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*There is probable evidence that weight management and physical activity can improve the quality of life of cancer survivors, reduce the risk of cancer recurrence and extend and increase cancer survival.*

#### Key messages

In Australia the number of cancer survivors has been estimated at more than 267,000 and is increasing as our population ages. Cancer survivors may be at increased risk of other health problems, including heart disease, diabetes and functional impairment, which could be reduced through lifestyle interventions.

On the basis of the available evidence, The Cancer Council Australia supports the adoption of a long-term healthy lifestyle following cancer treatment, to improve quality of life and reduce the risk of cancer recurrence.

The Cancer Council Australia recommends cancer survivors:

- maintain a healthy body weight, with a body mass index between 18.5 and 25
- be physically active – aim for at least 30 minutes of moderate activity daily
- eat more vegetables and fruit – aim for two serves of fruit and five serves of vegetables a day
- limit or avoid alcohol – no more than two standard drinks a day for men and no more than one standard drink a day for women
- handle and prepare food safely.

Most of these recommendations are consistent with evidence-based advice on reducing the risk of cancer and with national dietary recommendations to promote general health. They should be considered in the context of a cancer survivor's individual health and social circumstances.

Such lifestyle interventions are showing the potential to improve the health and wellbeing of cancer survivors, in particular women with breast cancer. Further research is required to determine the efficacy and effectiveness of specific lifestyle interventions designed for breast cancer survivors and survivors of other cancers.

## Background

The role of lifestyle factors in improving survival rates for people with cancer is an emerging area of research. In 2003, the American Cancer Society established an expert committee to review the evidence for the impact of lifestyle factors on quality of life, cancer recurrence and overall survival – see Appendix A(1). This review concluded that there was ‘probable’ evidence (the second highest level on their evidence rating scale) for weight management and physical activity to improve quality of life, reduce the risk of cancer recurrence and extend overall survival for cancer survivors(1).

Recent results from the Women’s Intervention Nutrition Study (WINS) and the Nurses Health Study have strengthened the evidence that lifestyle factors can benefit not only on quality of life, but also overall survival, and decrease the risk of recurrence from breast cancer(2;3).

The purpose of this position statement is to outline the evidence for the benefits for nutrition and physical activity interventions for cancer survivors, and provide a rationale for The Cancer Council NSW’s recommendations for cancer survivors.

### **Cancer survival in Australia**

The number cancer survivors in Australia’s is increasing due to population ageing, growing incidence of some cancers and improvements in early detection and treatment. In Australia, the number of cancer survivors has been estimated at more than 267,000(4).

Cancer survivors may be at increased risk of weight gain, functional impairment, fatigue, other chronic diseases (osteoporosis, cardiovascular disease, diabetes), secondary cancers and death from non-cancer causes, all of which could be reduced by healthy lifestyle interventions.

### **Defining a cancer survivor**

For the purposes of this position statement, a cancer survivor is defined as someone who has completed their active treatment phase and who is not undergoing palliative care. The nutritional and physical activity needs of most people with cancer change during different phases of treatment and post-treatment recovery. An individual survivor’s overall health and social circumstances should be considered before making any lifestyle changes.

## Breast cancer survival and weight management

Due to the focus of research to date, most of the existing evidence-based literature on the relationship between healthy body weight and cancer survival outcomes is centred on breast cancer survivors.

Increased body mass index or body weight has been found to be a significant risk factor for breast cancer recurrence and decreased survival(5). Studies have shown the risk of death from breast cancer to increase by up to five time (30-540%) in heavier women with breast cancer compared with women in the healthy weight range(5).

In 2005, results from the Nurses Health Study showed that large weight gains after breast cancer diagnosis were associated with a 64% higher risk of recurrence, compared with those women who maintained their weight(2). Smaller weight gains were associated with smaller increases in risk(2).

Being overweight or obese has also been associated with recurrence of colorectal cancer(6;7) and an increased risk of cancer death(8).

