

ACTIVIDAD FISICA Y CÁNCER SEPTIEMBRE 2017

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Benefits of home-based multidisciplinary exercise and supportive care in inoperable non-small cell lung cancer - protocol for a phase II randomised controlled trial.

Edbrooke L1, Aranda S2,3, Granger CL4,5,6, McDonald CF5,7, Krishnasamy M3,8, Mileshkin L9, Irving L10, Braat S11, Clark RA12, Gordon I13, Denehy L4,5.

Author information

Abstract

BACKGROUND:

Lung cancer is one of the most commonly diagnosed cancers, and is a leading cause of cancer mortality world-wide. Due to lack of early specific symptoms, the majority of patients present with advanced, inoperable disease and five-year relative survival across all stages of non-small cell lung cancer (NSCLC) is 14%. People with lung cancer also report higher levels of symptom distress than those with other forms of cancer. Several benefits for survival and patient reported outcomes are reported from physical activity and exercise in other tumour groups. We report the protocol for a study investigating the benefits of exercise, behaviour change and symptom self-management for patients with recently diagnosed, inoperable, NSCLC.

METHODS:

This multi-site, parallel-group, assessor-blinded randomised controlled trial, powered for superiority, aims to assess functional and patient-reported outcomes of a multi-disciplinary, home-based exercise and supportive care program for people commencing treatment. Ninety-two participants are being recruited from three tertiary-care hospitals in Melbourne, Australia. Following baseline testing, participants are randomised using concealed allocation, to receive either: a) 8 weeks of home-based exercise (comprising an individualised endurance and resistance exercise program and behaviour change coaching) and nurse-delivered symptom self-management intervention or b) usual care. The primary outcome is the between-group difference in the change in functional exercise capacity (six-minute walk distance) from baseline to post-program assessment. Secondary outcomes include: objective and self-reported physical activity levels, physical activity self-efficacy, behavioural regulation of motivation to exercise and resilience, muscle strength (quadriceps and grip), health-related quality of life, anxiety and depression and symptom interference.

DISCUSSION:

There is a lack of evidence regarding the benefit of exercise intervention for people with NSCLC, particularly in those with inoperable disease receiving treatment. This trial will contribute to evidence currently being generated in national and international trials by implementing and evaluating a home-based program including three components not yet combined in previous research, for people with inoperable NSCLC receiving active treatment and involving longer-term follow-up of outcomes. This trial is ongoing and currently recruiting.

TRIAL REGISTRATION:

This trial was prospectively registered on the Australian New Zealand Clinical Trials Registry (ACTRN12614001268639 : (4/12/14).

KEYWORDS:

Home-based exercise; Non-small cell lung cancer; Physical function; Supportive care; Symptom control

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Eur J Cancer Care (Engl). 2017 Sep 27. doi: 10.1111/ecc.12779. [Epub ahead of print]
Lessons learnt from a process evaluation of an exercise intervention in patients treated with autologous stem cell transplantation.

Persoon S1, Chinapaw MJM2, Buffart LM3,4, Brug J3,5, Kersten MJ6, Nollet F1.

Author information

Abstract

This paper describes the process evaluation of an 18-week supervised exercise programme in 50 patients treated with high-dose chemotherapy followed by autologous stem cell transplantation. The intervention included 30 exercise sessions with six resistance exercises and interval training. We evaluated the context, dose delivered and received, and patients' and physiotherapists' satisfaction with the intervention. Ninety-two per cent of the patients trained within 15 km of their home address, with an average session attendance of 86%. Most patients trained at the prescribed intensity for four of the six resistance exercises, but the dose delivered and received of the two remaining resistance exercises and interval training could not be determined. Both patients and physiotherapists highly appreciated the programme (score of 8.3 and 7.9 out of 10 respectively). This process evaluation provided valuable lessons for future trials: (1) It is possible to deliver supervised exercise training to this patient group in local physiotherapy practices; (2) to determine dose received all intervention components should be standardised; and (3) to optimise data collection, all study materials should be tested more extensively prior to the start of the intervention.

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KEYWORDS:

autologous stem cell transplantation; exercise programme; haematologic malignancies; process evaluation

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Pearls of optimizing nutrition and physical performance of older adults undergoing cancer therapy.

Vigano A1, Kasvis P2, Di Tomasso J2, Gillis C3, Kilgour R4, Carli F5.

Author information

Abstract

As the global population continues to age, the prevalence of cancer is increasing, with more than half of new cancer diagnoses occurring in those aged 65 years and older. As a result of improved oncological care, a greater number of older patients undergo treatment, either chemoradiotherapy or surgery or both. The older oncology patient is not part of a homogenous group; chronological age poorly describes the health status of an individual. Comprehensive geriatric assessment (CGA) identifies domains, assessed by a multidisciplinary team, that should be considered to guide appropriate oncological treatment decisions. This paper will focus on two aspects of the CGA: the assessment of nutrition and functional status of the older patient with cancer. Optimization of both diet and physical activity may help patients improve their tolerance to oncological treatments and health-related quality of life (HRQOL). Beginning with definitions of frailty, sarcopenia, cachexia, and malnutrition, this paper will suggest standardized screening, diagnostic and interventional procedures to identify and treat these conditions in the older oncology patient.

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KEYWORDS:

Cachexia; Cancer; Elderly; Exercise; Frailty; Malnutrition; Performance; Prehabilitation; Sarcopenia; Screening

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[Epub ahead of print]

Practical approaches to managing cancer patients with weight loss.

Del Fabbro E1, Orr TA, Stella SM.

Author information**Abstract****PURPOSE OF REVIEW:**

Poor appetite and weight loss are a source of family conflict, psychological distress, and associated with poor tolerance to chemotherapy, impaired quality of life, and decreased survival. Despite clinicians' concern about the effect of cachexia on their patients, few oncological professional organizations provide guidelines for the treatment of cancer-related weight loss.

RECENT FINDINGS:

Recent publications indicate there is an unmet need for addressing cachexia in patients with cancer. Studies also reveal that patients are often consuming inadequate calories and protein. Inadequate oral intake may be mitigated by a multimodal interdisciplinary approach that uses pharmacological and nonpharmacological measures such as exercise and counseling. Other positive clinical outcomes include decreased symptom burden, improved quality of life, and enhanced physical performance.

SUMMARY:

Experience from specialist cachexia clinics and published literature indicates that simple assessments and interventions can be applied more broadly in clinical practice and that the interdisciplinary multimodal approach is important for achieving successful outcomes. The positive influence of this approach on clinical outcomes also has to be considered in clinical trial design.

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Br J Sports Med. 2017 Sep 27. pii: bjsports-2017-097891. doi: 10.1136/bjsports-2017-097891. [Epub ahead of print]

Which exercise prescriptions improve quality of life and physical function in patients with cancer during and following treatment? A systematic review and meta-analysis of randomised controlled trials.

Sweegers MG1,2, Altenburg TM3, Chinapaw MJ3, Kalter J1,2, Verdonck-de Leeuw IM2,4,5, Courneya KS6, Newton RU7, Aaronson NK8, Jacobsen PB9, Brug J1,10, Buffart LM1,2,7,11.

Author information**Abstract****OBJECTIVE:**

Certain exercise prescriptions for patients with cancer may improve self-reported quality of life (QoL) and self-reported physical function (PF). We investigated the effects of exercise on QoL and PF in patients with cancer and studied differences in effects between different intervention-related and exercise-related characteristics.

DESIGN:

We searched four electronic databases to identify randomised controlled trials investigating exercise effects on QoL and PF in patients with cancer. Pooled effects (Hedges' g) were calculated using Comprehensive Meta-Analysis software. Subgroup

analyses were conducted based on intervention dimensions, including timing, duration and delivery mode, and exercise dimensions, including frequency, intensity, type and time (FITT factors).

RESULTS:

We included 74 exercise arms. Patients who were randomised to exercise interventions had significantly improved QoL ($g=0.15$, 95% CI (0.10 to 0.20), $n=67$ exercise arms) and PF ($g=0.21$, 95% CI (0.15 to 0.27), $n=59$ exercise arms) compared with patients in control groups. We found a significant between-group difference for exercise delivery mode, with significant beneficial effects for supervised exercise interventions ($g=0.20$, 95% CI (0.14 to 0.26) for QoL and $g=0.27$, 95% CI (0.20 to 0.33) for PF), but not for unsupervised interventions ($g=0.04$, 95% CI (-0.06 to 0.13) for QoL and $g=0.09$, 95% CI (-0.01 to 0.19) for PF). No statistically significant differences in intervention effects were found for variations in intervention timing, duration or exercise FITT factors. Unsupervised exercise with higher weekly energy expenditure was more effective than unsupervised exercise with lower energy expenditure ($z=2.34$, $p=0.02$).

CONCLUSIONS:

Exercise interventions, especially when supervised, have statistically significant and small clinical benefit on self-reported QoL and PF in patients with cancer.

Unsupervised exercise intervention effects on PF were larger when prescribed at a higher weekly energy expenditure.

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KEYWORDS:

exercise; meta-analysis; neoplasm; physical activity; quality of life

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Contemp Oncol (Pozn). 2017;21(2):131-135. doi: 10.5114/wo.2017.68621. Epub 2017 Jun 30.

The problem of fatigue in patients suffering from neoplastic disease.

Kolak A1, Kamińska M1, Wysokińska E1, Surdyka D1, Kieszko D1, Pakieła M2, Burdan F1.

Author information

Abstract

Modern therapeutic management of patients with cancer is associated with many adverse side effects, including fatigue defined as weariness, burnout, lassitude, malaise, apathy, impatience, and/or inability to perform daily activities. It occurs frequently before the diagnosis of cancer and may persist for a long time after the end of cancer therapy. It is a common problem that occurs regardless of the type of cancer and applied therapeutic procedure. The appearance of this symptom significantly affects the quality of life of patients and often reduces the effectiveness of implemented treatment. The symptom of fatigue occurs among approximately 80% of patients treated with chemotherapy and/or radiotherapy, as well as among more than 75% of patients with metastatic disease. Causes of fatigue include metabolic and immune system disorders as well as increased level of tumour necrosis factor α (TNF- α). Recent studies also indicate a significant contribution of other cytokines, especially pro-inflammatory ones, i.e. interleukin-1 (IL-1), interleukin-6 (IL-6), soluble tumour necrosis factor receptor type II (sTNF type II) and C-reactive protein (CRP). A patient reporting fatigue should be properly diagnosed and thoroughly interviewed by doctors. Patients are mostly treated non-pharmacologically (by means of physical exercise and

psychotherapy) and pharmacologically (by applying methylphenidate and methylprednisolone). What is also extremely important is proper education of the patient and their closest family/friends on the symptoms, which significantly reduces anxiety and stress. On the other hand therapeutic management hinders the subjectivity of feeling and lack of standardised scales to rate symptoms.

KEYWORDS:

CRF; cancer-related fatigue; comorbid condition; mechanism causing CRF; treatment
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Clin J Oncol Nurs. 2017 Oct 1;21(5):618-626. doi: 10.1188/17.CJON.618-626.

Energy Through Motion: An Activity Intervention for Cancer-Related Fatigue in an Ambulatory Infusion Center

Abbott L1, Hooke MC2.

Author information

Abstract

BACKGROUND:

Cancer-related fatigue (CRF) occurs in most people with cancer undergoing chemotherapy. Physical activity (PA) is safe and effective in reducing CRF in people with cancer.

OBJECTIVES:

This project involved the implementation and evaluation of a three-month PA program to maintain or improve CRF and quality of life.

METHODS:

Activity trackers and resistance bands were provided to participants. Verbal instruction, printed material, activity videos, and text messages were used in this program. Participants completed a fatigue assessment; self-reported PA measure; and measure of attitudes, beliefs, and knowledge about sustaining regular PA pre- and postimplementation.

FINDINGS:

51 patients enrolled in the study, and 39 completed the program. Participants' fatigue did not worsen significantly during the three months, and self-reported activity levels increased, but not significantly. The activity tracker, text messages, and personal connection with nursing staff were reported to be helpful.

KEYWORDS:

adherence; behavior; cancer fatigue; exercise; physical activity
PMID: 28945709 DOI: [10.1188/17.CJON.618-626](#)

Eur J Surg Oncol. 2017 Sep 7. pii: S0748-7983(17)30651-0. doi: 10.1016/j.ejso.2017.08.012. [Epub ahead of print]

The association between performance parameters of physical fitness and postoperative outcomes in patients undergoing colorectal surgery: An evaluation of care data.

Heldens AFJM1, Bongers BC2, Lenssen AF3, Stassen LPS4, Buhre WF5, van Meeteren NLU6.

Author information

Abstract

BACKGROUND:

Preoperative cardiorespiratory fitness, as measured by cardiopulmonary testing or estimated using the less sophisticated incremental shuttle walk test, timed up-and-go test or stair climb test is known to be associated with postoperative outcome. This study aimed to evaluate whether parameters of physical fitness are associated with postoperative outcome in patients with colorectal cancer scheduled for elective resection.

PATIENTS AND METHODS:

Perioperative data of patients who underwent colorectal resection at Maastricht University Medical Center were retrospectively analyzed. Preoperative variables (e.g., age, body mass index, comorbidities, physical fitness, tumour characteristics, neoadjuvant treatment, American Society of Anesthesiologists score, level of perceived fatigue and nutritional status) were compared with postoperative outcomes.

RESULTS:

Out of 80 consecutive cases, 75 (93.8%) were available for analysis (57.3% male, median \pm interquartile range age 69.2 \pm 11.7 years). A higher Charlson comorbidity index (odds ratio (OR) of 1.604, 95% confidence interval (CI) 1.120-2.296), worse functional exercise capacity (in meters, OR of 0.995, 95% CI 0.991-1.000), a lower physical activity level (in min/day, OR of 0.994, 95% CI 0.988-1.000), and a higher level of perceived fatigue (OR of 1.047, 95% CI 1.016-1.078), were associated with a slower time to recovery of physical functioning. A better functional exercise capacity was associated with a lower OR (OR of 0.995, 95% CI 0.991-1.000) for non-surgical complications.

CONCLUSION:

There is an association between preoperative parameters and postoperative outcomes in patients with colorectal cancer scheduled for resection. Patients benefit from an optimal preoperative physical fitness level. Specific interventions can target this physical fitness level.

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KEYWORDS:

Colorectal cancer; Colorectal resection; Exercise testing; Physical fitness; Risk stratification

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PM R. 2017 Sep;9(9S2):S385-S397. doi: [10.1016/j.pmrj.2017.05.011](https://doi.org/10.1016/j.pmrj.2017.05.011).

Improving Functional Mobility in Children and Adolescents Undergoing Treatment for Non-Central Nervous System Cancers: A Systematic Review.

