

# Study of the role of regular physical activity on promoting hedonism and eudaimonia in breast cancer survivors

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## ABSTRACT

**Background:** Individuals who have completed cancer treatment may have psychological and physical challenges. Participating in regular physical activity is considered as one of the most important factors for improving postcancer experience. **Aims:** The aim of this study was to examine the effect of participating in physical activities on hedonism and eudaimonia among breast cancer survivors. **Methods:** The research method was a semi-experimental design in the form of time-series using two experimental and control groups. 42 breast cancer survivors participated in this study in Urmia. Data using motives for activation of hedonism and eudaimonia (HEMA) were gathered before the intervention program (pre-test), at the end of intervention (the first post-test), and two weeks after the first post-test (the second post-test). For data analysis, descriptive and inferential statistics (T-test, Chi-square, and repeated measures ANOVA) were used. **Result:** Repeated measures ANOVA analysis in the three different periods of pre-test, post-test, and a month later post-test showed that changes in the mean score of hedonism and eudaimonia motivation were not similar in the two groups and indicated the improvement of dialysis adequacy in the intervention group compared with the control group. **Conclusion:** Generally, the results showed that participating in regular physical activity is an effective intervention on enhancing the motives for hedonism and eudaimonia in breast cancer survivors.

**Keywords:** Cancer survivors, eudaimonia, hedonism, physical activity

## Introduction

According to the World Health Organization (WHO) reports, breast cancer is one of the most common cancers among women.<sup>[1,2]</sup> This cancer is responsible for 33% of all cancers as well as the 20% of mortality caused by cancer in women.<sup>[3]</sup> The latest reports of the Cancer Society of Iran also show that breast cancer is accounted for 25% of all cancer cases in Iranian women.<sup>[4]</sup>

According to the American Cancer Society, breast cancer affects the physical and psychological health status including

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changes in appearance, lack of overall happiness, negative thoughts, decreased activity, and anxiety, which is a distinction between this type of cancer and the other types of cancer among women.<sup>[5,6]</sup>

Researchers believe that exercise programs in patients with advanced cancer increases the levels of activity in patients without increasing the level of fatigue. Regular exercise reduces the risk of breast cancer by 30 to 40 percent. Moreover, as regular exercise increases the level of activity, it can reduce anxiety, increase satisfaction, and increase the quality of life in these patients.<sup>[7]</sup> Physical activity can have a positive effect in improving the overall health of the affected patients during the course of treatment until after treatment and recovery from cancer.<sup>[5,6]</sup>

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However, the important issue here is the effect of physical activity on health promotion in this group of people that can be associated with exercise activities. Also, some studies have reported the beneficial effect of physical activity on the health of these people; however, it has been shown that there is no regular and adequate exercise among these people after their treatment and this is one of the most important challenges among this group of patients.<sup>[8,9]</sup>

Studies widely show increased experience of health and well-being problems among patients who survived cancer in different societies.<sup>[10]</sup> It seems that cancer survivors have great difficulty in returning to normal life after a course of cancer treatment and, hence, studies in this field began to suggest physical activity programs as an effective intervention for improving the health, well-being, and re-adjustment to life-after-treatment, in this group.<sup>[11-13]</sup>

According to Ryan and Deci (2002), based on self-determination theory, there are two main approaches to defining well-being: hedonism and eudaimonia.<sup>[14]</sup> In contrast, a number of psychologists, including Ryff (1989), despite the interesting nature of hedonistic well-being, are opposed to this type of well-being and emphasize on eudaimonia-oriented well-being.<sup>[15]</sup> Eudaimonia view suggests that the ideal life is meant to flourish human capabilities. In other words, in this view, whatever is valuable to a person and is in accordance with the person's real self is important.<sup>[16-18]</sup>

Huta and Ryan (2010) investigated the motivations to achieve well-being on the basis of these two approaches. They also investigated any activity that causes a person to follow both motives of hedonism and eudaimonia.<sup>[19]</sup> Huta (2013) using this tool showed an optimal well-being and indicators of a good life, which this momentous is associated with both types of well-being. These types of motives have been investigated in different societies, but such motivations have not been studied, in particular, among those people who have survived cancer. It is likely that survivors can be motivated by combining both types of well-being motivations that this can further enhance the insight into well-being in this group of people compared with previous studies.<sup>[18]</sup>

Given the low studies in this regard and the positive impact of physical activity on some chronic diseases, this study aimed to determine the effect of regular physical activity and its role on hedonism and eudaimonia motivations among breast cancer survivors in Urmia.

## Methods

### Study design

This semi-experimental study was conducted with a time series design with intervention and control groups. The target population included breast cancer survivors in 2015 in Urmia.

### Study samples

In this study, after installing the recall notices in hospitals and health centers, 49 people who survived breast cancer were identified by the investigator and they were invited on a given day. After providing explanation about the process of research, 49 people aged 39–51 years who met the inclusion criteria volunteered to participate in this research and were randomly divided into two groups: control ( $n = 20$ ) and experimental ( $n = 22$ ). The inclusion criteria were no history of mental illness, the absence of disease and physical ability to do physical exercise, and the willingness to participate in the study. The exclusion criteria included unwillingness to continue participating and subsequent inability to perform exercise in the study.

