

TOPICAL AND CONTEMPORARY ISSUES IN EDUCATION, HUMAN KINETICS AND HEALTH EDUCATION

A MULTIDISPLINARY BOOK OF READING



Edited by:

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Of

**THE DEPARTMENT OF HUMAN KINETICS
AND HEALTH EDUCATION,
EKITI STATE UNIVERSITY, ADO-EKITI**

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PLACE OF EXERCISE IN THE PREVENTION OF CANCER

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Abstract

The evidence is growing to support the role of physical activity during and after cancer treatment. Keeping active throughout the cancer journey can preserve or improve physical function and psychological well-being, reducing the negative impact of some cancer-related side effects. Regular physical activity also has a potential role in reducing risk of cancer recurrence and increasing survival. Promoting physical activity as part of cancer care is a cost-effective intervention for the patients. There is clear evidence that physical activity is a safe and effective means to prevent cancer as well as mitigate disease and treatment-related side effects in both patients and survivors. Therefore the purpose of this study is to emphasize on the benefits of physical activity on cancer patients and survivors to reduce an increased risk for recurrence and/or onset of additional co-morbidities, and premature mortality.

Introduction

Cancer is a term used by both laymen and medical profession to refer to malignant neoplasms or tumours. The rate at which malignant neoplasms grow and their liability to form metastatic tumours varies from one type of neoplasm to another, and also in different individual with the same neoplasm. There are four separate nutritional problems related to cancer. First diet may influence the incidence of tumours in a community; secondly diet may influence the rate of growth of tumours thirdly malignancy almost always leads to undernutrition; and fourthly many patients need special dietary therapy.

There are over 100 different known cancers that affect humans (Phillips, Alfano, Perna and Glasgow, 2014). Schmitz, Courneya, Matthews, Demark-Wahnefried, Galvao and Pinto (2010) stated that tobacco use is the cause of about 22% of cancer deaths; another 10% is due to obesity, a poor diet, lack of physical activity, and consumption of alcohol. Other factors include certain infections, exposure to ionizing radiation, and environmental pollutants. In the developing world nearly 20% of cancers are due to infections such as hepatitis B, hepatitis C, and human papilloma virus (HPV). These factors act, at least partly, by changing the genes of a cell, typically many such genetic changes are required before cancer develops; and also approximately 5–10% of cancers are due to genetic defects inherited from a person's parents. Cancer can be detected by certain signs and symptoms or screening tests. It is then typically further investigated by medical imaging and confirmed by biopsy (Murphy and Girot, 2012)

There is clear evidence that physical activity is a safe and effective means to prevent cancer as well as mitigate disease and treatment-related side effects in both patients and survivors. With many cancer patients and survivors reliant on advice from physicians and other health professionals, it is essential that

health care providers, patients and survivors are aware of the physical and psychosocial benefits of physical activity. Unfortunately, empirically-based physical activity recommendations are often not communicated to either health care providers or cancer patients/survivors. In a report published by the U.S. Department of Health and Human Services, it was noted that only one in three cancer patients were being advised to engage in physical activity (Jones, Courneya, Fairey and Mackey, 2004).

Therefore the purpose of this study is to emphasize on the benefits of physical activity on cancer patients and survivors to reduce an increased risk for recurrence and/or onset of additional comorbidities, and premature mortality.

Physical Activity Benefits

Lack of activity destroys the good condition of every human being while in movement and methodical physical exercises save it and preserve it.

In the middle of last century exercise was not recognize as an important part of cancer treatment the prevailing motion at the time was that cancer patient undergoing cytotoxic treatment should avoid exertion. Many cancer patients with the chronic disease can have an energy zapping effect life, causing lowered muscular strength and functional capacity to perform everyday activities, an exercise programme can be a helpful way for cancer patients both before during and after treatment to regain fitness and decrease anxiety, such exercise modalities range from climbing a flight, or two of stairs, stretching, jogging, walking stationary cycling, lifting and aerobic exercise with the need for orderly assessment of exercise modalities.

Physical activity intersects with oncology in both the pre-diagnosis and survivorship settings, physical activity play a significant role in the prevention of many cancer. Physical activity

decrease treatment side effect speeding recovery after a cancer is diagnosis and enhancing survival which also decrease cancer risk. A study carried out by population wide universe assessment indicates a 25% reduction in the risk of breast cancer among physically active woman compared with those who are least active. The association also established the protective role exercise plays in decreasing the risk of many other cancer including lung endometrial, colon and possibly prostate cancer (Jones, Courneya, Fairey and Mackey, 2004).