Results from the WINS study were presented at the 2005 Conference of the American Society of Clinical Oncology (ASCO). WINS is a randomised controlled trial involving 2400 women (aged 48-79 years) with early stage breast cancer. The intervention group received group nutrition counselling to decrease their fat intake. After five years of follow-up, the average fat intake of the control group was 51g fat and 33g for the intervention group (~20 percent energy). The risk of recurrence was decreased by 24% in the intervention group, compared with the control group. Further analysis is required to determine if it was the decrease in fat intake, the change in fatty acid profile, increase in fibre intake or weight loss that was responsible for the benefits.

Results from the Women's Healthy Eating and Living (WHEL) study are expected in 2006. This is a randomised controlled trial of over 3000 women, evaluating the effect of a reduced-fat diet and increased intake of fruits and high-fibre vegetables among both pre- and postmenopausal women with early-stage breast cancer(9). The intervention in the WHEL study is delivered by telephone, whereas the WINS intervention was delivered by group counselling.

## Prostate cancer

There have been some smaller randomised controlled trials examining lifestyle interventions for improving survival from prostate cancer. In a recently published trial, men with early-stage prostate cancer who were undergoing 'watchful waiting' were randomised onto a strict vegan diet that contained only 10% energy from fat, supplemented with soy, fish oil, selenium, and vitamins E and C(10). The intervention also included regular exercise (30 minutes of walking, six days a week), doing yoga or some other type of meditation, and participating in support groups. After a year, men in the diet and exercise intervention group had decreased their PSA levels by 4%, while those in the control group had an increased PSA levels of 6% – enough to just be considered statistically significant. The study concluded that intensive lifestyle changes may restrict the progression of early, low-grade prostate cancer in men. Further studies and longer term follow-up are required(10).

## Dietary factors

Evidence that dietary intake of vegetables, fruit or related nutrients (eg beta carotene, vitamin C) reduces cancer recurrence or extends survival is supportive but not conclusive(5). The effect on risk is likely to be modest.

Epidemiological studies suggest that a diet high in vegetables may improve prognosis after the diagnosis of breast cancer(5). For oral cancers, consuming vegetables, citrus fruit and orange juice has been associated with a better prognosis(11). Fruit and vegetables are recommended for their important role as a low-energy density source of nutrients (vitamins, minerals, phytochemicals and fibre) and their contribution to weight management as well as for their probable cancer protective effect.

## **Alcohol**

No studies have found a significant association between alcohol intake and cancer survival, despite the convincing evidence for alcohol being a risk factor for some types of cancer(1;5).

## **Diet supplements**

Although diet supplement use is very common among cancer survivors, there are few studies into their effect on cancer recurrence and survival.

Foods like vegetables and fruits are complex and contain many different types of nutrients and phytochemicals, which cannot always be replicated in a supplement form. Clinical trials into vitamin supplementation (eg beta-carotene) to prevent cancer in particular high-risk groups have not produced evidence in support of their use(16).

It is still prudent to encourage cancer survivors to obtain the potentially beneficial compounds from food. Nutritional supplements are rarely a replacement for a diet rich in vegetables and fruit and their complex mixture of phytochemicals. A daily multivitamin supplement in amounts equivalent to 100% of the recommended dietary intakes is a good choice for cancer survivors who are unable to eat a healthy diet. The use of vitamin and mineral supplements in higher doses should be assessed and discussed on an individual basis. High doses of dietary supplements may be associated with toxicity.

## **Food safety**

Cancer patients undergoing active treatment are at risk of food borne illness, particularly if they are undergoing immunosuppressive treatment. Cancer survivors may be at increased risk of immunosuppression compared to the general population, and therefore should be careful to avoid foods that may contain unsafe levels of pathogenic micro-organisms.

## **Physical activity**

The benefits of exercise/physical activity for cancer survivors is becoming more apparent, especially in alleviating fatigue(12-14). Proven benefits of exercise for cancer survivors include improved cardiovascular fitness, muscle strength, body composition and self-esteem, and reduced fatigue, anxiety and depression. Such benefits result in overall improvements in several components of quality of life (eg physical, functional and emotional)(13).

