Exercise and Perceived Quality of Life during Survivorship: A Pilot Study Comparing Traditional and Non-Traditional Cancer Recovery Programs

Matthew S. Wiggins

University of Wisconsin-Eau Claire
Department of Kinesiology
105 Garfield Ave., Eau Claire, WI, 54702
USA

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Abstract

PURPOSE: To determine if cancer survivors could increase their perceived QOL using a non-traditional exercise and cancer recovery program consisting of resistance tubing, balance balls, and hand-weights. A second purpose was to compare perceived QOL ratings between survivors using a traditional versus non-traditional exercise program. **METHODS:** Sixty cancer survivors were assigned into two weight training groups (traditional and non-traditional). Participants were given a pre and post-test assessment using the FACT-G scale, designed to measure QOL ratings in a cancer population. Participants worked out for 12 weeks, two times per week for 30 to 60 minutes using individually prescribed exercise programs. The traditional group used various machines, while the non-traditional group used resistance tubing, stability balls, etc. **RESULTS:** Cancer survivors using the non-traditional training program significantly increased their perceived QOL, $F(1, 58) = 5.61, p = .021$. Overall, survivors under both conditions significantly increased their perceived QOL, $F(1, 118) = 7.71, p = .006$. **CONCLUSIONS:** Inexpensive non-traditional equipment can

be an ideal way to eliminate exercise barriers such as cost and travel to a facility, while also providing opportunities for cancer survivors to increase perceived QOL.

Keywords: Cancer, exercise, non-traditional, quality of life (QOL), survivors

Introduction

The American Cancer Institute on Research reports that of the 12 million new cancer cases globally, 2.8 million are estimated to be linked to poor diet, lack of physical activity, and obesity [1]. While not all risks that predispose an individual to cancer can be controlled or eliminated (i.e., genetic factors), certain lifestyle choices like being physically active and preventing environmental exposure to risk factors can help lower the development of cancer. More specifically, individuals can be proactive regarding their health by choosing not to smoke, and choosing to become involved in an exercise program. Therefore, not only do we see the reduction of risks and increase in health benefits relative to heart disease through being physically active (e.g., lowering cholesterol, less chance of stroke or heart attack), we also see positive results in the area of lowering obesity levels, which helps decrease one's risk of developing cancer [6].

Research in the area of cancer and exercise over the last few years has shown several benefits for survivors. For instance, increases in aerobic capacity, quality of life (QOL), and physical functioning have been documented by several researchers for cancer survivors who engage in exercise programs [4,5,7-10]. Health-related benefits in the cited studies were obtained through the use of exercise programs that incorporated traditional weight training and aerobic machines (i.e., heavy duty machines designed for multiple users at wellness facilities) to increase the QOL in cancer survivors [11].

Despite the benefits associated with exercise programs specifically designed for cancer survivors, certain barriers still prevent or limit individual participation in a supervised exercise program. For example, barriers such as treatment-related side effects, fatigue, physical deconditioning, and feelings of social isolation were identified by Blaney and colleagues in survivors during and following cancer treatment [2]. The authors also mentioned environmental factors such as program/facility cost and lack of a convenient location as barriers. One could further speculate that the use of traditional machines found in wellness facilities hinder a survivor's transition to home workouts because of the type of training equipment normally used at a wellness center (i.e., expensive single or multi-station equipment).

The purpose of this pilot study was to determine if survivors could increase their perceived QOL using a non-traditional exercise and cancer recovery program

consisting of resistance bands/tubing, balance balls, and hand-weights. A second purpose was to compare perceived QOL ratings between survivors using a traditional versus those using a non-traditional exercise program, and determine if there are similar QOL ratings for the two groups after finishing a supervised exercise program.

Methods

Participants

Sixty-two cancer survivors from the mid-west and south of the US were assigned into two weight training groups (traditional and non-traditional) based on facility location and the exercise program design. Two subjects dropped out, leaving identical numbers of 30 survivors (26 women and 4 men) in each group ($N = 60$). Volunteers were all Caucasian, with a majority of the participants identified as breast cancer survivors ($n = 44$). The remaining individuals self-identified their primary cancer diagnosis as colon, lung, endometrial, prostate, non-Hodgkin's lymphoma, or lymphoma. Volunteers ranged in age from 32 to 77 ($M = 59.6$, $SD = 9.6$), and most of the participants had finished their treatment within three months of starting their respective exercise program.

