



Clinical
Oncology
Society of
Australia

COSA
POSITION
STATEMENT
ON EXERCISE
IN CANCER
CARE

The background of the page features two black and white photographs of people exercising in a gym. The top photo shows two women on a treadmill, smiling and talking. The bottom photo shows a man on a stationary bike, also smiling. The page is decorated with large, overlapping geometric shapes in shades of blue, red, and teal.



COSA CALLS FOR

- Exercise to be embedded as part of standard practice in cancer care and to be viewed as an adjunct therapy that helps counteract the adverse effects of cancer and its treatment
- All members of the multidisciplinary cancer team to promote physical activity and recommend people with cancer adhere to exercise guidelines
- Best practice cancer care to include referral to an accredited exercise physiologist and/or physiotherapist with experience in cancer care



COSA'S POSITION

- All people with cancer should avoid inactivity and return to normal daily activities as soon as possible following diagnosis (i.e. be as physically active as current abilities and conditions allow)
- All people with cancer should progress towards and, once achieved, maintain participation in:
 - at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic exercise (e.g. walking, jogging, cycling, swimming) each week; and
 - two to three resistance exercise (i.e. lifting weights) sessions each week involving moderate- to vigorous-intensity exercises targeting the major muscle groups
- Exercise recommendations should be tailored to the individual's abilities noting that specific exercise programming adaptations may be required for people with cancer based on disease and treatment-related adverse effects, anticipated disease trajectory and their health status
- Accredited exercise physiologists and physiotherapists are the most appropriate health professionals to prescribe and deliver exercise programs to people with cancer
- All health professionals involved in the care of people with cancer have an important role in promoting these recommendations

This document contains general principles only and should not be used as a substitute for individual exercise prescription. Consideration of exercise safety for an individual should be assessed by a health professional with knowledge of cancer, prior to exercise commencement.

Services provided by accredited exercise physiologists and physiotherapists are eligible for subsidies through Medicare and private health insurers. An extensive number of exercise physiologists and physiotherapists are based in the community and can be located using online search functions of the respective accrediting bodies:

Exercise physiologists – www.essa.org.au/find-aep/

Physiotherapists – www.choose.physio/

Effective exercise prescriptions can be delivered across a variety of settings including hospital, cancer treatment centre, community and home-based (i.e. self-managed).

A black and white photograph of a middle-aged man with short hair, smiling while sitting on a stationary bike. He is wearing a cycling jersey with 'WEST AUSTRALIA' and 'MOUNTAIN KING' visible. The image is partially covered by a teal and blue diagonal graphic overlay.

EXERCISE IN CANCER CARE

COSA encourages all health professionals involved in the care of people with cancer to:

- 1** Discuss the role of exercise in cancer recovery
- 2** Recommend their patients adhere to the exercise guidelines
- 3** Refer their patients to a health professional who specialises in the prescription and delivery of exercise (i.e. accredited exercise physiologist or physiotherapist with experience in cancer care)

The term physical activity applies to any movement produced by skeletal muscles that requires the body to exert energy. Exercise is structured physical activity for the purpose of conditioning the body to improve health and fitness. To maximise the therapeutic potential of exercise, well-established principles of training (including specificity, progression, overload, individualisation) should be applied and operationalised using the FITT formula – frequency (number of exercise sessions), intensity (how hard per session), time (session duration) and type (exercise modality) [1, 2].

Clinical research has established exercise as a safe and effective intervention to counteract many of the adverse physical and psychological effects of cancer and its treatment. To date, the strongest evidence exists for improving physical function (including aerobic fitness, muscular strength and functional ability), attenuating cancer-related fatigue, alleviating psychological distress and improving quality of life across multiple general health and cancer-specific domains [3-17]. Emerging evidence highlights that regular exercise before, during and/or following cancer treatment decreases the severity of other adverse side effects and is associated with reduced risk of developing new cancers and comorbid conditions such as cardiovascular disease, diabetes and osteoporosis [3, 4]. Furthermore, epidemiological research suggests that being physically active provides a protective effect against cancer recurrence, cancer-specific mortality and all-cause mortality for some types of cancer (research has predominantly focused on breast, colorectal and prostate cancers) [3, 18-27]. These findings have set the scene for a number of clinical trials, which are currently underway to rigorously evaluate the effects of exercise on cancer survival.

