/Physiotherapist or community-based exercise program) should form part of standard cancer care and would lead to the patient receiving relevant exercise prescription alongside behaviour change advice.

WHAT TYPE OF EXERCISE IS BEST FOR PEOPLE WITH CANCER/CANCER SURVIVORS?

Recommended target: 150 minutes of moderate-intensity exercise, or 75 minutes of high-intensity exercise (or an equivalent combination of these) every week. Two sessions of resistance exercise (muscle strengthening exercise) are also recommended each week.

Additional health benefits may be possible from higher volumes of exercise (e.g. 300 minutes/week of moderate-intensity exercise and/or incorporating high-intensity into aerobic- or resistance-based sessions). Importantly, an exercise program should be individualised according to past and current fitness level, previous and planned cancer treatment, disease- and treatment-related risk factors, the presence and severity of treatment-related symptoms, and side effects, as well as the interests and preferences of each person. For some people, particularly immediately after surgery or during treatment, the general guidelines may be unrealistic. In these cases, people should be encouraged to follow the general rules outlined in the box below. A comprehensive overview of specific exercise programs can be found in the ACSM's exercise guidelines for cancer survivors (8), and the position stand of ESSA, Optimising cancer outcomes through exercise (9). In the absence of contraindications, cancer survivors should be encouraged to explore exercise options that they enjoy or that may be optimal for achieving individual goals.

GENERAL RULES FOR EXERCISING AFTER A CANCER DIAGNOSIS

- Limit sedentary behaviours, such as sitting or lying down.
- Maintain or gradually return to 'typical' activities of daily living.
- Gradually introduce planned exercise. Aim to build up to the recommended intensity and duration slowly (Goal: 150 minutes of moderate-intensity exercise each week).
- Include both aerobic- and resistance-based exercises.
- Aerobic- and/or resistance-based exercise sessions should preferably be spread out over the week.
- Aerobic-based exercise could include walking, cycling, or swimming and should be performed in sessions of at least 10 minutes duration;
- Muscle strengthening exercises may include free- or machine-weights, body weight, or theraband exercises for the major muscle groups. Allow ≥ 48 hours between sessions.
- Set short and long-term exercise goals, look for barriers to achieving these goals, and explore ways to overcome these barriers.

Some exercise is better than no exercise, and more is generally better than less.

RELATED INFORMATION AND REFERENCES

Exercise is Medicine Australia www.exerciseismedicine.org.au
Exercise Right www.exerciseright.com.au
Find a Physiotherapist www.choose.physio
Find an Accredited Exercise Physiologist www.essa.org.au

Prepared by Dr Sandi Hayes / Dr Rosa Spence

If you have any concerns about the safety of your patient in commencing an exercise program, please consider referral to a Sport and Exercise Physician.

Find a Sport and Exercise Physician www.acsep.org.au/

1. WCRF & AICR. Food, nutrition, and physical activity, and the prevention of cancer: A global perspective.
2. Singh, F., et al., A systematic review of pre-surgical exercise intervention studies with cancer patients. *Surg Oncol*, 2013. 22(2): p. 92-104.
3. Mustian, K.M., et al., 2016. Exercise Recommendations for the Management of Symptom Clusters Resulting From Cancer and Cancer Treatments.
4. Ballard-Barbash, R., et al., 2012. Physical activity, biomarkers, and disease outcomes in cancer survivors: a systematic review.
5. Friedenreich, C.M., et al., 2016. Physical Activity and Survival After Prostate Cancer.
6. Adult Pre-exercise screening tool and User guide. Version 1, 2011. Available (free) online from Exercise and Sports Science Australia: <https://www.essa.org.au/wp-content/uploads/2011/09/Screening-Manual-v1.1-user-guide.pdf>
<https://www.essa.org.au/wp-content/uploads/2011/09/Screen-tool-version-v1.1.pdf>
7. Find an Accredited Exercise Physiologist (Exercise and Sports Science Australia): <https://www.essa.org.au/find-aep/>
8. Schmitz KH, et al. 2010. American College of Sports Medicine Roundtable on exercise guidelines for cancer survivors.
9. Hayes SC, et al. 2009. Australian Association for Exercise and Sport Science position stand: optimising cancer outcomes through exercise.