One of the first studies to show that physical activity improved breast cancer survival rate and not just quality of life was published in 2005(3). Results from the Nurses Health Study showed that the greatest survival benefit occurred in women who performed moderate activity, such as the equivalent of walking 3 to 5 hours per week at an average pace, compared with those women who were sedentary(3). There was a 26-40 percent improvement in survival outcomes for those women who were more active compared to the least active women(3).

It is currently not known what exercise prescription would be most beneficial for which types of cancer, at which stage of disease or treatment. Information is required on the best type, frequency, duration and intensity of exercise to recommend to cancer survivors(15).

## Cancer Council recommendations

The Cancer Council Australia recommends cancer survivors:

- maintain a healthy body weight with a body mass index between 18.5 and 25
- be physically active – aim for at least 30 minutes of moderate activity daily
- eat more vegetables and fruit – aim for two serves of fruit and five serves of vegetables a day
- limit or avoid alcohol – no more than two standard drinks a day for men and no more than one standard drink a day for women
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Most of these recommendations are consistent with evidence-based advice on reducing the risk of cancer and with national dietary recommendations to promote general health. They should be considered in the context of a cancer survivor's individual health and social circumstances.

### Research needs

The link between healthy lifestyle and cancer survival is an emerging scientific concern, but remains understudied in Australia. As people with cancer are at high risk of other chronic diseases, lifestyle interventions are likely to have significant benefits beyond cancer control. Further randomised control trials are required to assess the efficacy of dietary and/or physical activity interventions and advice for cancer survivors. A better understanding of the enabling factors and barriers to cancer patients following dietary and physical activity advice is also required.

### Further information

Contact The Cancer Council in your state or territory for referral to more detailed lifestyle advice after a cancer diagnosis/treatment or call Cancer Council Helpline on 131 120.

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## References

- (1) Brown JK, Byers T, Doyle C, Coumeya KS, Demark-Wahnefried W, Kushi LH et al. Nutrition and physical activity during and after cancer treatment: an American Cancer Society guide for informed choices. *CA Cancer J Clin* 2003; 53(5):268-291.
- (2) Kroenke CH, Chen WY, Rosner B, Holmes MD. Weight, weight gain, and survival after breast cancer diagnosis. *J Clin Oncol* 2005; 23(7):1370-1378.
- (3) Holmes MD, Chen WY, Feskanich D, Kroenke CH, Colditz GA. Physical activity and survival after breast cancer diagnosis. *JAMA* 2005; 293(20):2479-2486.
- (4) Australian Bureau of Statistics. Cancer in Australia: a snapshot. 2004. Australia, Australian Bureau of Statistics. Ref Type: Report
- (5) Rock CL, Demark-Wahnefried W. Nutrition and survival after the diagnosis of breast cancer: a review of the evidence. *J Clin Oncol* 2002; 20(15):3302-3316.
- (6) Tartter PI, Slater G, Papatestas AE, Aufses AH, Jr. Cholesterol, weight, height, Quetelet's index, and colon cancer recurrence. *J Surg Oncol* 1984; 27(4):232-235.
- (7) Slattery ML, Anderson K, Samowitz W, Edwards SL, Curtin K, Caan B et al. Hormone replacement therapy and improved survival among postmenopausal women diagnosed with colon cancer (USA). *Cancer Causes Control* 1999; 10(5):467-473.
- (8) Calle EE, Rodriguez C, Walker-Thurmond K, Thun MJ. Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. *N Engl J Med* 2003; 348(17):1625-1638.
- (9) Newman VA, Thomson CA, Rock CL, Flatt SW, Kealey S, Bardwell WA et al. Achieving substantial changes in eating behavior among women previously treated for breast cancer--an overview of the intervention. *J Am Diet Assoc* 2005; 105(3):382-391.
- (10) Ornish D, Weidner G, Fair WR, Marlin R, Pettengill EB, Raisin CJ et al. Intensive lifestyle changes may affect the progression of prostate cancer. *J Urol* 2005; 174(3):1065-1069.
- (11) Crosignani P, Russo A, Tagliabue G, Berrino F. Tobacco and diet as determinants of survival in male laryngeal cancer patients. *Int J Cancer* 1996; 65(3):308-313.
- (12) Ahlberg K, Ekman T, Gaston-Johansson F, Mock V. Assessment and management of cancer-related fatigue in adults. *Lancet* 2003; 362(9384):640-650.