The convincing body of epidemiological and clinical trial evidence on the benefits of exercise has led to the endorsement of exercise guidelines for people with cancer by major organisations internationally [28-33]. These guidelines largely mirror guidelines for the general population (as outlined in the previous section). Despite this advice being widely disseminated by government and non-government cancer organisations, the majority of Australian's with cancer do not meet these recommended targets [34-36]. Reports indicate that approximately 60-70% of people with cancer do not meet aerobic exercise guidelines and it is estimated that approximately 80-90% do not meet resistance exercise guidelines [34-36]. Thus, while many people with cancer have indicated a desire to participate in appropriately designed and supervised exercise programs [37-45], only a minority are engaging in sufficient levels of exercise.

This document outlines the position of COSA with respect to exercise recommendations [28-33], taking into account the strengths and limitations of the epidemiological and clinical trials evidence base.

Key Points:

- Being physically active and exercising regularly is important for the health, function, quality of life and potentially survival of people with cancer
- The majority of people with cancer do not meet exercise recommendations
- People with cancer express a desire to become and stay sufficiently active but need advice and support to do so
- To maximise safety and therapeutic effect, exercise should be prescribed and delivered under the direction of an accredited exercise physiologist or physiotherapist with a focus on transitioning to ongoing self-managed exercise

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COSA gratefully acknowledges the feedback provided throughout the national consultation process.

AUTHORISED BY

This Position Statement was endorsed by a meeting of COSA Council on 18 August 2017 and remains in effect for five years from that date during which time the Position Statement may be amended by action of COSA Council.

ENDORSED BY

Position statements produced by COSA are stand-alone documents, the content of which is not influenced by any other authority. COSA is pleased to have the support of the following endorsing organisations:



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Australasian Lung Cancer Trials Group

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Australia and New Zealand Melanoma Trials Group

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Oncology Group

Australian and New Zealand Urogenital and Prostate
Cancer Trials Group

Beyond Five

Breast Cancer Network Australia

Cancer Nurses Society of Australia

Cooperative Trials Group for Neuro-Oncology

Counterpart

Lung Foundation Australia

Ovarian Cancer Australia

Palliative Care Clinical Studies Collaborative

Primary Care Collaborative Cancer Clinical Trials Group

Prostate Cancer Foundation of Australia

Psycho-oncology Co-operative Research Group

Royal Australasian College of Physicians

Trans Tasman Radiation Oncology Group

GLOSSARY OF EXERCISE TERMINOLOGY

Physical Activity: Any bodily movement produced by the contraction of skeletal muscles that results in a substantial increase in caloric requirements over resting energy expenditure.

Exercise: A type of physical activity consisting of planned, structured, and repetitive bodily movement for the purpose of improving and/or maintaining health and physical fitness.

Aerobic exercise: A form of exercise that predominately stresses the cardiovascular system; any exercise that uses large muscle groups, can be maintained continuously and is rhythmical in nature; examples include walking, jogging, cycling, swimming; also referred to as cardiovascular exercise or endurance exercise.

Resistance exercise: A form of exercise that predominately stresses the musculoskeletal system; any exercise that requires a muscle or a muscle group to work against external resistance; examples include squats, chair rises, chest press, push ups; also referred to as muscle strengthening exercise or weight training.

FITT principle: A method of prescribing exercise that includes specification of the frequency (i.e. number of exercise sessions), intensity (i.e. how hard/difficult the exercise is), time (i.e. duration of exercise) and type (i.e. exercise modality) of exercise to be performed. The exact composition of the FITT principle of exercise prescription should be revised according to the individual response, need, limitation and adaptations to exercise as well as evolution of the goals and objectives of the exercise program.