Wacker K1, Tanner L2, Ovans J3, Mason J4, Gilchrist L5.

Author information**Abstract****BACKGROUND:**

Childhood cancers and subsequent treatments can leave survivors with impairments that may lead to decreased physical performance. Rehabilitation can be an important component of promoting improved physical function in children and adolescents undergoing treatment for cancer.

OBJECTIVE:

To review and synthesize evidence for nonsurgical, nonpharmacologic, rehabilitation interventions for children and adolescents undergoing treatment for non-central nervous system cancers aimed at improving their physical impairments and functional mobility limitations.

DESIGN:

A systematic review of the literature, from January 1996 to October 2016, on interventions for improving functional mobility and physical impairments in pediatric patients on treatment or recently off treatment for a non-central nervous system cancer.

SETTING:

Not applicable.

METHODS:

Included articles were reviewed for quality. Evidence for each impairment area was analyzed.

MAIN OUTCOME MEASURES:

Not applicable.

RESULTS:

A total of 22 articles met our inclusion criteria. Only 7 randomized controlled trials were identified, and most studies had few subjects. More than one half of the existing clinical trials were on exercise or programs to increase strength and physical activity, with some evidence to support improvements in strength but mixed evidence for improving physical activity. Relatively few assessed other interventions used in rehabilitation such as orthotics, neuromuscular re-education, and functional training.

CONCLUSION:

The body of literature describing nonsurgical and nonpharmacological interventions for decreased functional mobility and its related impairments is only beginning to emerge as few studies of high quality were found in the literature. Rehabilitation researchers and clinicians need to collaborate to produce the multi-site trials that will be needed to best serve these children.

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PM R. 2017 Sep;9(9S2):S347-S384. doi: [10.1016/j.pmrj.2017.07.074](https://doi.org/10.1016/j.pmrj.2017.07.074).

A Systematic Review of Exercise Systematic Reviews in the Cancer Literature (2005-2017).

Stout NL¹, Baima J², Swisher AK³, Winters-Stone KM⁴, Welsh J⁵.

Author information**Abstract****BACKGROUND:**

Evidence supports the benefits of exercise for patients with cancer; however, specific guidance for clinical decision making regarding exercise timing, frequency, duration, and intensity is lacking. Efforts are needed to optimize clinical recommendations for exercise in the cancer population.

OBJECTIVES:

To aggregate information regarding the benefit of exercise through a systematic review of existing systematic reviews in the cancer exercise literature.

DATA SOURCES:

PubMed, CINAHL Plus, Scopus, Web of Science, and EMBASE.

STUDY ELIGIBILITY CRITERIA:

Systematic reviews and meta-analyses of the impact of movement-based exercise on the adult cancer population.

METHODS:

Two author teams reviewed 302 abstracts for inclusion with 93 selected for full-text review. A total of 53 studies were analyzed. A Measurement Tool to Assess Systematic Reviews (AMSTAR) was used as a quality measure of the reviews. Information was

extracted using the PICO format (ie, participants, intervention, comparison, outcomes). Descriptive findings are reported.

RESULTS:

Mean AMSTAR score = 7.66/11 (± 2.04) suggests moderate quality of the systematic reviews. Exercise is beneficial before, during, and after cancer treatment, across all cancer types, and for a variety of cancer-related impairments. Moderate-to-vigorous exercise is the best level of exercise intensity to improve physical function and mitigate cancer-related impairments. Therapeutic exercises are beneficial to manage treatment side effects, may enhance tolerance to cancer treatments, and improve functional outcomes. Supervised exercise yielded superior benefits versus unsupervised. Serious adverse events were not common.

LIMITATIONS:

Movement-based exercise intervention outcomes are reported. No analysis of pooled effects was calculated across reviews due to significant heterogeneity within the systematic reviews. Findings do not consider exercise in advanced cancers or pediatric populations.

CONCLUSIONS:

Exercise promotes significant improvements in clinical, functional, and in some populations, survival outcomes and can be recommended regardless of the type of cancer. Although generally safe, patients should be screened and appropriate precautions taken. Efforts to strengthen uniformity in clinical trial reporting, develop clinical practice guidelines, and integrate exercise and rehabilitation services into the cancer delivery system are needed.

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The Case for Prehabilitation Prior to Breast Cancer Treatment.

Santa Mina D1, Brahmabhatt P2, Lopez C3, Baima J4, Gillis C5, Trachtenberg L6, Silver JK7.

Author information

Abstract

Cancer rehabilitation in breast cancer survivors is well established, and there are many studies that focus on interventions to treat impairments as well as therapeutic exercise. However, very little is known about the role of prehabilitation for people with breast cancer. In this narrative review, we describe contemporary clinical management of breast cancer and associated treatment-related morbidity and mortality considerations. Knowing the common short- and long-term sequelae, as well as less frequent but serious sequelae, informs our rationale for multimodal breast cancer prehabilitation. We suggest 5 core components that may help to mitigate short- and long-term sequelae that align with consensus opinion of prehabilitation experts: total body exercise; locoregional exercise pertinent to treatment-related deficits; nutritional optimization; stress reduction/psychosocial support; and smoking cessation. In each of these categories, we review the literature and discuss how they may affect outcomes for women with breast cancer.

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Effects of nurse-led home-based exercise & cognitive behavioral therapy on reducing cancer-related fatigue in patients with ovarian cancer during and after chemotherapy: A randomized controlled trial.

Zhang Q1, Li F1, Zhang H2, Yu X3, Cong Y4.

Author information

Abstract

BACKGROUND:

High levels of fatigue have been documented in ovarian cancer patients. However, increased levels of fatigue are positively associated with a high risk of sleep disturbance and depression.

OBJECTIVE:

To investigate the feasibility of a nurse-led home-based exercise and cognitive behavioral therapy (E&CBT) for ovarian cancer adults with cancer-related fatigue on outcomes of fatigue, plus other secondary outcomes (sleep disturbance and depression), either during or after completion of primary cancer treatment.

DESIGN:

Randomized, single-blind control trial.

SETTINGS:

Gynaecologic oncology department of the First Hospital of Jilin University in China.

PARTICIPANTS:

72 eligible women who recently had surgery and completed their first cycle of adjuvant chemotherapy were randomly assigned to two groups.

INTERVENTION:

The experimental group received exercise and cognitive behavioral therapy. Five nurses with nursing master degree were trained to deliver this intervention. Patients received online interventions each week in the patient's place of residence or in the nurse-led clinic, as requested. Home visits, coupled with telephone-based motivational interviews twice a week were available with the permission of the participants. comparison group participants received services as usual.

MEASUREMENTS:

The primary outcome was measured by the Chinese version of the Piper Fatigue Scale that has 4 subscales (Behavior, Affect, Sensory, and Cognition). Secondary outcomes were measured using the Self-Rating Depression Scale and the Pittsburgh Sleep Quality Index questionnaire. Repeated-measure ANOVA was used to examine the effectiveness of this intervention in reducing fatigue, depression, and improving sleep quality.

RESULTS:

For baseline comparisons, no significant differences were found between the two groups. After the interventions, total fatigue scores were significantly reduced from T1 to T2, to T3 in the experimental group (4.37, 4.24, 3.90), respectively. The comparison group showed almost no change in total fatigue score over time. In the repeated measures ANOVA, the differences of behavioral fatigue score ($F=11.647$, $p=0.001$) and cognitive fatigue score ($F=5.741$, $p=0.019$) were statistically significant for the group by time interaction. After the interventions, the experimental group participants demonstrated significantly lower symptoms of depression compared with the comparison group (T2: $p=0.001$ and T3: $p<0.001$). Sleep duration, sleep dysfunction, daytime dysfunction as well as total sleep quality significantly improved.

CONCLUSION:

Nurse-delivered home-based E&CBT have measurable benefits in helping women with ovarian cancer to decrease cancer-related fatigue, depressive symptoms, and improving their quality of sleep.

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KEYWORDS:

Cancer-related fatigue; Chemotherapy; Depression; Ovarian cancer; Sleep

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Dose-response effects of aerobic exercise on body composition among colon cancer survivors: a randomised controlled trial.

Brown JC1, Zemel BS2,3, Troxel AB4, Rickels MR5, Damjanov N6, Ky B7, Rhim AD8, Rustgi AK9, Courneya KS10, Schmitz KH11.

Author information

Abstract

BACKGROUND:

Physical activity is associated with a lower risk of disease recurrence among colon cancer survivors. Excess visceral adipose tissue is associated with a higher risk of disease recurrence among colon cancer survivors. The pathways through which physical activity may alter disease outcomes are unknown, but may be mediated by changes in visceral adipose tissue.

METHODS:

Thirty-nine stage I-III colon cancer survivors were randomised to one of three groups: usual-care control, 150 min wk⁻¹ of aerobic exercise (low dose) and 300 min wk⁻¹ of aerobic exercise (high dose) for 6 months. The prespecified key body composition outcome was visceral adipose tissue quantified using dual energy X-ray absorptiometry.

RESULTS:

Exercise reduced visceral adipose tissue in dose-response fashion (P_{trend}=0.008). Compared with the control group, the low- and high-dose exercise groups lost 9.5 cm² (95% CI: -22.4, 3.5) and 13.6 cm² (95% CI: -27.0, -0.1) in visceral adipose tissue, respectively. Each 60 min wk⁻¹ increase in exercise predicted a 2.7 cm² (95% CI: -5.4, -0.1) reduction in visceral adipose tissue.

CONCLUSIONS:

Aerobic exercise reduces visceral adipose tissue in dose-response fashion among patients with stage I-III colon cancer. Visceral adipose tissue may be a mechanism through which exercise reduces the risk of disease recurrence among colon cancer survivors. *British Journal of Cancer* advance online publication 21 September 2017; doi:[10.1038/bjc.2017.339](https://doi.org/10.1038/bjc.2017.339) www.bjcancer.com.

PMID: 28934762 DOI: [10.1038/bjc.2017.339](https://doi.org/10.1038/bjc.2017.339)

Medicines (Basel). 2017 Jan 12;4(1). pii: E2. doi: [10.3390/medicines4010002](https://doi.org/10.3390/medicines4010002).

Qigong in Cancer Care: Theory, Evidence-Base, and Practice.

Klein P1.

Author information

Abstract

Background: The purpose of this discussion is to explore the theory, evidence base, and practice of Qigong for individuals with cancer. Questions addressed are: What is qigong? How does it work? What evidence exists supporting its practice in integrative oncology? What barriers to wide-spread programming access exist? **Methods:**

Sources for this discussion include a review of scholarly texts, the Internet, PubMed, field observations, and expert opinion. **Results:** Qigong is a gentle, mind/body exercise integral within Chinese medicine. Theoretical foundations include Chinese medicine energy theory, psychoneuroimmunology, the relaxation response, the meditation effect,

and epigenetics. Research supports positive effects on quality of life (QOL), fatigue, immune function and cortisol levels, and cognition for individuals with cancer. There is indirect, scientific evidence suggesting that qigong practice may positively influence cancer prevention and survival. No one Qigong exercise regimen has been established as superior. Effective protocols do have common elements: slow mindful exercise, easy to learn, breath regulation, meditation, emphasis on relaxation, and energy cultivation including mental intent and self-massage. **Conclusions:** Regular practice of Qigong exercise therapy has the potential to improve cancer-related QOL and is indirectly linked to cancer prevention and survival. Wide-spread access to quality Qigong in cancer care programming may be challenged by the availability of existing programming and work force capacity.

KEYWORDS:

Qigong; Tai chi; cancer; review

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[10.1177/1539449217730356](#). [Epub ahead of print]

Content Analysis of a Participant-Directed Intervention to Optimize Activity Engagement of Older Adult Cancer Survivors.

[Lyons KD](#)^{1,2}, [Newman R](#)³, [Adachi-Mejia AM](#)², [Whipple J](#)⁴, [Hegel MT](#)^{1,2}.

Author information

Abstract

Many older adult cancer survivors reduce their activity level during and after cancer treatment. Occupational therapy interventions need to flexibly address various obstacles to occupational engagement that survivors may face. The aim of this analysis was to describe the content of a participant-directed occupational therapy intervention for older adults with cancer. Content analysis was used to describe the treatment session data from the experimental arm of a pilot randomized controlled trial in terms of activities addressed, obstacles reported, and treatment strategies utilized. Participants predominantly used the intervention to increase exercise engagement or address instrumental activities of daily living. The most common obstacles to occupational engagement included fatigue, finding time, weather, and pain. Regarding treatment strategies, 77% of participants chose to practice the activity with the occupational therapist, 42% requested a piece of equipment, and 11% modified the environment to increase activity engagement. Overall, the participant-directed intervention appears flexible enough to address various activities and obstacles to occupational engagement.

KEYWORDS:

Neoplasms; program development; qualitative research; rehabilitation

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[10.1177/1534735417731514](#). [Epub ahead of print]

Effects of a Translational Community-Based Multimodal Exercise Program on Quality of Life and the Influence of Start Delay on Physical Function and Quality of Life in Breast Cancer Survivors: A Pilot Study.

[Foley MP](#)¹, [Hasson SM](#)², [Kendall E](#)¹.

Author information

Abstract

The purpose of this investigation was 2-fold: (1) to investigate the effects of a

translational 12-week community-based multimodal exercise program on quality of life (QoL) in breast cancer survivors (BCS) and (2) to examine the influence of a start delay on physical function and QoL in BCS. Fifty-two female BCS completed a 12-week program consisting of 90-minute supervised exercise sessions at a frequency of 2 supervised sessions per week. Exercise sessions consisted of three 30-minute components: (1) aerobic conditioning, (2) resistance exercise training, and (3) balance and flexibility training. Significant ($P < .05$) improvements in QoL were identified post-program completion. Cohort stratification comparison between the early start (<1 year since completion of oncologic treatment) and late start (>1 year since completion of oncologic treatment) revealed no significant ($P > .05$) differences between the early start and late start groups on improvements in physical function. Regarding the influence of start delay on QoL, the early start group showed significant ($P < .05$) improvement in emotional well-being. No other significant differences in improvement in QoL were detected between the early start and late start groups. Regardless of start delay, meaningful improvements in physical function and QoL were found after completing the community-based multimodal exercise program. Early participation in community-based exercise programming may benefit BCS' emotional well-being compared to later participation.

KEYWORDS:

breast cancer survivors; community-based exercise; physical function; quality of life; start delay

PMID: 28929821 DOI: [10.1177/1534735417731514](https://doi.org/10.1177/1534735417731514)

Cancer. 2017 Sep 19. doi: 10.1002/cncr.30987. [Epub ahead of print]

Randomized controlled trial of increasing physical activity on objectively measured and self-reported cognitive functioning among breast cancer survivors: The memory & motion study.

