

Exercise Therapy and Quality of Life in Cancer: An Overview of Systematic Reviews

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Abstract

This article is aimed to provide an evidence-informed integrative overview on exercise therapy and its influence on quality of life in cancer through a literature search of PubMed. Nine systematic reviews and/or meta-analyses (cancer=5; breast cancer=2; lung cancer=1; prostate cancer=1) were found including two Cochrane systematic reviews, unanimously demonstrating unidirectional effectiveness for exercise therapy in improving quality of life in people with cancer. This interaction between exercise and quality of life was mediated by a complex intermingled inter-relationship between biological, psychological and social dimensions of health and disease.

Keywords: Participation restriction; Holistic rehabilitation; Biopsychosocial model; Rehabilitation oncology; Behavioral oncology.

Objective

This article is aimed to provide an evidence-informed integrative overview on exercise therapy and its influence on quality of life (QOL) or health-related QOL (HrQOL) in cancer through a literature search of PubMed.

Findings

Cancer

Courneya and Friedenreich[1] located 24 empirical studies published between 1980 and 1997, and 18 studies had consistently demonstrated that physical exercise had a positive effect on QOL following cancer

diagnosis, including physical and functional well-being (e.g. functional capacity, muscular strength, body composition, nausea, fatigue) and psychological and emotional well-being (e.g. personality functioning, mood states, self-esteem, and QOL).

Ferrer *et al*[2] in their meta-analysis found that exercise interventions increased QOL, provided that interventions were targeted more on intense aerobic exercise and addressed women.

Mishra *et al*[3] searched the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed MEDLINE, EMBASE, CINAHL, PsycINFO, PEDRO, LILACS, SIGLE, SportDiscus, OTSeeker, Sociological Abstracts, Web of Science and Scopus, and found 56 trials with 4826 participants randomized to an exercise (n = 2286) or comparison (n = 1985) group. "Exercise interventions (walking with/without cycling, resistance training, or strength training; resistance training; strength training; cycling; yoga; or Qigong) resulted in improvements in: HrQOL from baseline to 12 weeks' follow-up or when comparing difference in follow-up scores at 12 weeks; physical functioning from baseline to 12 weeks' follow-up or 6 months; or when comparing differences in follow-up

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scores at 12 weeks or 6 months; role function from baseline to 12 weeks' follow-up or when comparing differences in follow-up scores at 12 weeks or 6 months; and, in social functioning at 12 weeks' follow-up or when comparing differences in follow-up scores at both 12 weeks and 6 months."

Mishra *et al*[4] searched the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, MEDLINE, EMBASE, CINAHL, PsycINFO, PEDRO, LILACS, SIGLE, SportDiscus, OTSeeker, and Sociological Abstracts, Web of Science and Scopus, and found 40 trials with 3694 participants and found that exercise might have beneficial effects on HrQOL and certain HrQOL domains including cancer-specific concerns (e.g. breast cancer), body image/self-esteem, emotional well-being, sexuality, sleep disturbance, social functioning, anxiety, fatigue, and pain at varying follow-up periods."

Speed-Andrews and Courneya[5] examined the effects of physical activity (PA) upon quality of life and disease prognosis in cancer survivors focusing upon (a) quality of life during treatments, (b) quality of life during survivorship (after treatments), (c) quality of life during palliative care, and (d) disease prognosis end points. "Compelling clinical trial data indicated that PA can improve quality of life end points during treatment and survivorship."

Breast cancer

Duijts *et al*[6] identified 56 studies in their meta-analysis and found the positive effect of behavioral techniques on fatigue, depression, anxiety and stress. Physical exercise interventions had positive effect on fatigue, depression, body-image and HrQOL.

Bicego *et al*[7] searched MEDLINE, EMBASE, CINAHL, PubMed, and PEDro and found nine relevant randomized controlled trials four of moderate methodological quality and five of high methodological quality. "There was strong evidence that exercise positively influences QOL in women living with breast

cancer.

Lung cancer

Granger *et al*[8] did a systematic review of articles through electronic databases MEDLINE, CINAHL, EMBASE, TRIP, Science Direct, PubMed, Cochrane Library, Expanded Academic ASAP, Meditext/Informat, PEDRO and DARE. The review identified 16 studies on 13 unique patient groups totalling 675 patients with non-small cell lung cancer (NSCLC). Exercise intervention for patients with NSCLC was found to be safe before and after cancer treatment and was associated with positive benefits on exercise capacity, symptoms and some domains of HrQOL.

Prostate cancer

Keogh and MacLeod[9] in their systematic review identified 12 training studies and gave following findings: "Grade A level evidence was observed for the benefits of exercise in improving muscular endurance, aerobic endurance, and overall quality of life, as well as reducing fatigue in prostate cancer patients. Grade B evidence also suggested that exercise may improve prostate cancer patients' muscle mass, muscular strength, functional performance (walking and sit to stand speed), as well as health-related, social and physical quality of life. These effects appeared greater for group-rather than home-based-exercise, especially if these programs included resistance training."

Summary

Nine systematic reviews and/or meta-analyses (cancer=5; breast cancer=2; lung cancer=1; prostate cancer=1) were found including two Cochrane systematic reviews, unanimously demonstrating unidirectional effectiveness for exercise therapy in improving quality of life in people with cancer. This interaction between exercise and quality of life was mediated by a complex intermingled inter-relationship between biological,

psychological and social dimensions of health and disease.

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