Exercise dosage: The overall level of exposure to exercise; based on a combination of the volume and intensity of exercise.

Exercise volume: The amount of exercise performed (i.e. how much exercise); based on a combination of the exercise duration and frequency.

Exercise intensity: The level of exertion required when exercising (i.e. how hard/difficult the exercise is); based on the level of physiological stress required to complete the exercise.

Moderate intensity exercise: Exercise stimulus that requires patients to work at a level of exertion equivalent to 40-59% of heart rate reserve; exertion perceived as 'somewhat hard'; e.g. brisk walking, cycling and/or swimming at a somewhat hard pace.

Vigorous intensity exercise: Exercise stimulus that requires patients to work at a level of exertion equivalent to 60-89% of heart rate reserve; exertion perceived as 'hard to very hard'; e.g. running, cycling and/or swimming at a hard pace.

Specificity: A principle of exercise prescription that stipulates physiological adaptations are specific to the body system/s trained with exercise.

Overload: A principle of exercise prescription that stipulates exercise dosage must be increased for continued improvement; i.e. exercise below a minimum threshold does not sufficiently challenge the body to result in physiological adaptation.

Progression: A principle of exercise prescription that stipulates a gradual increase in exercise dosage is required for continued physiological adaptation; i.e. the dosage must increase to maintain overload.

Individualisation: A principle of exercise prescription that stipulates the customised application of exercise towards the physiological status of the patient.

Recovery: A principle of exercise prescription that stipulates time between exercise sessions is required in order to permit the necessary biological resynthesis to replace the required constituents of the body system/s stressed by exercise.