Hartman SJ^{1,2}, Nelson SH^{1,2}, Myers E², Natarajan L^{1,2}, Sears DD^{1,2,3}, Palmer BW^{4,5}, Weiner LS^{1,2}, Parker BA^{2,3}, Patterson RE^{1,2}.

Author information

Abstract

BACKGROUND:

Increasing physical activity can improve cognition in healthy and cognitively impaired adults; however, the benefits for cancer survivors are unknown. The current study examined a 12-week physical activity intervention, compared with a control condition, on objective and self-reported cognition among breast cancer survivors.

METHODS:

Sedentary breast cancer survivors were randomized to an exercise arm ($n = 43$) or a control arm ($n = 44$). At baseline and at 12 weeks, objective cognition was measured with the National Institutes of Health Cognitive Toolbox, and self-reported cognition using the Patient-Reported Outcomes Measurement Information System scales. Linear mixed-effects regression models tested intervention effects for changes in cognition scores.

RESULTS:

On average, participants ($n = 87$) were aged 57 years (standard deviation, 10.4 years) and were 2.5 years (standard deviation, 1.3 years) post surgery. Scores on the Oral Symbol Digit subscale (a measure of processing speed) evidenced differential improvement in the exercise arm versus the control arm ($b = 2.01$; $P < .05$). The between-group differences in improvement on self-reported cognition were not statistically significant but were suggestive of potential group differences. Time since surgery moderated the correlation, and participants who were ≤ 2 years post surgery

had a significantly greater improvement in Oral Symbol Digit score (exercise vs control (b = 4.00; P < .01), but no significant improvement was observed in patients who were >2 years postsurgery (b = -1.19; P = .40). A significant dose response was observed with greater increased physical activity associated with objective and self-reported cognition in the exercise arm.

CONCLUSIONS:

The exercise intervention significantly improved processing speed, but only among those who had been diagnosed with breast cancer within the past 2 years. Slowed processing speed can have substantial implications for independent functioning, supporting the potential importance of early implementation of an exercise intervention among patients with breast cancer. Cancer 2017. © 2017 American Cancer Society. © 2017 American Cancer Society.

KEYWORDS:

breast neoplasms; clinical trial; cognition; exercise; neuropsychological tests
PMID: 28926676 DOI: [10.1002/cncr.30987](https://doi.org/10.1002/cncr.30987)

Women Health. 2017 Sep 18. doi: 10.1080/03630242.2017.1372844. [Epub ahead of print]

Breast cancer survivors' perceptions of participating in a supervised exercise intervention: an exploratory review of the literature.

Livsey L1, Lewis K1.

Author information

Abstract

BACKGROUND:

Despite the reported beneficial effects of physical activity (PA) during and after cancer diagnosis, current research data suggest that the percentages of breast cancer survivors who adhere to PA recommendations are low. The aim of the present systematic, critical review was to identify, analyze and provide a summary of qualitative literature findings, which have explored breast cancer survivors' experiences of participating in an exercise/PA intervention after cancer treatment.

METHODS:

A systematic search was conducted using CINAHL, PsychINFO, PubMed and Scopus electronic databases to search for qualitative literature published during 2000-2016. A total of six studies which met the inclusion criteria were reviewed. Thematic synthesis, following Thomas and Harden's (2008) methods, were used to analyze the data.

FINDINGS:

Seven descriptive themes were developed: control, focus, transitioning phase, regaining a sense of confidence, enhanced spirits, social support and safe environment. The findings suggested that participation in supervised exercise interventions enhanced breast cancer survivors' self-confidence and mood. It allowed them to regain control and provide a focus, therefore allowing them to move forward in their lives.

CONCLUSION:

The results of this systematic critical review indicated that supervised exercise was a positive experience for breast cancer survivors.

KEYWORDS:

Breast cancer; experiences; mood; physical activity; qualitative; review
PMID: 28922074 DOI: [10.1080/03630242.2017.1372844](https://doi.org/10.1080/03630242.2017.1372844)

Int J Cancer. 2017 Sep 16. doi: 10.1002/ijc.31049. [Epub ahead of print]

Associations of alcohol intake, smoking, physical activity and obesity with

survival following colorectal cancer diagnosis by stage, anatomic site and tumor molecular subtype.

Jayasekara H1,2,3, English DR1,4, Haydon A5, Hodge AM1, Lynch BM1,4,6, Rosty C2,7,8, Williamson EJ9,10, Clendenning M2, Southey MC11, Jenkins MA4, Room R3,12,13, Hopper JL4, Milne RL1,4, Buchanan DD2,4,14, Giles GG1,4, MacInnis RJ1,4.

Author information

Abstract

The influence of lifestyle factors on survival following a diagnosis of colorectal cancer (CRC) is not well established. We examined associations between lifestyle factors measured before diagnosis and CRC survival. The Melbourne Collaborative Cohort Study collected data on alcohol intake, cigarette smoking and physical activity, and body measurements at baseline (1990-94) and wave 2 (2003-07). We included participants diagnosed to 31 August 2015 with incident stage I-III CRC within 10-years post exposure assessment. Information on tumor characteristics and vital status was obtained. Tumor DNA was tested for microsatellite instability (MSI) and somatic mutations in oncogenes BRAF (V600E) and KRAS. We estimated hazard ratios (HRs) for associations between lifestyle factors and overall and CRC-specific mortality using Cox regression. Of 724 eligible CRC cases, 339 died (170 from CRC) during follow-up (average 9.0 years). Exercise (non-occupational/leisure-time) was associated with higher CRC-specific survival for stage II (HR = 0.25, 95% CI: 0.10-0.60) but not stage I/III disease (p for interaction = .01), and possibly for colon and KRAS wild-type tumors. Waist circumference was inversely associated with CRC-specific survival (HR = 1.25 per 10 cm increment, 95% CI: 1.08-1.44), independent of stage, anatomic site and tumor molecular status. Cigarette smoking was associated with lower overall survival, with suggestive evidence of worse survival for BRAF mutated CRC, but not with CRC-specific survival. Alcohol intake was not associated with survival. Survival did not differ by MSI status. We have identified pre-diagnostic predictors of survival following CRC that may have clinical and public health relevance. This article is protected by copyright. All rights reserved.

© 2017 UICC.

KEYWORDS:

Colorectal cancer; alcohol intake; obesity; physical activity; smoking; survival
PMID: 28921583 DOI: [10.1002/ijc.31049](https://doi.org/10.1002/ijc.31049)

Crit Rev Oncol Hematol. 2017 Oct;118:27-41. doi: 10.1016/j.critrevonc.2017.08.008.
Epub 2017 Aug 26.

Distance-delivered physical activity interventions for childhood cancer survivors: A systematic review and meta-analysis.

Mizrahi D1, Wakefield CE2, Fardell JE2, Quinn VF2, Lim Q3, Clifford BK4, Simar D4, Ness KK5, Cohn RJ2.

Author information

Abstract

This review aimed to determine the feasibility of distance-delivered physical activity (PA) interventions in childhood cancer survivors (CCS), and assess the effect on PA levels, and physical, physiological and psychological outcomes. We searched electronic databases until May 2016, including studies following intensive treatment. Meta-analyses were conducted on randomized controlled trials. We calculated the effect of interventions on PA levels and physical, physiological and psychological health outcomes. Thirteen studies (n=270 participants) were included in the systematic review and four (n=102 participants) in the meta-analysis. Most studies used telephone

to deliver interventions with contact (1/day-1/month), duration (2 weeks-1year) and timing (maintenance therapy->20years following intensive treatment) varying between interventions. Interventions yielded a mean recruitment rate=64%, retention rate=85% and adherence rate=88%. Interventions did not increase PA levels (p=0.092), but had a positive effect on physical function (p=0.008) and psychological outcomes (p=0.006). Distance-delivered PA interventions are feasible in CCS. Despite not increasing PA levels, participation may improve physical and psychological health; however, larger randomized controlled trials are warranted.

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KEYWORDS:

Childhood cancer survivor; Distance-delivery intervention; Exercise; Physical activity
PMID: 28917267 DOI: [10.1016/j.critrevonc.2017.08.008](https://doi.org/10.1016/j.critrevonc.2017.08.008)

Adv Exp Med Biol. 2017;1005:123-141. doi: [10.1007/978-981-10-5717-5_6](https://doi.org/10.1007/978-981-10-5717-5_6).

Physical Exercise Prescription in Metabolic Chronic Disease.

Stefani L1, Galanti G2.

Author information

Abstract

Metabolic syndrome as a consequence of the association to overweight, hypertension, and diabetes is at high risk of coronary events. Regular physical training has been recently promoted to reduce cardiovascular risks factors, by the improved lifestyle and also by the "anti-inflammatory effectiveness." A positive impact has been shown in case of cancer survived patients either with or without comorbidities and especially in those subjects where the inflammatory process is globally represented. The American College of Sports Medicine (ACSM) guidelines and more recently a new Italian model both support the role of "exercise as therapy" at moderate level of energy expenditure. The importance to establish the individual level of physical exercise, like a drug's dose, has induced authors in investigating this aspect in diverse diseases and in different clinical fields associated to an incorrect lifestyle habits. To reach this goal, a specific research strategy is important to spread the knowledge.

KEYWORDS:

Aerobic and resistance exercise; Noncommunicable chronic disease
PMID: 28916931 DOI: [10.1007/978-981-10-5717-5_6](https://doi.org/10.1007/978-981-10-5717-5_6)

Clin Breast Cancer. 2017 Aug 24. pii: S1526-8209(17)30285-9. doi: [10.1016/j.clbc.2017.08.009](https://doi.org/10.1016/j.clbc.2017.08.009). [Epub ahead of print]

Assessing Changes in the Activity Levels of Breast Cancer Patients During Radiation Therapy.

Champ CE1, Ohri N2, Klement RJ3, Cantor M4, Beriwal S5, Glaser SM5, Smith RP5.

Author information

Abstract

BACKGROUND:

Radiation therapy (RT) is often delivered after lumpectomy for women with breast cancer. A common perceived side effect of RT is fatigue, yet its exact effect on activity levels and sleep is unknown. In this study we analyzed the change in activity levels and sleep using an activity tracking device before, during, and after RT for women with early stage breast cancer and ductal carcinoma in situ who underwent adjuvant RT.

PATIENTS AND METHODS:

After institutional review board approval, activity levels were quantified before, during, and after RT with measurements of steps, miles walked, calories burned, and sleep metrics in 10 women fitted with activity trackers. All data were uploaded and tabulated

on a secure database. Multivariable linear regressions were used to evaluate changes in these variables over time during the RT course.

RESULTS:

Median step count was 5047 per day (range, 2741-15,508) and distance traveled was 1.6 miles per day (range, 0.9-5.3). Step count, distance, and calories decreased by an average of 54 steps per day, 0.02 miles per day, and 3 calories per day (median calories 1822; range, 1461-2712) during RT, respectively. These changes were statistically significant ($P < .001$), but not clinically relevant. There was no significant change in sleep (average 6.8 hours per night; range, 5.5-8.3).

CONCLUSION:

RT has a minimal effect on activity or sleep in women undergoing treatment for breast cancer. Activity levels varied greatly between patients in a population of women undergoing hypofractionated RT. Because increased activity levels correlate with improved outcomes, further studies evaluating attempts to increase physical activity during as well as after treatment with radiation are warranted.

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KEYWORDS:

Activity trackers; Breast cancer and sleep; Exercise; Impact of radiation therapy on activity

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Ann Oncol. 2017 Sep 1;28(9):2107-2118. doi: [10.1093/annonc/mdx271](https://doi.org/10.1093/annonc/mdx271).

Forcing the vicious circle: sarcopenia increases toxicity, decreases response to chemotherapy and worsens with chemotherapy.

Bozzetti F1.

Author information

Abstract

Sarcopenia has recently emerged as a new condition that, independently from malnutrition, may adversely affect the prognosis of cancer patients. Purpose of this narrative review is to define the prevalence of sarcopenia in different primaries, its role in leading to chemotherapy toxicity and decreased compliance with the oncological therapy and the effect of some drugs on the onset of sarcopenia. Finally, the review aims to describe the current approaches to restore the muscle mass through nutrition, exercise and anti-inflammatory agents or multimodal programmes with a special emphasis on the results of randomized controlled trials. The examination of the computed tomography scan at the level of the third lumbar vertebra—a common procedure for staging many tumours—has allowed the oncologist to evaluate the muscle mass and to collect many retrospective data on the prevalence of sarcopenia and its clinical consequences. Sarcopenia is a condition affecting a high percentage of patients with a range depending on type of primary tumour and stage of disease. It is noteworthy that patients may be sarcopenic even if their nutritional status is apparently maintained or they are obese. Sarcopenic patients exhibited higher chemotherapy toxicity and poorer compliance with oncological treatments. Furthermore, several antineoplastic drugs appeared to worsen the sarcopenic status. Therapeutic approaches are several and this review will focus on those validated by randomized controlled trials. They include the use of ω -3-enriched oral nutritional supplements and orexigenic agents, the administration of adequate high-protein regimens delivered enterally or parenterally, and programmes of physical exercise. Better results are expected combining different procedures in a multimodal approach. In conclusion, there are several premises to prevent/treat sarcopenia. The oncologist should coordinate this multimodal approach by selecting priorities and sequences of

treatments and then involving a nutrition health care professional or a physical therapist depending on the condition of the single patient.

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KEYWORDS:

cancer and sarcopenia; sarcopenia; sarcopenia and chemotherapy; sarcopenia and prognosis; sarcopenia and toxicity; sarcopenia therapy

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J Cancer Surviv. 2017 Sep 12. doi: 10.1007/s11764-017-0645-9. [Epub ahead of print]

An international review and meta-analysis of prehabilitation compared to usual care for cancer patients.

Treanor C1, Kyaw T2, Donnelly M2,3.

Author information

Abstract

PURPOSE:

The purpose of the study is to systematically review and synthesise randomised controlled trials investigating the effectiveness of prehabilitation compared to usual care for newly diagnosed, adult-onset cancer patients.

METHODS:

MEDLINE, EMBASE, PsycINFO, CINAHL and SSCI were searched up to April 2017. Studies were included if disease-related, treatment-related, patient-reported and health service utilisation outcomes were assessed. Two reviewers independently reviewed and appraised the risk of bias of each study.