Aerobic exercise well not only improved functional capacity and body composition but will be feasible, safe and beneficial high – intensity activity provide more benefit than light activity. Exercise decrease symptom burden extend to elderly patients who exercise and bring about less fatigue after completion of treatment, consistently exercise increased cardio respiratory fitness and quality of life. In using exercise in prevention and treatments of cancer physicians still have to guide when deciding how to prescribe exercise for a particular patient with optimal timing of exercise in relation to prevention and treatment is Important.

Prevention

A substantial body of evidence has demonstrated a convincing link between physical inactivity and cancer risk. World Health Organisation (2014) has reported that physical inactivity has been linked to a greater risk of colon, breast, endometrial, prostate, gastric, kidney, bladder; esophageal, lung, and ovarian cancer. Physical activity is also recognized as a way to maintain a healthy weight and prevent overweight/obesity. By maintaining a healthy weight, individuals reduce their risk of disease onset and other co morbid complications (Marques and Jamnik, 2014).

Pre-Treatment

Physical activity during the pre-treatment phase (e.g., timeline between cancer diagnosis and start of clinical treatment/intervention), is relatively new in oncology. As a result, there is limited data supporting its overall effect with post-treatment outcomes. However, preliminary evidence suggests that pre-treatment physical activity not only prepares the body for the physical and psychological stressors of treatment, it also provides a strong foundation, enabling the cancer patient to recover more quickly. Friedenreich, Neilson, Lynch (2010) stated that pre-treatment physical activity programs are also a means to maintain functional fitness (musculoskeletal, cardiopulmonary) and psychological stability. This was in collaboration with the view of Singh, Varayil, Devanna, Murad and Iyer (2014) that encouraging cancer patients to engage in physical activity pre-treatment may not only reduce the severity of the anticipated treatment-related impairments, but it may also enable patients to return to their highest level of function more quickly.

During Treatment

Whether on active treatment or between treatments, the American College of Sports Medicine strongly advises that some activity is better than no activity (ACSM, 2014). Furthermore, the Canadian Cancer Society and the American College of Sports Medicine endorse physical activity as a means to maintain or improve physical and psychological well-being while one is actively undergoing cancer treatment. By including physical activity into the overall treatment plan, cancer patients and survivors are better able to manage disease and treatment-related side-effects as described in Table 1.

Survivorship

It is widely accepted that a cancer diagnosis and its therapies (chemotherapy, radiation, surgery, and hormonal agents) can lead to a variety of “late effects” Leach, Weaver, Aziz (2014). For example, cancer survivors may face many late or long-term effects such as cardio-toxicity, peripheral neuropathy, bone loss, weight gain, reduced muscle strength, and cognitive impairments (Bourke, Homer, Thaha, Steed, Rosario, Robb, Saxton, Taylor, 2014). Because each individual is unique, and therapies vary according to type and stage of cancer, physical activity interventions may need to be adapted to fit individual needs. Murphy, Girot (2012) reported that cancer survivors, who are just beginning or who are re-engaging in physical activity programs, are encouraged to start slowly and progress gradually.

Supportive/Palliative Care

Continuing to encourage cancer patients to engage in physical activity once their disease has progressed to a palliative stage is equally important. Patients with advanced disease also reap physical and psychosocial benefits from a physical activity intervention. Friedenreich and Orenstein (2002) Palliative cancer patients often have high levels of disease and treatment-related symptoms such as pain, fatigue, nausea, shortness of breath, depression, anxiety, and stress. Physical activity has been found to mitigate/manage some of these physical and psychosocial symptoms. .

Singh et al. (2014) confirmed that research also indicates that patients with advanced cancer who engage in physical activity have lower levels of fatigue and a greater sense of invigoration and wellness, and are able to maintain their functional fitness for a longer period of time, despite chronic physical deterioration. Suitable activities for those with advanced cancer include:

walking, cycling, swimming, and resistance training as they are low impact, accessible, low cost, and do not result in weight loss.

Considerations before starting a Physical Activity Program

The level of physical activity will depend on the type and stage of cancer, the patient's energy level, and treatment received. The insert enclosed on The National Comprehensive Cancer Network's (NCCN) physical activity Survivorship Guidelines outlines a preliminary physical activity assessment, risk assessment, and recommendations for implementation (Behrens & Leitzmann, 2013). It is important to note that some patients may exhibit contraindications to physical activity such as bone metastasis, peripheral neuropathy, suppressed immune function, or severe lymphedema. Singh, Devanna, Edakkanambeth, Murad and Iyer (2014) that more detailed list of various conditions that would contraindicate physical activity is included in the NCCN insert, although contraindications exist, research indicates that physical activity is safe for most cancer patients/survivors with the appropriate precautions and activity modifications.