REFERENCES

- Winters-Stone, K.M., S.E. Neil, and K.L. Campbell, *Attention to principles of exercise training: a review of exercise studies for survivors of cancers other than breast*. British Journal of Sports Medicine, 2013.
- Sasso, J.P., et al., *A framework for prescription in exercise-oncology research*. J Cachexia Sarcopenia Muscle, 2015. 6(2): p. 115-24.
- Cormie, P., et al., *Exercise and cancer: systematic review of the impact of exercise on cancer mortality, recurrence and treatment related side effects*. Epidemiologic Reviews, 2016. (in review).
- Courneya, K.S. and C.M. Friedenreich, eds. *Physical Activity and Cancer*. Recent Results in Cancer Research, ed. P.M. Schlag and H.J. Senn. 2011, Springer: London. 387.
- Mishra, S.I., et al., *Exercise interventions on health-related quality of life for people with cancer during active treatment*. Cochrane Database Syst Rev, 2012. 8: p. CD008465.
- Mishra, S.I., et al., *Exercise interventions on health-related quality of life for cancer survivors*. Cochrane Database Syst Rev, 2012. 8: p. CD007566.
- Craft, L.L., et al., *Exercise effects on depressive symptoms in cancer survivors: a systematic review and meta-analysis*. Cancer Epidemiol Biomarkers Prev, 2012. 21(1): p. 3-19.
- Cramp, F. and J. Daniel, *Exercise for the management of cancer-related fatigue in adults*. Cochrane Database Syst Rev, 2010. CD006145(2): p. 1-37.
- Gardner, J.R., P.M. Livingston, and S.F. Fraser, *Effects of exercise on treatment-related adverse effects for patients with prostate cancer receiving androgen-deprivation therapy: a systematic review*. J Clin Oncol, 2014. 32(4): p. 335-46.
- Speck, R.M., et al., *An update of controlled physical activity trials in cancer survivors: a systematic review and meta-analysis*. J Cancer Surviv, 2010. 4(2): p. 87-100.
- Cheema, B.S., et al., *Safety and efficacy of progressive resistance training in breast cancer: a systematic review and meta-analysis*. Breast Cancer Res Treat, 2014. 148(2): p. 249-268.
- Meneses-Echávez, J., E. González-Jiménez, and R. Ramírez-Vélez, *Effects of supervised exercise on cancer-related fatigue in breast cancer survivors: a systematic review and meta-analysis*. BMC Cancer, 2015. 15(1): p. 77.
- Brown, J.C., et al., *Efficacy of exercise interventions in modulating cancer-related fatigue among adult cancer survivors: a meta-analysis*. Cancer Epidemiol Biomarkers Prev, 2011. 20(1): p. 123-33.
- Bourke, L., et al., *Survivorship and Improving Quality of Life in Men with Prostate Cancer*. Eur Urol, 2015.
- Tomlinson, D., et al., *Effect of exercise on cancer-related fatigue: a meta-analysis*. Am J Phys Med Rehabil, 2014. 93(8): p. 675-86.
- Hanson, E.D., et al., *The Independent Effects of Strength Training in Cancer Survivors: a Systematic Review*. Curr Oncol Rep, 2016. 18(5): p. 31.
- Strasser, B., et al., *Impact of Resistance Training in Cancer Survivors: a Meta-analysis*. Med Sci Sports Exerc, 2013. 45(11): p. 2080-2090.
- Des Guetz, G., et al., *Impact of Physical Activity on Cancer-Specific and Overall Survival of Patients with Colorectal Cancer*. Gastroenterol Res Pract, 2013. 2013: p. 1-6.
- Friedenreich, C.M., et al., *Physical Activity and Cancer Outcomes: A Precision Medicine Approach*. Clin Cancer Res, 2016.
- Ibrahim, E.M. and A. Al-Homaidh, *Physical activity and survival after breast cancer diagnosis: meta-analysis of published studies*. Med Oncol, 2010.
- Je, Y., et al., *Association between physical activity and mortality in colorectal cancer: a meta-analysis of prospective cohort studies*. Int J Cancer, 2013. 133(8): p. 1905-13.
- Lahart, I.M., et al., *Physical activity, risk of death and recurrence in breast cancer survivors: A systematic review and meta-analysis of epidemiological studies*. Acta Oncol, 2015. 54(5): p. 635-54.
- Li, T., et al., *The dose-response effect of physical activity on cancer mortality: findings from 71 prospective cohort studies*. Br J Sports Med, 2015.
- Otto, S.J., et al., *Association of change in physical activity and body weight with quality of life and mortality in colorectal cancer: a systematic review and meta-analysis*. Support Care Cancer, 2015. 23(5): p. 1237-50.
- Schmid, D. and M.F. Leitzmann, *Association between physical activity and mortality among breast cancer and colorectal cancer survivors: a systematic review and meta-analysis*. Ann Oncol, 2014. 25(7): p. 1293-311.
- Wu, W., et al., *Pre- and post-diagnosis physical activity is associated with survival benefits of colorectal cancer patients: a systematic review and meta-analysis*. Oncotarget, 2016.
- Zhong, S., et al., *Association between physical activity and mortality in breast cancer: a meta-analysis of cohort studies*. Eur J Epidemiol, 2014. 29(6): p. 391-404.