RESULTS:

Eighteen studies were included. Interventions comprised one or more of the following components: psychological support, education and exercise. Meta-analyses found that pelvic floor muscle training (PFMT) significantly increased odds of continence at 3 months (OR = 3.29, 95% CI = 1.57-6.91), but did not significantly reduce daily pad use at 6 months post-surgery Mean Difference (MD) = (- 0.96, 95% CI = - 2.04-0.12) for prostate cancer patients. Although quality of life improved due to PFMT, functional ability or distress did not. Further meta-analyses indicated that pre-surgical exercise significantly reduced length of hospital stay (MD = - 4.18, 95% CI = - 5.43-- 2.93) and significantly lowered odds of post-surgery complications (OR = 0.25, 95% CI = 0.10-0.66) for lung cancer patients. Psychology-based prehabilitation significantly improved mood, physical well-being and immune function for prostate cancer patients and improved fatigue and psychological outcomes and a trend for better quality of life among breast cancer patients. Risk of bias was high for most studies.

CONCLUSIONS:

Prehabilitation appears to benefit cancer patients. Rigorous trials are needed to investigate the effectiveness of prehabilitation among other cancer sites and other related effects. The cost-effectiveness of prehabilitation remains unanswered.

IMPLICATIONS FOR CANCER SURVIVORS:

Providing interventions earlier in the care pathway may lead to better outcomes for patients during survivorship.

KEYWORDS:

Cancer; Meta-analysis; Prehabilitation; Systematic review

PMID: 28900822 DOI: [10.1007/s11764-017-0645-9](https://doi.org/10.1007/s11764-017-0645-9)

Nutrients. 2017 Sep 12;9(9). pii: E1003. doi: 10.3390/nu9091003.

The Effect of Nutrition Therapy and Exercise on Cancer-Related Fatigue and Quality of Life in Men with Prostate Cancer: A Systematic Review.

Baguley BJ1, Bolam KA2,3, Wright ORL4,5, Skinner TL6.

Author information

Abstract

BACKGROUND:

Improvements in diet and/or exercise are often advocated during prostate cancer treatment, yet the efficacy of, and optimal nutrition and exercise prescription for managing cancer-related fatigue and quality of life remains elusive. The aim of this study is to systematically review the effects of nutrition and/or exercise on cancer-related fatigue and/or quality of life.

METHODS:

A literature search was conducted in six electronic databases. The Delphi quality assessment list was used to evaluate the methodological quality of the literature. The study characteristics and results were summarized in accordance with the review's Population, Intervention, Control, Outcome (PICO) criteria.

RESULTS:

A total of 20 articles (one diet only, two combined diet and exercise, and seventeen exercise only studies) were included in the review. Soy supplementation improved quality of life, but resulted in several adverse effects. Prescribing healthy eating guidelines with combined resistance training and aerobic exercise improved cancer-related fatigue, yet its effect on quality of life was inconclusive. Combined resistance training with aerobic exercise showed improvements in cancer-related fatigue and quality of life. In isolation, resistance training appears to be more effective in improving cancer-related fatigue and quality of life than aerobic exercise. Studies that utilised an exercise professional to supervise the exercise sessions were more likely to report improvements in both cancer-related fatigue and quality of life than those prescribing unsupervised or partially supervised sessions. Neither exercise frequency nor duration appeared to influence cancer-related fatigue or quality of life, with further research required to explore the potential dose-response effect of exercise intensity.

CONCLUSION:

Supervised moderate-hard resistance training with or without moderate-vigorous aerobic exercise appears to improve cancer-related fatigue and quality of life. Targeted physiological pathways suggest dietary intervention may alleviate cancer-related fatigue and improve quality of life, however the efficacy of nutrition management with or without exercise prescription requires further exploration.

KEYWORDS:

cancer-related fatigue; exercise; nutrition; prostate cancer; quality of life

PMID: 28895922 DOI: [10.3390/nu9091003](https://doi.org/10.3390/nu9091003)

Free full text

[Eur J Breast Health. 2017 Jul 1;13\(3\):103-112. doi: 10.5152/ejbh.2017.3583. eCollection 2017 Jul.](#)

Risk Reduction Strategies in Breast Cancer Prevention.

Costa M1, Saldanha P1.

Author information

Abstract

Evaluating the risk of breast cancer makes it possible to identify women with a high risk of developing breast cancer in the future. Adopting a healthier lifestyle, involving diet and exercise, is one way of reducing this risk-but there are other, non-modifiable risk factors, such as family history, genetics and diagnosis of premalignant lesions. In this

high-risk population, the tracking must be rigorous and involve the participation of the patient herself, earlier and more frequent clinical assessment, and the use of imaging screening. Agents such as tamoxifen, raloxifene and aromatase inhibitors may be used in chemoprevention and may reduce the risk substantially. The risks and benefits must be assessed, and one must discuss with the patient her adverse events and the decision regarding the best treatment. Women who carry the BRCA1/2 mutation (very high risk) can benefit from prophylactic surgical interventions, such as bilateral mastectomy and/or bilateral salpingo-oophorectomy. This group of patients must be monitored by a multidisciplinary team, providing explanations prior to surgery regarding the surgical treatment offered, the reconstruction techniques, and the risks and complications.

KEYWORDS:

Breast; mastectomy; risk; serm oophorectomy

PMID: 28894848 PMCID: [PMC5544140](#) DOI: [10.5152/ejbh.2017.3583](#)

Free PMC Article

[Iran J Public Health. 2017 Aug;46\(8\):1154-1155.](#)

Suppression of Expression Levels of Constitutive Androstane Receptor by Moderate Exercise in BALB/c Nude Mice with Breast Cancer.

[Lee BS1](#), [So WY1](#), [Chung W2](#), [Choi EJ3](#).

Author information

PMID: 28894724 PMCID: [PMC5575402](#)

Free PMC Article

[Curr Breast Cancer Rep. 2017 Jun;9\(2\):111-121. doi: 10.1007/s12609-017-0237-8. Epub 2017 May 3.](#)

Diagnostic Methods, Risk Factors, Prevention, and Management of Breast Cancer-Related Lymphedema: Past, Present, and Future Directions.

[Sayegh HE1](#), [Asdourian MS1](#), [Swaroop MN1](#), [Brunelle CL2](#), [Skolny MN1](#), [Salama L1](#), [Taghian AG1](#).

Author information

Abstract

PURPOSE OF REVIEW:

Breast cancer-related lymphedema (BCRL) is a chronic, adverse, and much feared complication of breast cancer treatment, which affects approximately 20% of patients following breast cancer treatment. BCRL has a tremendous impact on breast cancer survivors, including physical impairments and significant psychological consequences. The intent of this review is to discuss recent studies and analyses regarding the risk factors, diagnosis, prevention through early screening and intervention, and management of BCRL.

RECENT FINDINGS:

Highly-evidenced risk factors for BCRL include axillary lymph node dissection, lack of reconstruction, radiation to the lymph nodes, high BMI at diagnosis, weight fluctuations during and after treatment, subclinical edema within and beyond 3 months after surgery, and cellulitis in the at-risk arm. Avoidance of potential risk factors can serve as a method of prevention. Through establishing a screening program by which breast cancer patients are measured pre-operatively and at follow-ups, are objectively assessed through a weight-adjusted analysis, and are clinically assessed for signs and symptoms, BCRL can be tracked accurately and treated effectively. Management of BCRL is done by a trained professional, with research mounting towards the use of compression bandaging as a first line intervention against BCRL. Finally, exercise is

safe for breast cancer patients with and without BCRL and does not incite or exacerbate symptoms of BCRL.

SUMMARY:

Recent research has shed light on BCRL risk factors, diagnosis, prevention, and management. We hope that education on these aspects of BCRL will promote an informed, consistent approach and encourage additional research in this field to improve patient outcomes and quality of life in breast cancer survivors.

KEYWORDS:

Breast cancer-related lymphedema; Diagnosis; Management; Prevention; Risk factors; Survivorship

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Cancer Res. 2017 Sep 15;77(18):4894-4904. doi: 10.1158/0008-5472.CAN-16-3125.

Exercise-Induced Catecholamines Activate the Hippo Tumor Suppressor Pathway to Reduce Risks of Breast Cancer Development.

Dethlefsen C1, Hansen LS1, Lillelund C2, Andersen C2, Gehl J3, Christensen JF1, Pedersen BK1, Hojman P4,3.

Author information

Abstract

Strong epidemiologic evidence documents the protective effect of physical activity on breast cancer risk, recurrence, and mortality, but the underlying mechanisms remain to be identified. Using human exercise-conditioned serum for breast cancer cell incubation studies and murine exercise interventions, we aimed to identify exercise factors and signaling pathways involved in the exercise-dependent suppression of breast cancer. Exercise-conditioned serum from both women with breast cancer ($n = 20$) and healthy women ($n = 7$) decreased MCF-7 (hormone-sensitive) and MDA-MB-231 (hormone-insensitive) breast cancer cell viability *in vitro* by 11% to 19% and reduced tumorigenesis by 50% when preincubated MCF-7 breast cancer cells were inoculated into NMRI-Foxn1nu mice. This exercise-mediated suppression of cell viability and tumor formation was completely blunted by blockade of β -adrenergic signaling in MCF-7 cells, indicating that catecholamines were the responsible exercise factors. Both epinephrine (EPI) and norepinephrine (NE) could directly inhibit breast cancer cell viability, as well as tumor growth *in vivo*. EPI and NE activate the tumor suppressor Hippo signaling pathway, and the suppressive effect of exercise-conditioned serum was found to be mediated through phosphorylation and cytoplasmic retention of YAP and reduced expression of downstream target genes, for example, ANKRD1 and CTGF. In parallel, tumor-bearing mice with access to running wheels showed reduced growth of MCF-7 (-36%, $P < 0.05$) and MDA-MB-231 (-66%, $P < 0.01$) tumors and, for the MCF-7 tumor, increased regulation of the Hippo signaling pathway. Taken together, our findings offer a mechanistic explanation for exercise-dependent suppression of breast cancer cell growth. *Cancer Res*; 77(18); 4894-904. ©2017 AACR.

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PMID: 28887324 DOI: [10.1158/0008-5472.CAN-16-3125](#)

Medicine (Baltimore). 2017 Sep;96(36):e7923. doi: 10.1097/MD.0000000000007923.

A case-control study of the association between self-reported occupational and recreational physical activity and lung cancer.

He F1, Chen LM, Xiong WM, Xu QP, Xiao RD, Li X, Lin T, Cai L.

Author information

Abstract

This case-control study with a Fujian population investigated whether self-reported occupational and recreational physical activity may be associated with lung cancer. The population comprised 1622 patients with newly diagnosed primary lung cancer and 1622 age- and gender-matched healthy controls. High-intensity occupational physical activity was associated with significantly higher risk of lung cancer (OR=1.354, 95% CI: 1.068-1.717), especially nonsmall cell lung carcinoma (OR=1.384, 95% CI: 1.087-1.762). Moderate or low intensity recreational physical activity was associated with reduced risk of lung cancer. The protective effect of recreational physical activity was observed in current or former smokers, but not never-smokers, and in subjects with normal or high BMI, but not low BMI, as well as people without a history of chronic lung disease. The frequency of recreational physical activity was associated with a linear reduction in the risk of lung cancer ($P<.001$), and also specifically nonsmall cell lung cancer ($P<.001$). Occupational and recreational physical activity was associated with different effects on the risk of lung cancer in a Fujian population. While recreational physical activity was associated with decreased risk of lung cancer, occupational physical activity was associated with increased risk of lung cancer.

PMID: 28885346 DOI: [10.1097/MD.00000000000007923](https://doi.org/10.1097/MD.00000000000007923)

[Indexed for MEDLINE] **Free full text**

Clin Rehabil. 2017 Sep 1:269215517728326. doi: 10.1177/0269215517728326. [Epub ahead of print]

Feasibility of a home-based exercise intervention with remote guidance for patients with stable grade II and III gliomas: a pilot randomized controlled trial.

Gehring K1,2, Kloek CJ1,3, Aaronson NK4, Janssen KW5, Jones LW6, Sitskoorn MM1, Stuiver MM7,8.

Author information

Abstract

OBJECTIVE:

In this pilot study, we investigated the feasibility of a home-based, remotely guided exercise intervention for patients with gliomas.

DESIGN:

Pilot randomized controlled trial (RCT) with randomization (2:1) to exercise or control group.

SUBJECTS:

Patients with stable grade II and III gliomas.

INTERVENTION:

The six-month intervention included three home-based exercise sessions per week at 60%-85% of maximum heart rate. Participants wore heart rate monitors connected to an online platform to record activities that were monitored weekly by the physiotherapist.

MAIN MEASURES:

Accrual, attrition, adherence, safety, satisfaction, patient-reported physical activity, VO₂ peak (by maximal cardiopulmonary exercise testing) and body mass index (BMI) at baseline and at six-month follow-up.

RESULTS:

In all, 34 of 136 eligible patients (25%) were randomized to exercise training (N = 23) or the control group (N = 11), of whom 19 and 9, respectively, underwent follow-up. Mean adherence to prescribed sessions was 79%. Patients' experiences were positive. There were no adverse events. Compared to the control group, the exercise group showed larger improvements in absolute VO₂ peak (+158.9 mL/min; 95% CI: -44.8 to

362.5) and BMI (-0.3 kg/m²; 95% CI: -0.9 to 0.2). The median increase in physical activity was 1489 metabolic equivalent of task (MET) minutes higher in the exercise group. The most reported reasons for non-participation were lack of motivation or time.

CONCLUSION:

This innovative and intensive home-based exercise intervention was feasible in a small subset of patients with stable gliomas who were interested in exercising. The observed effects suggest that the programme may improve cardiorespiratory fitness. These results support the need for large-scale trials of exercise interventions in brain tumour patients.

KEYWORDS:

Glioma; brain tumour; exercise; physical fitness; physical training
PMID: 28882061 DOI: [10.1177/0269215517728326](https://doi.org/10.1177/0269215517728326)

Oncotarget. 2017 Apr 18;8(32):52775-52782. doi: 10.18632/oncotarget.17188.
eCollection 2017 Aug 8.

Middle-distance running acutely influences the concentration and composition of serum bile acids: Potential implications for cancer risk?

Danese E#1, Salvagno GL#1, Tarperi C2, Negrini D1, Montagnana M1, Festa L2, Sanchis-Gomar F3,4, Schena F2, Lippi G1.

Author information

Abstract

BACKGROUND:

This study was aimed to investigate the acute effect of medium-distance running on bile acids concentration and composition, in order to verify whether the positive impact of physical exercise on cancer risk may also be mediated by variation of bile acids concentration and composition in serum.

METHODS:

The concentration and composition of serum bile acids was analyzed in 30 middle-aged and healthy recreational athletes with a reference liquid chromatography-mass spectrometry technique, immediately before and shortly after the end of the running trial. The concentration of bile acids after the run was adjusted for plasma volume change.