The American College of Sports Medicine (2014), in collaboration with international and national researchers, has developed physical activity guidelines for cancer patients and survivors. A brief outline of these guidelines is provided below. The American College of Sports Medicine also provides cancer survivor-specific guidelines for breast, prostate, colon, hematologic, and gynecologic cancers.

The American College of Sports Medicine Physical Activity and Cancer Survivorship Guidelines recommend:

- Engaging in regular physical activity;
- Avoiding inactivity and returning to normal daily activities as soon as possible following diagnosis;
- Aiming to exercise at least 150 minutes per week; and

- Including strength-training exercises at least two days per week.

Table 2 provides a summary of the evidence for various activities that can be performed, and provides guidance on intensity, frequency, and types of activities for cancer prevention and management.

Table 2: Physical activity and cancer recommendations across disease trajectory

| Place on Continuum Prevention | Type | Intensity | Frequency | Time |
|-------------------------------|--|--|---|---|
| | Aerobic Walking Cycling Swimming Calisthenic Jogging | Moderate- Vigorous | Bouts of 10 minutes or more. 2 times per week Rest muscles at least one day between sessions | 150 minutes per week. Ensure 1-2 minute rest between each set |
| Pre-Treatment | Aerobic Resistance Flexibility | Maintain | 2 times per week | For a duration that suits the unique needs of the individual |
| During Treatment | Aerobic Resistance Flexibility Gentle-stretching | Maintain | As often as able | For a duration that suits the unique needs of the individual |
| Survivorship | Aerobic Walking Cycling Swimming Calisthenics Jogging. Flexibility Stretching Range of motion activities | Target all muscle groups Focus on areas that may have been impacted by treatment with steroids, radiation, or surgery | Daily | Hold each stretch for 30 seconds and repeat on opposite side |

Source: World Cancer Research Fund (2007)

The Role of Primary Care and Other Health Professionals

Cancer patients and survivors are more likely to participate in and adhere to a physical activity program that is recommended

by their family physician or other health care provider. World Cancer Research Fund (2007) stated despite low levels of physical activity, cancer patients and survivors do report an interest and willingness in participating in physical activity across all stages of the disease trajectory. Friedenreich, Neilson and Lynch (2010) in Nova Scotia specifically, cancer survivors have expressed unmet informational needs related to exercise and physical activity, cancer patients and survivors often struggle in understanding which activities are safe, at what intensity they can participate, if/where physician support is available, and how to access information about appropriate programming.

By promoting proactive physical activity, family physicians and other health care providers can deliver a more holistic approach to care that will provide peace of mind for patients and survivors to safely engage in physical activity and continue to participate in community life. As a health care provider, you can have a positive impact on patients' and survivors' willingness to engage in physical activity. Available research shows that a cancer diagnosis can act as a learning moment that typically encourages patients and survivors to change unhealthy lifestyle habits. Thus, it is important to encourage inactive patients to start to engage in physical activity, and continue to assist patients to reach their physical activity goals. There is also value in routinely reminding cancer patients/survivors of the benefits of regular physical activity to enhance participation and adherence.

Conclusion

Physical activity is a safe and proactive way to prevent and manage disease- and treatment-related side-effects across the disease trajectory. Patients and survivors, whether on or off treatment or receiving curative or non-curative care, report an interest in and willingness to participate in a physical activity program. Family physicians and other health care providers who

promote the benefits of physical activity to their patients/survivors will contribute to the patient's overall wellness and quality of life.

Patients who engage in regular physical activity:

- Have a decreased chance of recurrence or onset of co-morbidities;
- Benefit both physically and psychologically;
- Can reduce or mitigate their disease- and treatment-related side-effects; and
- Often experience an enhanced quality of life.

Recommendations

1. Creates a broad awareness that exercise is indeed, medicine.
2. Make "level of physical activity" a standard vital sign question at each patient visit.
3. Help physicians and other health care providers become consistently effective in counseling and referring patient as to their physical activity needs.
4. Leads to policy changes in public and private sectors that support physical activity counseling and referrals in cynical setting.
5. Produces an expectation among the public and patients that their health care providers should and will ask about and prescribe exercise.
6. Appropriately encourages physicians and other health care providers to be physically active themselves.

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