- (13) Courneya KS, Friedenreich CM. Physical exercise and quality of life following cancer diagnosis: a literature review. *Ann Behav Med* 1999; 21(2):171-179.
- (14) Galvao DA, Newton RU. Review of exercise intervention studies in cancer patients. *J Clin Oncol* 2005; 23(4):899-909.
- (15) Humpel N, Iverson DC. Review and critique of the quality of exercise recommendations for cancer patients and survivors. *Support Care Cancer* 2005; 13(7):493-502.
- (16) Gescher AJ, Sharma RA, Steward WP. Cancer chemoprevention by dietary constituents: a tale of failure and promise. *Lancet Oncol* 2001; 2(6):371-379.

## Appendix A – American Cancer Society Grading of Nutritional and Physical Activity Evidence for Benefit vs. Harm

A1	=	Convincing evidence of benefit
A2	=	Probable evidence of benefit
A3	=	Possible evidence of benefit
B	=	Insufficient evidence to conclude benefit or risk
C	=	Evidence of lack of benefit
D	=	Evidence of harm

Cancer Site	Factor	Cancer Recurrence	Overall Survival	Quality of Life
<b>Breast Cancer</b>	Aiming for a healthy weight - during treatment	A3	B	B
	Aiming for a healthy weight - after treatment	A2	A2	A2
	Increasing physical activity - during treatment	B	B	A2
	Increasing physical activity - after treatment	A3	A3	A2
	Limiting total fat intake	B	B	B
	Limiting saturated fat intake	B	A2	A3
	Increasing F&V	A3	A3	B
	Increasing fibre	B	B	B
	Increasing omega 3 fatty acids	B	B	B
	Increasing soy	B	B	B
<b>Colorectal Cancer</b>	Aiming for a healthy weight - during treatment	A3	B	B
	Aiming for a healthy weight - after treatment	A3	A2	A2
	Increasing physical activity - during treatment	B	A3	A2
	Increasing physical activity - after treatment	A3	A2	A2
	Limiting total fat intake	B	B	B
	Limiting saturated fat intake	A3	A3	B
	Increasing F&V	A3	A3	B
	Increasing fibre	B	A3	B
	Increasing omega 3 fatty acids	B	B	B
	Increasing soy	B	B	B

<b>Prostate Cancer</b>	Aiming for a healthy weight - during treatment	B	B	B
	Aiming for a healthy weight - after treatment	B	A2	A3
	Increasing physical activity - during treatment	B	B	A3
	Increasing physical activity - after treatment	B	A2	A2
	Limiting total fat intake	B	B	B
	Limiting saturated fat intake	A3	A2	B
	Increasing F&V	A3	A2	A3
	Increasing fibre	B	B	B
	Increasing omega 3 fatty acids	B	B	B
	Increasing soy	B	B	B
<b>Lung Cancer</b>	Aiming for a healthy weight - during treatment	A3	A2	A2
	Aiming for a healthy weight - after treatment	A3	A2	A3
	Increasing physical activity - during treatment	B	B	B
	Increasing physical activity - after treatment	B	A2	A3
	Limiting total fat intake	B	B	B
	Limiting saturated fat intake	B	A3	B
	Increasing F&V	A2	A3	B
	Increasing fibre	B	B	B
	Increasing omega 3 fatty acids	B	A3	B
	Increasing soy	B	B	B