RESULTS:

All athletes successfully completed the trial. After correction of values for the individual plasma volume change calculated after the run, the serum concentration of total bile acids was found to be significantly reduced by approximately 46%. A statistically significant decrease was observed for cholic, deoxycholic, chenodeoxycholic, ursodeoxycholic, glyoursodeoxycholic and hyodeoxycholic acids, whereas the concentration of the remaining compounds remained unvaried after the run. A considerable variation of bile acids profile was also observed. No significant association was found between running performance and variation of bile acids concentrations.

CONCLUSION:

These results show that middle distance running acutely decreases the concentration of total bile acids in serum, especially that of the more mutagenic and carcinogenic compounds, so providing an intriguing support to the favorable effects of physical exercise for lowering the risk of many gastrointestinal cancers.

KEYWORDS:

bile acids; damage; exercise; gastrointestinal cancer; sport
PMID: 28881769 PMCID: [PMC5581068](https://pubmed.ncbi.nlm.nih.gov/PMC5581068/) DOI: [10.18632/oncotarget.17188](https://doi.org/10.18632/oncotarget.17188)

Free PMC Article

Cancer. 2017 Sep 7. doi: 10.1002/cncr.30935. [Epub ahead of print]

Strategic recruitment of an ethnically diverse cohort of overweight survivors of breast cancer with lymphedema.

Sturgeon KM1, Hackley R2, Fornash A2, Dean LT3, Laudermilk M4, Brown JC5, Sarwer DB6, DeMichele AM2, Troxel AB7, Schmitz KH1.

Author information

Abstract

BACKGROUND:

Black women are more likely to experience adverse effects from cancer treatment such as lymphedema. Thus, black women may particularly benefit from research regarding interventions to improve lymphedema. Herein, the authors report the challenges and strategies related to the recruitment of minority survivors of breast cancer and to the recruitment of survivors of breast cancer with lymphedema into the Women In Steady Exercise Research (WISER) Survivor Clinical Trial.

METHODS:

Subjects for this community-based trial were recruited from the Philadelphia area through active (mailings) and passive (printed materials and Web site) recruitment strategies. In addition, education sessions coordinated through partner hospitals in communities with a predominantly minority population were conducted to increase awareness of lymphedema in survivors of breast cancer. Women who were interested in the study were screened for lymphedema via telephone questionnaire and invited to see a study-related certified lymphedema therapist to confirm the presence of lymphedema.

RESULTS:

Screening was conducted among 2295 women: 628 were eligible, 450 consented, and 351 were randomized. Minority women comprised 38% of the study population. Letters to women on state and hospital registries resulted in a 0.4% randomization rate; education sessions yielded a 10% randomization rate. The authors observed that approximately 23.6% of the study sample had no previous diagnosis of lymphedema.

CONCLUSIONS:

The WISER Survivor Clinical Trial faced multiple recruitment challenges and used unique strategies to successfully enroll minority survivors of breast cancer into a lifestyle intervention. Cancer 2017. © 2017 American Cancer Society.

© 2017 American Cancer Society.

KEYWORDS:

African American; body weight; breast cancer lymphedema; exercise; patient recruitment; patient selection

PMID: 28881471 DOI: [10.1002/cncr.30935](https://doi.org/10.1002/cncr.30935)

Intern Emerg Med. 2017 Sep 5. doi: 10.1007/s11739-017-1741-6. [Epub ahead of print]

2D longitudinal LV speckle tracking strain pattern in breast cancer survivors: sports activity vs exercise as prescription model.

Galanti G1, Pedrizzetti G2, Pedri S3, Stefani L4.

Author information

Abstract

Prevention strategies are important to optimize and to manage heart care in breast cancer survivors. Regular physical activity at moderate intensity is normally proposed to maintain myocardial performance; however, no data is available about the different impact of different levels of physical exercise. 2D speckle tracking echocardiography (2DSTE) is an accepted method for early detection of myocardial dysfunction. The

study aims to monitor the cardiac performances in breast cancer survivors by 2DSTE analysis to manage sports activity vs physical activity. Two groups of previous breast cancer survivors (33 BCS) trained at moderate intensity and 55 athletes practicing dragon boat (DBA) sport were enrolled. They were matched with two healthy subjects groups: 23 competitive female athletes practicing different sports and 20 healthy women trained with exercise as prescription model. All women were studied by a complete echo examination including LV global longitudinal strain (GLS) assessment (XStrain-Esaote). EF and GS are only significantly higher in healthy subjects (-25.4 ± 2.1). Nevertheless, GLS values are within the normal range for all groups. Particularly, GS does not show any significant differences among subjects (-19.93 ± 4) practicing exercise as prescription when compared to the DBA competitive trained group. 2DSTE method is an appropriate method to supervise the intensity of exercise in breast cancer patients. Particularly, GLS can optimize and improve cancer therapy supporting and creating efficiencies within the health system confirming the role of the exercise prescription therapy in maintaining normal heart function.

KEYWORDS:

2D speckle tracking echocardiography; 2DSTE; Breast cancer; Global longitudinal strain; Physical exercise; Sports

PMID: 28875298 DOI: [10.1007/s11739-017-1741-6](https://doi.org/10.1007/s11739-017-1741-6)

Curr Oncol. 2017 Aug;24(4):e290-e315. doi: 10.3747/co.24.3619. Epub 2017 Aug 31.

Exercise for people with cancer: a systematic review.

Segal R1, Zwaal C2, Green E3, Tomasone JR4, Loblaw A5, Petrella T6; Exercise for People with Cancer Guideline Development Group.

Author information

Abstract

BACKGROUND:

This systematic review was completed by the Exercise for People with Cancer Guideline Development Group, a group organized by Cancer Care Ontario's Program in Evidence-Based Care (pebc). It provides background and guidance for clinicians with respect to exercise for people living with cancer in active and post treatment. It focuses on the benefits of specific types of exercise, pre-screening requirements for new referrals, safety concerns, and delivery models.

METHODS:

Using the pebc's standardized approach, medline and embase were systematically searched for existing guidelines, systematic reviews, and primary literature.

RESULTS:

The search identified two guidelines, eighteen systematic reviews, and twenty-nine randomized controlled trials with relevance to the topic. The present review provides conclusions about the duration, frequency, and intensity of exercise appropriate for people living with cancer.

CONCLUSIONS:

The evidence shows that exercise is safe and provides benefit in quality of life and in muscular and aerobic fitness for people with cancer both during and after treatment. The evidence is sufficient to support the promotion of exercise for adults with cancer, and some evidence supports the promotion of exercise in group or supervised settings and for a long period of time to improve quality of life and muscular and aerobic fitness. Exercise at moderate intensities could also be sustainable for longer periods and could encourage exercise to be continued over an individual's lifetime. It is important that a pre-screening assessment be conducted to evaluate the effects of disease, treatments, and comorbidities.

KEYWORDS:

Exercise; systematic reviews

PMID: 28874900 PMCID: [PMC5576469](#) DOI: [10.3747/co.24.3619](#)

Free PMC Article

[BJU Int.](#) 2017 Sep 5. doi: [10.1111/bju.14008](#). [Epub ahead of print]

Time on androgen deprivation therapy and adaptations to exercise: secondary analysis from a 12-month randomized controlled trial in men with prostate cancer.

[Taaffe DR](#)^{1,2,3}, [Buffart LM](#)^{1,4}, [Newton RU](#)^{1,2,5,6}, [Spry N](#)^{1,7,8}, [Denham J](#)^{9,10}, [Joseph D](#)^{1,8,11}, [Lamb D](#)¹², [Chambers SK](#)^{1,13,14,15}, [Galvão DA](#)^{1,2}.

Author information**Abstract****OBJECTIVES:**

To explore if duration of previous exposure to androgen deprivation therapy (ADT) in men with prostate cancer (PCa) undertaking a year-long exercise programme moderates the exercise response with regard to body composition and muscle performance, and also to explore the moderator effects of baseline testosterone, time since ADT, and baseline value of the outcome.

PATIENTS AND METHODS:

In a multicentre randomized controlled trial, 100 men who had previously undergone either 6 months (short-term) or 18 months (long-term) of ADT in combination with radiotherapy, as part of the TROG 03.04 RADAR trial, were randomized to 6 months supervised exercise, followed by a 6-month home-based maintenance programme, or to printed physical activity educational material for 12 months across 13 university-affiliated exercise clinics in Australia and New Zealand. The participants were long-term survivors of PCa with a mean age of 71.7 ± 6.4 years, and were assessed for lower extremity performance (repeated chair rise), with a subset of men ($n = 57$) undergoing additional measures for upper and lower body muscle strength and body composition (lean mass, fat mass, appendicular skeletal muscle [ASM]) by dual X-ray absorptiometry. Data were analysed using generalized estimating equations.

RESULTS:

Time on ADT significantly moderated the exercise effects on chair rise ($\beta_{\text{interaction}} = -1.3$ s, 95% confidence interval [CI] -2.6 to 0.0), whole-body lean mass ($\beta_{\text{interaction}} = 1194$ g, 95% CI 234 to 2153) and ASM mass ($\beta_{\text{interaction}} = 562$ g, 95% CI 49 to 1075), and approached significance for fat mass ($\beta_{\text{interaction}} = -1107$ g, 95% CI -2346 to 132), with greater benefits for men previously on long-term ADT. At 6 months, the intervention effects on chair rise time -1.5 s (95% CI -2.5 to -0.5), whole-body lean mass 824 g (95% CI 8 to 1640), ASM mass 709 g (95% CI 260 to 1158), and fat mass -1377 g (95% CI -2156 to -598) were significant for men previously on long-term ADT, but not for men on short-term ADT. At 12 months, the intervention effects for men on long-term ADT remained significant for the chair rise, with improved performance (-2.0 s, 95% CI -3.0 to -1.0) and increased ASM (537 g, 95% CI 153 to 921). Time on ADT did not moderate the exercise effects on muscle strength, nor did time since ADT cessation moderate any intervention effects. Similarly, testosterone and baseline values of the outcome had negligible moderator effects.

CONCLUSIONS:

Men with PCa previously treated long-term with ADT respond more favourably to exercise in terms of lower body muscle performance and body composition (lean and fat mass, and ASM) than those with short-term ADT exposure. As a result, men who were formerly on long-term androgen suppression regimens should be especially

prescribed exercise medicine interventions to alleviate residual treatment-related adverse effects.

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KEYWORDS:

#PCSM; #Prostate cancer; androgen deprivation therapy; exercise

PMID: 28872752 DOI: [10.1111/bju.14008](https://doi.org/10.1111/bju.14008)

J Phys Act Health. 2017 Sep 5:1-19. doi: 10.1123/jpah.2016-0204. [Epub ahead of print]

Cancer-specific Mortality Relative to Engagement in Muscle Strengthening Activities and Lower Extremity Strength.

Dankel S1, Loenneke JP1, Loprinzi PD1.

Author information

Abstract

BACKGROUND:

Skeletal muscle strength and engagement in muscle strengthening activities are each inversely associated with all-cause mortality, however less is known on their relationship with cancer-specific mortality.

METHODS:

Data from the 1999-2002 NHANES were used assessing 2,773 individuals ≥ 50 years. Individuals were dichotomized at the 75th percentile for knee extensor strength, and engagement in muscle strengthening activities was acquired through self-report with ≥ 2 sessions per week were classified as meeting guidelines.

RESULTS:

With respect to cancer-specific mortality, individuals in the upper quartile for muscle strength were at a 50% reduced risk (HR: 0.50; 95% CI:0.29-0.85; $p=0.01$) and those meeting muscle strengthening activities were at a non-significant 8% reduced risk [HR:0.92; 95% CI:0.45-1.86, $p=0.81$] after adjusting for covariates.

CONCLUSIONS:

Clinicians should routinely assess lower extremity strength and promote engagement in muscle strengthening activities aimed at increasing muscle strength.

KEYWORDS:

NHANES; cancer; knee extension; resistance exercise; strength training

PMID: 28872397 DOI: [10.1123/jpah.2016-0204](https://doi.org/10.1123/jpah.2016-0204)

J Cancer Surviv. 2017 Sep 4. doi: 10.1007/s11764-017-0638-8. [Epub ahead of print]

Examining the accessibility of high-quality physical activity behaviour change support freely available online for men with prostate cancer.

Short CE1,2, Gelder C3,4, Binnewerg L5, McIntosh M3, Turnbull D3,6.

Author information

Abstract

BACKGROUND:

While the internet is considered a promising avenue for providing physical activity support to prostate cancer survivors, little is known about the accessibility of quality websites in the real world.

PURPOSE:

This work aimed to explore what websites prostate cancer survivors are likely to find when seeking physical activity support online and to evaluate their quality using evidenced-based criteria.

METHOD:

A search strategy was developed in consultation with prostate cancer survivors

(n = 44) to reflect the most common ways they are likely to search the internet. The search was then conducted by a single reviewer, and identified websites were assessed for quality by two reviewers using an evidence-based quality assessment tool developed for this study. Discrepancies were resolved by a third reviewer.

RESULTS:

Of the 45 identified websites, 13 (29%) received a high quality rating, 22 (49%) received a moderate rating and 10 (22%) received a low quality rating. Higher-quality websites tended to have a .org or .gov domain and tended to be located using searches specific to prostate cancer or prostate cancer and exercise. Very few websites contained complete information regarding the physical activity guidelines for cancer survivors, and no websites provided comprehensive behaviour change support.

CONCLUSION:

There are some good-quality physical activity websites accessible to men with prostate cancer. However, they may be difficult to find and/or require updating to include complete recommendations and more behaviour change support.

IMPLICATIONS FOR CANCER SURVIVORS:

Efforts to improve physical activity information online and strategies to direct prostate cancer survivors to higher-quality websites and support services are needed to ensure safety and efficacy.

KEYWORDS:

Behaviour change; Physical activity; Prostate cancer; Web-based intervention; Website quality

PMID: 28871558 DOI: [10.1007/s11764-017-0638-8](https://doi.org/10.1007/s11764-017-0638-8)

J Cancer Res Ther. 2017 Jul-Sep;13(3):392-398. doi: 10.4103/0973-1482.150356.

Physical activity influences the immune system of breast cancer patients.

Schmidt T1, van Mackelenbergh M2, Wesch D3, Mundhenke C2.