Measures

Participants were given a pre and post-test assessment using Cella and associates' FACT-G scale (Functional Assessment of Cancer Therapy-General), which is an inventory designed for measuring QOL ratings in a cancer population [3]. Cella and colleagues provided evidence of a five-phase validation process showing high coefficients for content validity and reliability (r values $> .70$). Sample questions include "I have a lack of energy," "I am losing hope in the fight against my illness," and "I get emotional support from my family." Participants are asked to identify how they "generally" felt over the past seven days for each item on a 0 to 4 Likert-type scale (0 = not at all, 4 = very much). The FACT-G provides a total QOL index ranging from 0 to 104, with higher scores indicating a higher perceived QOL.

Procedures

Participants were referred by their oncologist into an exercise and cancer recovery program at one of two locations directed by the author. Subjects were given the FACT-G pre-test and filled out an informed consent document. Participants were then physically assessed (VO_2 /treadmill test, upper and lower body strength and endurance, body fat, upper and lower body flexibility, and balance) prior to starting the program. Based on physical assessments, participants were given an individual exercise program to follow, which was updated approximately every two weeks. The subjects worked out for approximately three months, two times per week for 30 to 60 minutes using their individually prescribed exercise programs. Each participant was

paired with a university kinesiology student trained in exercise and cancer recovery, who led them through the warm-up, training activities, and cool-down exercises. The traditional exercise group used various machines (e.g. treadmill, chest press/fly, lat pull-down, leg-extension/flexion, etc.), and the non-traditional group used resistance tubing, medicine balls, hand-weights, and stability balls during their respective workouts. Although the programs consisted of different training equipment, the types of movements, number of exercise stations, and exercise progression for intensity, frequency, and duration over the three months were similar. At the conclusion of the 12 weeks, participants were given the FACT-G post-test inventory.

Results

Findings indicated that the survivors using the non-traditional exercise and cancer recovery program were able to significantly increase their perceived QOL from pre-test ($M = 84.7$, $SD = 12.3$) to post-test ($M = 91.4$, $SD = 9.1$) over the three month exercise program, $F(1, 58) = 5.61$, $p = .021$. A similar increase was observed in the traditional exercise program group from pre-test ($M = 79.7$, $SD = 17.3$) to post-test ($M = 86.9$, $SD = 14.1$). Overall, cancer survivors under both conditions were able to significantly increase their total perceived QOL, $F(1, 118) = 7.71$, $p = .006$. There were no significant differences between the groups at pre-test, $F(1, 58) = 1.71$, $p = .196$, or post-test, $F(1, 58) = 2.15$, $p = .148$.

Conclusions

Based on the results of this pilot study, QOL benefits for cancer survivors can be achieved either through the use of traditional exercise equipment typical found at a wellness facility (e.g., weight machines), or through the use of non-traditional and/or therapeutic equipment (e.g., resistance tubing, hand weights, balance balls). No significant QOL differences were observed under the two conditions, with both groups reporting an average increase in QOL of approximately seven points over the three months. Although the power and generalizability of this study is limited by the lack of a control group and lack of participant diversity, one other important conclusion can be inferred from the results. As pointed out by Blaney and associates, cost and facility location are major barriers for cancer survivors when it comes to exercising [2]. Therefore, it seems imperative that exercise practitioners not only provide a workout program that allows a survivor to increase their physical functioning and QOL at a typical supervised wellness facility when first coming back from cancer treatment [11], but practitioners should also be able to provide exercises

that can be adapted for home use. Since many survivors will be unable to afford the cost of any standard “industrial” equipment, exercise practitioners need to incorporate when possible non-traditional training equipment that can be easily transitioned into a home use system. Inexpensive resistance equipment will allow cancer survivors to comfortably continue training on their own. Therefore, the use of less expensive therapeutic or non-traditional resistance equipment can be an ideal way to eliminate exercise barriers such as cost and poor facility location (or lack of facility), while also providing opportunities for cancer survivors to increase their physical and perceived QOL.

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