- Schmitz, K.H., et al., *American College of Sports Medicine roundtable on exercise guidelines for cancer survivors*. Med Sci Sports Exerc, 2010. 42(7): p. 1409-26.
- Rock, C.L., et al., *Nutrition and physical activity guidelines for cancer survivors*. CA Cancer J Clin, 2012. 62(4): p. 242-74.
- National Comprehensive Cancer Network, *NCCN Clinical Practice Guidelines in Oncology - Survivorship*. Vol. 2.2016. 2016: National Comprehensive Cancer Network Inc. 220.
- ASCO Cancer Survivorship Committee, *Providing High Quality Survivorship Care in Practice: An ASCO Guide*. 2014. American Society of Clinical Oncology.
- Campbell, A., C. Stevinson, and H. Crank, *The BASES Expert Statement on Exercise and Cancer Survivorship*. J Sports Sci, 2012. 30(9): p. 949-952.
- Hayes, S.C., et al., *Australian Association for Exercise and Sport Science position stand: optimising cancer outcomes through exercise*. J Sci Med Sport, 2009. 12(4): p. 428-34.
- Eakin, E.G., et al., *Health behaviors of cancer survivors: data from an Australian population-based survey*. Cancer Causes Control, 2007. 18(8): p. 881-94.
- Short, C.E., et al., *Main outcomes of the Move More for Life Trial: a randomised controlled trial examining the effects of tailored-print and targeted-print materials for promoting physical activity among post-treatment breast cancer survivors*. Psychooncology, 2015. 24 (7): p. 771-8.
- Galvao, D.A., et al., *Compliance to exercise-oncology guidelines in prostate cancer survivors and associations with psychological distress, unmet supportive care needs, and quality of life*. Psychooncology, 2015. [Epub ahead of print].
- Blaney, J.M., et al., *Cancer survivors' exercise barriers, facilitators and preferences in the context of fatigue, quality of life and physical activity participation: a questionnaire-survey*. Psychooncology, 2013. 22(1): p. 186-94.
- McGowan, E.L., et al., *Physical activity preferences among a population-based sample of colorectal cancer survivors*. Oncol Nurs Forum, 2013. 40(1): p. 44-52.
- Harrington, J.M., D.C. Schwenke, and D.R. Epstein, *Exercise preferences among men with prostate cancer receiving androgen-deprivation therapy*. Oncol Nurs Forum, 2013. 40(5): p. E358-67.
- Jones, L.W. and K.S. Courneya, *Exercise counseling and programming preferences of cancer survivors*. Cancer Pract, 2002. 10(4): p. 208-15.
- Jones, L.W., et al., *Exercise interest and preferences among patients diagnosed with primary brain cancer*. Support Care Cancer, 2006. 15(1): p. 47-55.
- Karvinen, K.H., et al., *Exercise preferences of endometrial cancer survivors: a population-based study*. Cancer Nurs, 2006. 29(4): p. 259-65.
- Karvinen, K.H., et al., *Exercise programming and counseling preferences in bladder cancer survivors: a population-based study*. J Cancer Surviv, 2007. 1(1): p. 27-34.
- Karvinen, K.H., et al., *Exercise programming and counseling preferences of breast cancer survivors during or after radiation therapy*. Oncol Nurs Forum, 2011. 38(5): p. E326-34.
- Vallance, J., et al., *Rural and Small Town Breast Cancer Survivors' Preferences for Physical Activity*. Int J Behav Med, 2012.



ABOUT COSA

The Clinical Oncology Society of Australia (COSA) is the peak national body representing multidisciplinary health professionals whose work encompasses cancer control and care. COSA members are doctors, nurses, scientists and allied health professionals involved in the clinical care of people with cancer. COSA is affiliated with and provides medical and scientific advice to Cancer Council Australia.

COSA is the only organisation that provides a perspective on cancer control activity in Australia from those who deliver treatment and care services across all disciplines. The benefits of membership include discounted registration to COSA's Annual Scientific Meeting, access to a range of education programs and workshops, Cancer in the News daily email and subscriptions to Cancer Forum and the Asia Pacific Journal of Clinical Oncology. Please visit our website at www.cosa.org.au for more information.

The COSA Exercise and Cancer Group focuses on enhancing supportive care practice and policy with the aim of improving outcomes for patients through affordable, accessible and effective exercise medicine.

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Suggested citation:
Clinical Oncology Society of Australia. COSA Position Statement on Exercise in Cancer Care. April 2018.

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Published by the Clinical Oncology Society of Australia

Photography credit

Exercise Oncology Team
at Australian Catholic
University

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Oncology
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**VERSION 1
APRIL 2018**

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