Author information

Abstract

It has been suggested that physical activity in breast cancer patients can not only improve quality of life. Influences on physical and psychological levels have been evaluated, but effects on the immune system of breast cancer patients are hardly known. A PubMed search identified relevant trials and meta-analyses from 1970 to 2013. This review summarizes the results of international studies and the current discussion of effects of physical activity on the immune system of breast cancer patients. Highlighted are effects of physical activity on the immune system. Seven original articles and 14 reviews included in this review. Two original and the review articles includes other tumor entities besides breast cancer. Evaluated methods such as dose-response relationships for exercise in oncology, hardly exist. Increased immunological anti-cancer activity due to physical activity is probably mediated via an increase in number and cytotoxicity of monocytes and natural killer cells and cytokines. PMID: 28862198 DOI: [10.4103/0973-1482.150356](https://doi.org/10.4103/0973-1482.150356)

Free full text

Chirurgia (Bucur). 2017 Jul-Aug;112(4):457-468. doi: 10.21614/chirurgia.112.4.457.

Results of 1-year Diet and Exercise Interventions for ER+/PR±/HER2- Breast Cancer Patients Correlated with Treatment Type.

Artene DV, Bordea CI, Blidaru A.

Abstract

PURPOSE:

Many breast cancer patients gain weight during chemotherapy and antiestrogenic

treatment increasing recurrence, oncologic specific and all-cause mortality risks. Patients and **Methods:** 165 ER+/PR±/HER2- breast cancer patients under antiestrogenic treatment were randomly assigned to follow an at-home diet based on food naturally high in proteins, calcium, probiotics and prebiotics (D), or this diet and 4' isometric exercises (D+Ex) for 1 year. We measured weight (W), body (BF) and visceral fat (VF) using a multi-frequency bioelectrical impedance scale on the 6th and 12th month and we correlated results with chemotherapy, surgery and antiestrogenic medication type. Results were analysed using the Friedman Test, then with Wilcoxon signed-rank tests if Friedman Test was significant. **Results:** Overall, the patients 1-year results show that both D+Ex and D patients obtained statistically significant weight loss and fat loss. D patients lost 3.3 kg, 3.2% BF and 1% visceral fat. D+Ex patients lost 6.5 kg, 3.3% BF and 2% visceral fat. D+Ex patients obtained statistically significance for W, BF and VF regardless of chemotherapy, surgery or antiestrogenic treatment type. D patients with mastectomy or with aromatase inhibitors lost W, BF and VF. D patients with conservatory surgery, adjuvant or both neoadjuvant and adjuvant chemotherapy and those on Tamoxifen only lost W. D patients with neoadjuvant chemotherapy also lost VF.

CONCLUSION:

This diet is effective for ER+/PR±/HER2- breast cancer patients on antiestrogenic medication. Adding at least a minimal exercise protocol improves patients chances of counteracting sarcopenic obesity.

Celsius.

KEYWORDS:

breastcancer; isometricexercise; oncologynutrition; sarcopenicobesity

PMID: 28862123 DOI: [10.21614/chirurgia.112.4.457](https://doi.org/10.21614/chirurgia.112.4.457)

Free full text

[Ir J Med Sci. 2017 Aug 31. doi: 10.1007/s11845-017-1677-x. \[Epub ahead of print\]](#)

Physical activity and advanced cancer: the views of oncology and palliative care physicians in Ireland.

[Sheill G1](#), [Guinan E2](#), [Neill LO3](#), [Hevey D4](#), [Hussey J3](#).

Author information

Abstract

BACKGROUND:

Physical activity (PA) levels play an important role in maintaining the quality of life and enhancing the physical function of advanced cancer patients. A brief exercise prompt by physicians can increase PA levels of patients diagnosed with cancer.

AIMS:

This study explores the views of Irish oncology and palliative care physicians towards PA for patients with advanced cancer.

METHODS:

A web-based survey with closed- and open-ended questions was used to explore physicians' views. The survey presented a Likert-style questionnaire and open text responses to two patient case studies. Quantitative data were analysed using descriptive statistics, and qualitative data were analysed using content analysis.

RESULTS:

Forty participants completed the study, a response rate of 41%. Responding physicians acknowledged the importance of physical activity for patients with advanced cancer.

Twenty-six physicians (67%) agreed that patients look to them for PA recommendations and 30 physicians (77%) indicated a need for more information on providing PA recommendations. Case study responses highlighted concerns relating to

PA prescription for patients with bone metastases including the aggravation of symptom control and increased fracture risk.

CONCLUSIONS:

The results of this study identify a need for physician education on providing PA recommendations for patients with advanced cancer. Concerns over the prescription of PA to patients with bone metastases highlight the need to disseminate the evidence on the benefits of PA for patients with metastatic cancer to healthcare professionals.

KEYWORDS:

Advanced cancer; Exercise; Metastases; Physicians; Survey

PMID: 28861844 DOI: [10.1007/s11845-017-1677-x](https://doi.org/10.1007/s11845-017-1677-x)

Lancet Oncol. 2017 Aug;18(8):e457-e471. doi: 10.1016/S1470-2045(17)30411-4. Epub 2017 Jul 26.

Physical activity, sedentary behaviour, diet, and cancer: an update and emerging new evidence.

Kerr J1, Anderson C1, Lippman SM2.

Author information

Abstract

The lifestyle factors of physical activity, sedentary behaviour, and diet are increasingly being studied for their associations with cancer. Physical activity is inversely associated with and sedentary behaviour is positively (and independently) associated with an increased risk of more than ten types of cancer, including colorectal cancer (and advanced adenomas), endometrial cancers, and breast cancer. The most consistent dietary risk factor for premalignant and invasive breast cancer is alcohol, whether consumed during early or late adult life, even at low levels. Epidemiological studies show that the inclusion of wholegrain, fibre, fruits, and vegetables within diets are associated with reduced cancer risk, with diet during early life (age <8 years) having the strongest apparent association with cancer incidence. However, randomised controlled trials of diet-related factors have not yet shown any conclusive associations between diet and cancer incidence. Obesity is a key contributory factor associated with cancer risk and mortality, including in dose-response associations in endometrial and post-menopausal breast cancer, and in degree and duration of fatty liver disease-related hepatocellular carcinoma. Obesity produces an inflammatory state, characterised by macrophages clustered around enlarged hypertrophied, dead, and dying adipocytes, forming crown-like structures. Increased concentrations of aromatase and interleukin 6 in inflamed breast tissue and an increased number of macrophages, compared with healthy tissue, are also observed in women with normal body mass index, suggesting a metabolic obesity state. Emerging randomised controlled trials of physical activity and dietary factors and mechanistic studies of immunity, inflammation, extracellular matrix mechanics, epigenetic or transcriptional regulation, protein translation, circadian disruption, and interactions of the microbiome with lifestyle factors will be crucial to advance this field.

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[Indexed for MEDLINE]

PLoS One. 2017 Jul 6;12(7):e0179731. doi: 10.1371/journal.pone.0179731. eCollection 2017.

Physical activity domains and risk of gastric adenocarcinoma in the MCC-Spain case-control study.

Huerta JM1,2, Chirlaque MD1,2,3, Molina AJ2,4, Amiano P2,5, Martín V2,4,

Fernández-Villa T4, Pérez-Gómez B2,6,7, Moreno V2,8,9, Burgui R2,10, Gómez-Acebo I2,11, Ramos-Lora M12,13, Fernández-Tardón G2,14, Peiró R2,15, Olmedo-Requena R2,16,17, Pollán M2,6,7, Kogevinas M2,18,19,20, Castaño-Vinyals G2,18,19,20, Aragonés N2,6,7; Navarro.

Author information

Erratum in

Correction: Physical activity domains and risk of gastric adenocarcinoma in the MCC-Spain case-control study. [PLoS One. 2017]

Abstract

BACKGROUND:

Evidence for a protective role of physical activity against development of stomach cancer is yet inconclusive. We studied the association of domain-specific physical activity and the risk of gastric adenocarcinoma (GAC), by site and histology, in the MCC-Spain case-control study.

METHODS:

428 histologically confirmed GAC cases (67% men) including the gastro-esophageal region and 3225 controls were included. Cases were recruited in hospitals from 10 different Spanish regions, whereas population controls were randomly selected within the respective hospitals' catchment areas. A physical activity (PA) questionnaire was used to gather information on household and recreational activities, allowing estimation of PA volume (in metabolic equivalents (MET)-min/week). Participants also reported the intensity of working PA and daily sitting time. Questionnaire data on diet, lifestyles and clinical variables including *Helicobacter pylori* serology were available. Adjusted odds ratios (OR) of GAC were estimated for domains of physical activity, stratifying by sex, site (cardia vs. non-cardia), and Lauren classification (intestinal vs. diffuse).

RESULTS:

Household physical activity (HPA) showed a strong inverse association with GAC, observed for both cardia and non-cardia tumours. Risk of overall gastric cancer was 50% lower risk among participants in the highest HPA category (OR = 0.50, 95%CI: 0.38, 0.66). Recreational physical activity (RPA) was also associated with lower overall GAC risk (OR = 0.68, 95% CI: 0.52, 0.88), particularly at moderate levels of intensity such as walking (OR = 0.61, 95% CI: 0.46, 0.79). The protective effect of RPA was strongest for non-cardia tumours. Sedentary time was not related to GAC risk (p-trend = 0.392), but the potential protective effect of RPA was restricted to non-sedentary participants.

CONCLUSIONS:

Both household and recreational physical activities were independently related to lower GAC risk in the MCC-Spain study.

PMID: 28683070 PMCID: [PMC5500262](#) DOI: [10.1371/journal.pone.0179731](#)

[Indexed for MEDLINE] **Free PMC Article**

PLoS One. 2017 May 31;12(5):e0177767. doi: [10.1371/journal.pone.0177767](#). eCollection 2017.

Weather, day length and physical activity in older adults: Cross-sectional results from the European Prospective Investigation into Cancer and Nutrition (EPIC) Norfolk Cohort.

Wu YT1,2, Luben R3, Wareham N2, Griffin S2, Jones AP1,2.

Author information

Abstract

BACKGROUND:

A wide range of environmental factors have been related to active ageing, but few

studies have explored the impact of weather and day length on physical activity in older adults. We investigate the cross-sectional association between weather conditions, day length and activity in older adults using a population-based cohort in England, the European Prospective Investigation into Cancer and Nutrition (EPIC) Norfolk study.

METHODS:

Physical activity was measured objectively over 7 days using an accelerometer and this was used to calculate daily total physical activity (counts per minute), daily minutes of sedentary behaviour and light, moderate and vigorous physical activity (LMVPA). Day length and two types of weather conditions, precipitation and temperature, were obtained from a local weather station. The association between these variables and physical activity was examined by multilevel first-order autoregressive modelling.

RESULTS:

After adjusting for individual factors, short day length and poor weather conditions, including high precipitation and low temperatures, were associated with up to 10% lower average physical activity ($p < 0.01$) and 8 minutes less time spent in LMVPA but 15 minutes more sedentary time, compared to the best conditions.

CONCLUSION:

Day length and weather conditions appear to be an important factor related to active ageing. Future work should focus on developing potential interventions to reduce their impact on physical activity behaviours in older adults.

PMID: 28562613 PMCID: PMC5451002 DOI: [10.1371/journal.pone.0177767](https://doi.org/10.1371/journal.pone.0177767)

[Indexed for MEDLINE] [Free PMC Article](#)

Gynecol Oncol. 2017 Sep;146(3):630-635. doi: [10.1016/j.ygyno.2017.05.028](https://doi.org/10.1016/j.ygyno.2017.05.028). Epub 2017 May 25.

A study of chronic fatigue in Norwegian cervical cancer survivors.

Steen R1, Dahl AA2, Hess SL3, Kiserud CE4.

Author information

Abstract

OBJECTIVE:

Chronic fatigue after treatment is a common adverse event in cancer patients, but there are few studies in long-term survivors of cervical cancer. The aim of this investigation was to explore the prevalence of chronic fatigue and its association with various clinical and treatment-related factors in a population-based cohort of Norwegian cervical cancer survivors treated by any modality.

METHODS:

All patients, treated for cervical cancer from 2000 through 2007 in the Health Region of South-Eastern Norway, cancer-free, alive and aged ≤ 75 years by the end 2013 ($n=822$) received a questionnaire covering chronic fatigue and other clinical variables.

RESULTS:

461 of 822 survivors (56%) completed the questionnaire and 382 entered the analyses. Chronic fatigue was reported by 23% (95% confidence interval 19%-27%) with a median age of 52 years (range 32-75) at survey, 11 years (range 7-15) after diagnosis. Among survivors treated by minimal invasive- or radical surgery, 19% had chronic fatigue, while the prevalence was 28% in those treated with radiation and concomitant chemotherapy (chemoradiation). The chronic fatigue group reported significantly more cardiovascular disease, obesity, less physical activity, more treatment-related symptom experience, more menopausal symptoms, higher levels of anxiety and depressive symptoms, and poorer quality of life than the non-fatigued group. In multivariate analysis only increased level of depression and poorer global quality of life were significantly associated with chronic fatigue.

CONCLUSIONS:

Chronic fatigue was reported by 23% of long-term survivors after cervical cancer at a mean of 11 years after treatment. Some of the associated factors are amenable to prevention and/or treatment and should be subjects of attention at follow-up.

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KEYWORDS:

Cancer survivor; Cervical cancer; Chemotherapy; Chronic fatigue; Long-term survivors; Radiotherapy; Surgery

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[Indexed for MEDLINE]

Br J Haematol. 2017 Aug;178(3):442-447. doi: 10.1111/bjh.14702. Epub 2017 May 3.

Physical activity, obesity and survival in diffuse large B-cell and follicular lymphoma cases.

Boyle T1,2, Connors JM3, Gascoyne RD3, Berry BR4, Sehn LH3, Bashash M5, Spinelli JJ6,7.

Author information

Abstract

There is limited information concerning the impact of physical activity and obesity on non-Hodgkin lymphoma (NHL) prognosis. We examined the associations between pre-diagnosis physical activity and body mass index (BMI) with survival in 238 diffuse large B-cell (DLBCL) and 175 follicular lymphoma cases, with follow-up from 2000 to 2015. The most physically active DLBCL cases had 41% lower risk of dying in the follow-up period than the least active [Hazard ratio (HR) = 0.59, 95% confidence interval (CI) = 0.36-0.96], while obese follicular lymphoma cases had a 2.5-fold risk of dying (HR = 2.52, 95% CI = 1.27-5.00) compared with cases with normal BMI. NHL-specific survival results were similar.

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KEYWORDS:

body mass index; diffuse large B-cell lymphoma; follicular lymphoma; physical activity; prognosis

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[Indexed for MEDLINE]

Curr Opin Oncol. 2017 Jul;29(4):235-242. doi: 10.1097/CCO.0000000000000376.

Integrative medicine in cancer survivors.

Viscuse PV1, Price K, Millstine D, Bhagra A, Bauer B, Ruddy KJ.

Author information

Abstract

PURPOSE OF REVIEW:

Due to medical advances and an aging population, the number of cancer survivors continues to rise. Survivors often experience late and long-term sequelae of cancer and its treatment (e.g., fatigue, pain, fear of recurrence, and stress). As a result, some patients have utilized or expressed interest in integrative medicine (IM) modalities for prevention of recurrence, optimizing health, enhancing quality of life, and managing symptoms. The purpose of this review is to focus on research published during the past year that informs our understanding of the utility of IM for cancer survivors.

RECENT FINDINGS:

Physical activity, diet, dietary supplements, mind-body modalities, acupuncture, and massage therapy all may play a role in the management of the physical (e.g., fatigue and pain) and emotional (e.g., anxiety and fear) issues faced by cancer survivors.

SUMMARY:

IM therapies are appealing to and utilized by many cancer survivors and may reduce symptom burden. Clinicians who provide cancer survivorship care may improve patient care by understanding the evidence for and against their use.

PMID: 28459738 DOI: [10.1097/CCO.0000000000000376](https://doi.org/10.1097/CCO.0000000000000376)

[Indexed for MEDLINE]

Gan To Kagaku Ryoho. 2016 Nov;43(12):1458-1460.

[Effectiveness of Postoperative Physical Therapy for Upper-Limb Impairments after Breast Cancer Treatment].

[Article in Japanese]

Yamamoto D1, Sinko S, Suga T, Tsubota Y, Sueoka N, Yoshikawa K, Kon M.

Author information

Abstract

Previous studies have reported the benefits of beginning rehabilitation immediately after breast cancer surgery for improving motor function. However, most studies have not evaluated the long-term struggles patients face after hospital discharge in resuming their previous activities and social participation. Furthermore, the intervention methods and effects of rehabilitation for such activities have not been evaluated. We investigated the effectiveness of postoperative physical therapy for upperlimb impairments after breast cancer treatment. Fifty-four women in the postoperative period of surgery for breast cancer participated in the study. Range of motion in the ipsilateral shoulder was initially limited after surgery and recovered during the study period: shoulder flexion range of motion reached a mean value from 110 to 155 degrees, mean abduction was from 70 to 110 degrees, and mean external shoulder rotation was from 69 to 85 degrees. Lymphedema was present in 5 women. In conclusion, physical functional disabilities were present in the late postoperative period for breast cancer survivors, and limited range of motion in their shoulders negatively affected their functional capacity and quality of life. Therefore, we need to increase rehabilitation care after breast cancer surgery immediately.

PMID: 28133022

[Indexed for MEDLINE]

Br J Sports Med. 2017 Sep;51(18):1364-1369. doi: 10.1136/bjsports-2016-096860.

Epub 2016 Nov 25.

Cardiorespiratory fitness and death from cancer: a 42-year follow-up from the Copenhagen Male Study.

Jensen MT1, Holtermann A2, Bay H2,3, Gyntelberg F2,3.

Author information

Abstract

OBJECTIVES:

Poor cardiorespiratory fitness (CRF) is associated with death from cancer. If follow-up time is short, this association may be confounded by subclinical disease already present at the time of CRF assessment. This study investigates the association between CRF and death from cancer and any cause with 42 years and 44 years of follow-up, respectively.

SETTING, PARTICIPANTS AND MAIN OUTCOME MEASURES:

Middle-aged, employed and cancer-free Danish men from the prospective *Copenhagen Male Study*, enrolled in 1970-1971, were included. CRF (maximal oxygen consumption (VO₂max)) was estimated using a bicycle ergometer test and analysed in multivariable Cox models including conventional risk factors, social class and self-reported physical

activity. Death from cancer and all-cause mortality was assessed using Danish national registers. Follow-up was 100% complete.

RESULTS:

In total, 5131 men were included, mean (SD) age 48.8 (5.4) years. During 44 years of follow-up, 4486 subjects died (87.4%), 1527 (29.8%) from cancer. In multivariable models, CRF was highly significantly inversely associated with death from cancer and all-cause mortality ((HR (95% CI)) 0.83 (0.77 to 0.90) and 0.89 (0.85 to 0.93) per 10 mL/kg/min increase in estimated VO₂max, respectively). A similar association was seen across specific cancer groups, except death from prostate cancer (1.00 (0.82 to 1.2); p=0.97; n=231). The associations between CRF and outcomes remained essentially unchanged after excluding subjects dying within 10 years (n=377) and 20 years (n=1276) of inclusion.

CONCLUSIONS:

CRF is highly significantly inversely associated with death from cancer and all-cause mortality. The associations are robust for exclusion of subjects dying within 20 years of study inclusion, thereby suggesting a minimal influence of reverse causation.

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KEYWORDS:

Cancer; Fitness; Longevity; Physical fitness; VO₂max
PMID: 27888214 DOI: [10.1136/bjsports-2016-096860](https://doi.org/10.1136/bjsports-2016-096860)
[Indexed for MEDLINE]

J Cancer Surviv. 2017 Apr;11(2):264-273. doi: 10.1007/s11764-016-0584-x. Epub 2016 Nov 16.

Cardiovascular disease and physical activity in adult cancer survivors: a nested, retrospective study from the Atlantic PATH cohort.

Keats MR1, Cui Y2, Grandy SA3, Parker L2.

Author information

Abstract

PURPOSE:

The study aimed to examine the relationship between cardiovascular disease (CVD) and physical activity (PA) levels in cancer survivors (CS).

METHODS:

Using a nested, retrospective follow-up design, this study presents the self-reported prevalence of CVD in an Atlantic Canadian population-based cohort of 1526 CS and 6034 age-sex matched, non-cancer controls ranging from 35 to 69 years of age. Univariate and multiple logistic regression models were used to explore the association between CVD and PA.

RESULTS:

Overall, CS were 30% more likely to have ever experienced a CVD event than controls (OR = 1.3; 95% CI 1-1.7, p = .07). Survivors were also significantly more likely to report having hypertension (OR = 1.60; 95% CI 1.03-1.3, p = .02) and diabetes (OR = 1.27; 95% CI 1.03-1.16, p = .02). Compared to controls, CS were significantly less likely to engage in high levels of PA. For survivors, compared to those who were least physically active, the odds of having a CVD risk factor was 35% lower for those who were moderately active (OR = 0.65; 95% CI 0.48-0.88) and 45% lower in the most highly active group (OR = 0.55; 95% CI 0.4-0.73). For controls, the odds of having a CVD risk factor was 25% lower for those in the moderately active group (OR = 0.75; 95% CI 0.64-0.88) and 30% lower for those in the high active group (OR = 0.70; 95%

CI 0.6-0.81).

CONCLUSION:

Low active survivors appear to be at a high risk of CVD-related comorbidity.

IMPLICATIONS FOR CANCER SURVIVORS:

PA is associated with lower CVD-related comorbidity in CS, suggesting that interventions directed at increasing PA should be implemented to improve long-term health outcomes.

KEYWORDS:

Cancer; Cardiovascular; Physical activity; Survivor
PMID: 27854007 DOI: [10.1007/s11764-016-0584-x](https://doi.org/10.1007/s11764-016-0584-x)
[Indexed for MEDLINE]

J Cancer Surviv. 2016 Dec;10(6):956-963. Epub 2016 Apr 21.

Survivorship care plans and adherence to lifestyle recommendations among breast cancer survivors.

Greenlee H1,2, Molmenti CL3,4, Crew KD3,4,5, Awad D4, Kalinsky K4,5, Brafman L4, Fuentes D4, Shi Z3, Tsai WY4,6, Neugut AI3,4,5, Hershman DL3,4,5.

Author information

Abstract

PURPOSE:

The effectiveness of survivorship care plans has not been widely tested. We evaluated whether a one-time brief lifestyle consultation as part of a broader survivorship care plan was effective at changing diet and lifestyle patterns.

METHODS:

A diverse sample of women with stage 0-III breast cancer were randomized to control or intervention groups within 6 weeks of completing adjuvant treatment. Both groups received the National Cancer Institute publication, "Facing Forward: Life after Cancer Treatment." The intervention group also met with a nurse (1 h) and a nutritionist (1 h) to receive personalized lifestyle recommendations based upon national guidelines. Diet, lifestyle, and perceived health were assessed at baseline, 3 and 6 months. Linear regression analyses evaluated the effects of the intervention adjusted for covariates.

RESULTS:

A total of 126 women completed the study (60 control/66 intervention, 61 Hispanic/65 non-Hispanic). At 3 months, the intervention group reported greater knowledge of a healthy diet (P = 0.047), importance of physical activity (P = 0.03), and appropriate use of dietary supplements (P = 0.006) and reported lower frequency of alcohol drinking (P = 0.03) than controls. At 6 months, only greater knowledge of a healthy diet (P = 0.01) persisted. The intervention was more effective among non-Hispanics than Hispanics on improving attitude towards healthy eating (P = 0.03) and frequency of physical activity (P = 0.006).

CONCLUSIONS:

The intervention changed lifestyle behaviors and knowledge in the short-term, but the benefits did not persist.

IMPLICATIONS FOR CANCER SURVIVORS:

Culturally competent long-term behavioral interventions should be tested beyond the survivorship care plan to facilitate long-term behavior change among breast cancer survivors.

KEYWORDS:

Breast cancer; Diet; Dietary supplements; Physical activity; Survivorship care plan
PMID: 27100859 DOI: [10.1007/s11764-016-0541-8](https://doi.org/10.1007/s11764-016-0541-8)
[Indexed for MEDLINE]

BMC Cancer. 2016 Oct 28;16(1):830.

Living well after breast cancer randomized controlled trial protocol: evaluating a telephone-delivered weight loss intervention versus usual care in women following treatment for breast cancer.

Reeves MM1, Terranova CO2, Erickson JM2, Job JR2, Brookes DS2,3, McCarthy N4, Hickman IJ5,6, Lawler SP2, Fjeldsoe BS2, Healy GN2,7,8, Winkler EA2, Janda M9, Veerman JL2, Ware RS2, Prins JB6, Vos T10, Demark-Wahnefried W11, Eakin EG2.

Author information

Abstract

BACKGROUND:

Obesity, physical inactivity and poor diet quality have been associated with increased risk of breast cancer-specific and all-cause mortality as well as treatment-related side-effects in breast cancer survivors. Weight loss intervention trials in breast cancer survivors have shown that weight loss is safe and achievable; however, few studies have examined the benefits of such interventions on a broad range of outcomes and few have examined factors important to translation (e.g. feasible delivery method for scaling up, assessment of sustained changes, cost-effectiveness). The Living Well after Breast Cancer randomized controlled trial aims to evaluate a 12-month telephone-delivered weight loss intervention (versus usual care) on weight change and a range of secondary outcomes including cost-effectiveness.

METHODS/DESIGN:

Women (18-75 years; body mass index 25-45 kg/m²) diagnosed with stage I-III breast cancer in the previous 2 years are recruited from public and private hospitals and through the state-based cancer registry (target n = 156). Following baseline assessment, participants are randomized 1:1 to either a 12-month telephone-delivered weight loss intervention (targeting diet and physical activity) or usual care. Data are collected at baseline, 6-months (mid-intervention), 12-months (end-of-intervention) and 18-months (maintenance). The primary outcome is change in weight at 12-months. Secondary outcomes are changes in body composition, bone mineral density, cardio-metabolic and cancer-related biomarkers, metabolic health and chronic disease risk, physical function, patient-reported outcomes (quality of life, fatigue, menopausal symptoms, body image, fear of cancer recurrence) and behaviors (dietary intake, physical activity, sitting time). Data collected at 18-months will be used to assess whether outcomes achieved at end-of-intervention are sustained six months after intervention completion. Cost-effectiveness will be assessed, as will mediators and moderators of intervention effects.

DISCUSSION:

This trial will provide evidence needed to inform the wide-scale provision of weight loss, physical activity and dietary interventions as part of routine survivorship care for breast cancer survivors.

TRIAL REGISTRATION:

Australian and New Zealand Clinical Trial Registry (ANZCTR) - ACTRN12612000997853 (Registered 18 September 2012).

KEYWORDS:

Breast cancer survivors; Diet; Lifestyle intervention; Nutrition; Physical activity

PMID: 27793125 PMCID: [PMC5086071](#) DOI: [10.1186/s12885-016-2858-0](#)

[Indexed for MEDLINE] **Free PMC Article**

J Pediatr Hematol Oncol. 2017 Jan;39(1):15-19.

Physical Activity in Long-term Survivors of Acute Lymphoblastic Leukemia in

Childhood and Adolescence: A Cross-sectional Cohort Study.

Nayiager T1, Barr RD, Anderson L, Cranston A, Hay J.

Author information

Abstract

Inadequate physical activity (PA) and elevated overweight/obesity (OW/OB) rates are common in survivors of cancer in childhood, especially acute lymphoblastic leukemia (ALL). Bony morbidity, including fractures, is also prevalent among survivors of ALL. This study examined the interrelationships of PA, measured in hours by the Habitual Activity Estimation Scale; OW/OB, defined by body mass index; and fractures (yes/no) in survivors of ALL (n=75) more than 10 years after diagnosis. All had been treated using protocols of the Dana Farber Cancer Institute Childhood ALL Consortium. The median age was 21.15 years and time from diagnosis 15.07 years, and 27 subjects had experienced fractures. More than 30% of the total sample were OW/OB. There was no correlation of body mass index with present PA. There were no significant differences between those with/without fractures in terms of age, sex, time from diagnosis, and the prevalence of OW/OB. Subjects with fractures during treatment reported more total activity on typical weekend days than those without fractures (mean 8.8 vs. 6.9 h, $P<0.01$). There was no significant difference on weekdays. Higher activity on weekends suggests that fractures may have occurred more commonly in those who had a more active lifestyle before, during, and after treatment.

PMID: 27571119 DOI: [10.1097/MPH.0000000000000667](https://doi.org/10.1097/MPH.0000000000000667)

[Indexed for MEDLINE]

Neuro Oncol. 2017 Mar 1;19(3):440-450. doi: [10.1093/neuonc/now177](https://doi.org/10.1093/neuonc/now177).

Exercise training for neural recovery in a restricted sample of pediatric brain tumor survivors: a controlled clinical trial with crossover of training versus no training.

Riggs L1,2, Piscione J3,4, Laughlin S5, Cunningham T6, Timmons BW7, Courneya KS8, Bartels U3,9, Skocic J1, de Medeiros C1, Liu F1, Persadie N7, Scheinemann K7, Scantlebury N1, Szulc KU1, Bouffet E3,9, Mabbott DJ1,2,10.

Author information

Abstract

BACKGROUND:

Exercise promotes repair processes in the mouse brain and improves cognition in both mice and humans. It is not known whether these benefits translate to human brain injury, particularly the significant injury observed in children treated for brain tumors.

METHODS:

We conducted a clinical trial with crossover of exercise training versus no training in a restricted sample of children treated with radiation for brain tumors. The primary outcome was change in brain structure using MRI measures of white matter (ie, fractional anisotropy [FA]) and hippocampal volume [mm³]. The secondary outcome was change in reaction time (RT)/accuracy across tests of attention, processing speed, and short-term memory. Linear mixed modeling was used to test the effects of time, training, training setting, and carryover.

RESULTS:

Twenty-eight participants completed training in either a group (n=16) or a combined group/home (n=12) setting. Training resulted in increased white matter FA ($\Delta=0.05$, $P<.001$). A carryover effect was observed for participants ~12 weeks after training ($\Delta=0.05$, $P<.001$). Training effects were observed for hippocampal volume ($\Delta=130.98\text{mm}^3$; $P=.001$) and mean RT ($\Delta=-457.04\text{ms}$, $P=0.36$) but only in the group setting. Related carryover effects for hippocampal volume ($\Delta=222.81\text{mm}^3$, $P=.001$),

and RT ($\Delta=-814.90\text{ms}$, $P=.005$) were also observed. Decreased RT was predicted by increased FA ($R=-0.62$, $P=.01$). There were no changes in accuracy.

CONCLUSIONS:

Exercise training is an effective means for promoting white matter and hippocampal recovery and improving reaction time in children treated with cranial radiation for brain tumors.

KEYWORDS:

brain recovery; cranial radiation; exercise; neuroplasticity; pediatric brain tumor

PMID: 27555603 PMCID: [PMC5464296](#) [Available on 2018-03-01] DOI:

[10.1093/neuonc/now177](#)

[Indexed for MEDLINE]

Cancer Nurs. 2017 Sep/Oct;40(5):E1-E8. doi: 10.1097/NCC.0000000000000425.

Physical Activity Preferences for People Living With Multiple Myeloma: A Qualitative Study.

Craike M1, Hose K, Courneya KS, Harrison SJ, Livingston PM.

Author information

Abstract

BACKGROUND:

Although physical activity (PA) has significant benefits for people living with multiple myeloma (MM), participation rates are low. Examination of PA preferences will provide important information to clinicians and assist in the development of interventions to increase participation in PA for people living with MM.

OBJECTIVE:

The aim of this study is to gain an in-depth understanding of the PA preferences for people living with MM, including the preferred role of clinicians.

METHODS:

Semistructured interviews were conducted with patients treated for MM within the preceding 2 to 12 months. Interviews were analyzed using content analysis, where coding categories were derived directly from the text data.

RESULTS:

Twenty-four interviews were conducted (women, 54%; age: mean [SD], 62 [8.8] years); 16 (67%) participants had an autologous stem cell transplant. Light- to moderate-intensity PA during and after treatment was feasible, with the strongest preference for a program 2 to 8 months after treatment. The timing of information delivery was important, as was input from clinicians and organizations with knowledge of MM. Preferences for location, structure, and timing of programs varied.

CONCLUSIONS:

Low- to moderate-intensity PA after treatment is likely to interest people with MM. Programs need to be flexible and consider individual differences in PA preferences, functional status, and treatment schedules.

IMPLICATIONS:

An individually tailored PA program should form part of clinical care, involving clinicians and organizations with expertise in MM. Options for home-based PA are also important. Further research, including a population-based study of people living with MM, is necessary to further quantify PA preferences.

PMID: 27532741 DOI: [10.1097/NCC.0000000000000425](#)

[Indexed for MEDLINE]

J Cancer Surviv. 2017 Feb;11(1):80-91. doi: 10.1007/s11764-016-0565-0. Epub 2016 Aug 6.

How do different delivery schedules of tailored web-based physical activity advice for breast cancer survivors influence intervention use and efficacy?

Short CE1,2, Rebar A3, James EL4,5,6,7, Duncan MJ4,5, Courneya KS8, Plotnikoff RC5, Crutzen R9, Vandelandotte C3.

Author information

Abstract

PURPOSE:

The purpose of the study is to investigate the impact of differing delivery schedules of computer-tailored physical activity modules on engagement and physical activity behaviour change in a web-based intervention targeting breast cancer survivors.

METHODS:

Insufficiently active breast cancer survivors (n = 492) were randomly assigned to receive one of the following intervention schedules over 12 weeks: a three-module intervention delivered monthly, a three-module intervention delivered weekly or a single module intervention. Engagement with the website (number of logins, time on site, modules viewed, action plans completed) was measured using tracking software. Other outcomes (website acceptability, physical activity behaviour) were assessed using online surveys. Physical activity outcomes were analysed using regression models for both study completers and when applying intention-to-treat (using multiple imputation).

RESULTS:

Completers allocated to the monthly module group rated the intervention higher (b = 2.2 95 % CI = 0.02-4.53) on acceptability and had higher levels of resistance-training (IRR = 1.88, 95 % CI = 1.16-3.04) than those in the single module group. When accounting for missing data, these differences were no longer significant. The completion of at least two action plans was higher among those allocated to the monthly module group compared to those in the weekly module group (53 vs 40 %, p = 0.02); though the completion of at least two modules was higher in the weekly module group compared to the monthly module group (60 vs 46 %; p = 0.01). There were no other significant between group differences observed.

CONCLUSION:

This study provides preliminary evidence that web-based computer-tailored interventions can be used to increase physical activity among breast cancer survivors. Further, there were some outcome differences based on how the tailored modules were delivered, with the most favourable outcomes observed in the monthly delivery group.

IMPLICATIONS FOR CANCER SURVIVORS:

This study will be useful for informing the design of future web-based interventions targeting breast cancer survivors.

KEYWORDS:

Behaviour change; Cancer; Physical activity; eHealth

PMID: 27498099 DOI: [10.1007/s11764-016-0565-0](https://doi.org/10.1007/s11764-016-0565-0)

Arch Sex Behav. 2016 Nov;45(8):2057-2068. Epub 2016 Jun 3.

Associations of Body Mass Index and Physical Activity With Sexual Dysfunction in Breast Cancer Survivors.

Paiva CE1,2,3, Rezende FF4, Paiva BS5,6, Mauad EC7, Zucca-Matthes G8, Carneseca EC6, Syrjänen KJ7, Schover LR9.

Author information

Abstract

Sexual dysfunction is a common and distressing consequence of breast cancer (BC) treatment. In the present study, we investigated the sexual functioning of BC patients

and its association with women's personal characteristics and cancer treatments. In this cross-sectional study, sexual function was assessed using the Female Sexual Function Index (FSFI). The health-related quality of life (HRQOL) was measured using the European Organization for Research and Treatment of Cancer (EORTC) QLQ-C30 and its breast module BR-23. Of the 235 participants approached, 216 participants were included in the study. Of these, 63 patients reported no sexual activity in the last month and thus were analyzed only in relation to the sexual desire domain of FSFI. A total of 154 (71.3 %) patients were classified with hypoactive sexual desire disorder (HSDD). From those patients reporting sexual activity in the last month, 63.3 % (97 out of 153) were classified with sexual dysfunction. Using hierarchical logistic regression, the variance explained (change in R²) by the addition of body mass index (BMI) and mild to moderate physical activity in the prediction models of sexual dysfunction and HSDD were 6.8 and 7.2 %, respectively. Age, BMI, and physical activity were independently associated with sexual dysfunction and HSDD. Additionally, BC patients with sexual dysfunction reported lower scores on global HRQOL, role functioning, and fatigue. Based on our findings, BC survivors should be encouraged to practice regular physical activity and to lose weight in order to avoid sexual dysfunction. However, future clinical trials are needed to confirm these findings.

KEYWORDS:

Breast cancer; Breast surgery; Quality of life; Sexual dysfunction; Sexuality
PMID: 27260627 DOI: [10.1007/s10508-016-0758-7](https://doi.org/10.1007/s10508-016-0758-7)
[Indexed for MEDLINE]

Med Sci Sports Exerc. 2016 Aug;48(8):1468-73. doi:
[10.1249/MSS.0000000000000926](https://doi.org/10.1249/MSS.0000000000000926).

Effects of Exercise on Doxorubicin-Induced Skeletal Muscle Dysfunction.

Bredahl EC1, Pfannenstiel KB, Quinn CJ, Hayward R, Hydock DS.

Author information

Abstract

INTRODUCTION:

Chemotherapy treatment with doxorubicin (DOX) can have a negative effect on normal skeletal muscle function. Recent research demonstrates the potential value of exercise in alleviating DOX-induced cardiotoxicity. Yet up to now, little research has been done to examine whether exercise might also be effective in addressing DOX's skeletal muscle adverse effects, especially because posttreatment skeletal muscle dysfunction may cause patient difficulties with completing activities of daily living. The main aim of this study was to examine how resistance training (RT) and treadmill (TM) training play a role in preventing DOX-induced skeletal muscle dysfunction.

METHODS:

Male Sprague-Dawley rats were randomly placed into an RT, TM, or sedentary (SED) group for 10 wk and then received either a bolus injection of DOX (15 mg·kg) or saline as a control. Skeletal muscle function was then assessed ex vivo 5 d after injection.

RESULTS:

SED animals treated with DOX showed significantly lower maximal twitch force, maximal rate of force production, and maximal rate of force decline versus SED + saline in the soleus (SOL) (Type I muscle). In the extensor digitorum longus (Type II muscle), treatment with DOX resulted in a significantly lower maximal rate of force production and maximal rate of force decline. RT preserved maximal twitch force and maximal rate of force decline in the SOL. TM attenuated DOX-induced fatigue in the SOL but not in the extensor digitorum longus.

CONCLUSION:

These findings suggest that RT and TM before DOX could be useful in preserving skeletal muscle function and minimizing fatigue after chemotherapy, but this protection may be dependent on the skeletal muscle type.

PMID: 27015384 DOI: [10.1249/MSS.0000000000000926](https://doi.org/10.1249/MSS.0000000000000926)

[Indexed for MEDLINE]

J Cancer Surviv. 2016 Oct;10(5):883-97. doi: [10.1007/s11764-016-0535-6](https://doi.org/10.1007/s11764-016-0535-6). Epub 2016 Mar 17.

Lifestyle-related effects of the web-based Kanker Nazorg Wijzer (Cancer Aftercare Guide) intervention for cancer survivors: a randomized controlled trial.

Kanera IM1, Bolman CA2, Willems RA2, Mesters I3, Lechner L2.

Author information

Abstract

PURPOSE:

The web-based Kanker Nazorg Wijzer (Cancer Aftercare Guide) responds to the needs of cancer survivors and oncology care providers to improve the counseling related to self-management of lifestyle and psychosocial challenges. In present study, overall intervention effects and the effects of using specific components were evaluated on vegetable, fruit, whole grain bread, and fish consumption, physical activity (PA), and smoking behavior.

METHODS:

Cancer survivors from 21 Dutch hospitals were recruited for a randomized controlled trial (N = 432). Intervention effects after 6 months were evaluated using multilevel linear regression analysis (complete cases and intention-to-treat). By conducting moderation analyses, additional effects of following the behavior-related modules were explored. The false discovery rate correction was applied to account for multiple testing.

RESULTS:

After 6 months, 409 participants completed follow-up (dropout = 11.5 %). Indications were found that access to the intervention may result in increases of moderate PA and vegetable intake. The moderate PA increase was meaningful: 74.74 min p/w higher increase in the intervention condition. Effect sizes of moderate PA (d = .25) and vegetable (d = .37) consumption were comparable to prior effective interventions. Visiting behavior-related modules affected moderate PA, fruit, and fish consumption. However, after correction for multiple testing, significances expired. No significant intervention effect was found on smoking behavior due to low numbers of smokers.

IMPLICATIONS FOR CANCER SURVIVORS:

Although the effectiveness was only shown only to a limited extend, this study provided several indications that this theory-based, comprehensive, and personalized eHealth intervention provides valuable content to complement usual cancer aftercare.

KEYWORDS:

Cancer survivorship; Computer tailoring; Nutrition; Physical activity; Smoking; eHealth

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[Indexed for MEDLINE] **Free PMC Article**

J Sci Med Sport. 2017 Feb;20(2):116-122. doi: [10.1016/j.jsams.2016.01.006](https://doi.org/10.1016/j.jsams.2016.01.006). Epub 2016 Feb 8.

Health-related physical fitness in patients with multiple myeloma or lymphoma recently treated with autologous stem cell transplantation.

Persoon S1, Kersten MJ2, Buffart LM3, Vander Slagmolen G4, Baars JW5, Visser O6, Manenschijn A7, Nollet F8, Chinapaw MJ9.

Author information

Abstract

OBJECTIVES:

We aimed to examine health-related physical fitness and its demographic and clinical correlates in patients recently treated with autologous stem cell transplantation.

DESIGN:

Cross-sectional study.

METHODS:

In 109 patients (multiple myeloma: n=58, lymphoma: n=51, median age: 55, range: 19-67 years) maximal exercise testing was conducted to assess cardiorespiratory fitness (VO₂peak). Upper and lower extremity muscle strength were assessed with hand grip and fixed dynamometry and body composition with whole body DXA scans. In addition, we assessed the patients' demographic and clinical characteristics and examined whether they were associated with health-related physical fitness.

RESULTS:

VO₂peak was 21.7 (5.5) mL/min/kg, 26% below reference values. Muscle strength was also reduced when compared with reference values (upper extremity: 90%, lower extremity: 80%) and 73% of our population was classified as overweight or obese. Being female and being older were significantly associated with a lower cardiorespiratory fitness (gender: $\beta=-2.7$, 95%CI=-4.6;-0.7mL/min/kg; age: $\beta=-0.2$, 95%CI=-0.3;-0.1mL/min/kg), upper (gender: $\beta=-17.7$, 95%CI=-20.1;-15.3kg; age: $\beta=-0.2$, 95%CI=-0.3;-0.1kg) and lower (gender: $\beta=-58.3$, 95%CI=-73.5;-43.0Nm; age: $\beta=-1.7$, 95%CI=-2.4;-1.1Nm) extremity muscle strength. Patients who were non-smoking ($\beta=-5.3$, 95%CI=-8.7;-1.9), women ($\beta=7.2$, 95%CI=4.8;9.6) and diagnosed with multiple myeloma ($\beta=4.6$, 95%CI=2.2;6.9) had a higher percentage body fat.

CONCLUSIONS:

The physical fitness deficits in this population indicate the need for targeted interventions.

TRIAL REGISTRATION:

Netherlands Trial Register - NTR2341.

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KEYWORDS:

Body composition; Exercise tolerance; Hematology; Muscle strength
PMID: 26971299 DOI: 10.1016/j.jsams.2016.01.006