### Exercise (Training) protocol

The physical and sport activities were conducted by expert trainers in the field of motor behavior and exercise physiology. At this point, participants in the experimental group, with supervision of researchers, performed aerobic exercises with the intensity of 55–60% heart rate reserve for 22 sessions, 3 times a week and each session lasted 50–60 minutes. This training program included 15 minutes of warm-up exercise and slow running. Aerobics included basic movements of aerobic that participants in the experimental group performed the first 10 sessions with 55% heart rate reserve and for 20 minutes. In the next 12 sessions, the duration of aerobic steps gradually increased to 30 minutes and 60% heart rate reserve, in which increases in the intensity and duration of exercise were based on the physical capabilities of the participants. The music for the sessions was selected by the coach with a rhythm that was intended to use 55–60% of resting heart rate. At the end of each training session, cooling down was performed with slow running and gentle stretching for 10 minutes.<sup>[11,20]</sup> The control group was asked to continue their daily activities during this period. In order to control the intensity of workouts, the heart rate was measured before workout, after workout, and during the cool-down period for each aerobic session using Polar heart-rate monitors. The questionnaires were distributed and collected before starting the training program, immediately after the—last training session and two weeks after the last session.

### Data collection tools

The motives for Hedonism and Eudaimonia activities (HEMA): This measure designed by Huta and Ryan (2010) separately measures hedonism (5 items) and Eudaimonia (4 items) motivations for carrying out the activities.<sup>[19]</sup> This scale has seven questions (Likert 1–7). Huta and Ryan (2010) reported an acceptable validity and reliability.<sup>[19]</sup> This measure has been used and approved among Iranian subjects.<sup>[21]</sup> Cronbach's alpha coefficient to determine the reliability scale for hedonistic motivation ( $\alpha = 0.62$ ) and motivation Eudaimonia ( $\alpha = 0.75$ ) is in the average and acceptable range.

### Statistics

After collecting the scales and required information, SPSS statistical software version 16 was used to analyze the data. In this

study, descriptive statistics was used to characterize and classify the information, the test of Kolmogorov–Smirnov and Levene's test were used to determine the normal distribution of scores and homogeneity of variance. Repeated measures ANOVA was used to compare the effect of exercise on the study variables in three steps of the experiment between the two groups. This test was used to assess the effects of variables over different times. The level of significance for all tests considered 0.05 ( $P < 0.05$ ).

### Ethical considerations

The study was approved by the ethics committee of the Urmia University of Medical Sciences (Code of ethics: 292/1393). Accordingly, informed consents were obtained from all the patients.

### Results

The mean age of the participants in the intervention group was 46.35 and 55.17 and in the control group was 44.36 and 55.98. Statistical analysis by *t*-test showed no significant difference between the two groups in terms of the mentioned variables ( $P = 0.25$ ). There was no statistically significant difference in marital status between the two groups based on Chi-square test ( $P = 0.73$ ).

Table 1 shows the mean scores of hedonism and eudaimonia motivation between each group for three times. The results of repeated measures showed that there was no significant difference between the changes in the mean scores of hedonism in both groups over time ( $P = 0.28$ ). The results of the interaction effect of time and intervention in this test showed that these two variables had a significant effect on the mean scores of hedonism within groups ( $P = 0.04$ ). In comparison between groups, the difference was statistically significant ( $P = 0.001$ ). Also, in relation to eudaimonia motivation, the results of the study showed that there was no significant difference between the changes in the

mean scores of eudaimonia in both groups over time ( $P = 0.18$ ). The results of the interaction effect of time and intervention in this test showed that these two variables had no significant effect on the mean scores of eudaimonia within groups ( $P = 0.3$ ). But, in comparison between the groups, the difference was statistically significant ( $P = 0.009$ ) Table 2.

### Discussion

The overall result of this study shows the important role of physical activity in promoting the hedonism and eudaimonia motivation in women who survived breast cancer. Because, hedonic and eudaimonic motivation significantly increased in 22 sessions of training in the experimental group. This increase demonstrates the positive role of exercise activities on the motives of well-being, and a good life in women who survived cancer. In fact, such behaviors can effectively determine the wellbeing motivations in people.<sup>[18,19,22]</sup> The results also showed that in the intervals between the first and the second post-test (rest interval), these two types of motivation in the experimental group, in all conditions, are at higher rates than the control group, but there was no significant change in this period. Nevertheless, the results show a significant improvement in both of these indicators from the pre-test to the second post-test.

The finding by Huta and Ryan (2010) has precisely been indicated in the present study. The fact that the level of eudemonic motivation is higher than hedonic motivation in the second post-test experiment compared to pre-test and first post-test.<sup>[19]</sup> In this regard, the motivations of both eudemonia and hedonism is increased as a result of participation in exercise activities, but eudemonic motivation shows a higher level of promotion than hedonic motive which is an indicator of duration and a better index for a good life. In contrast, the results of the control group that did not participate in the exercise program remained almost constant, and compared with the experimental group was at a

**Table 1: Mean scores of hedonism and eudaimonia motivation between the two groups in the three-time periods**

Group	Motives	Before starting an exercise program	Immediately after the last exercise session	A month after the last exercise session
		Mean±SD	Mean±SD	Mean±SD
Intervention	Hedonia	5.50±0.97	6.32±0.78	6.16±0.76
	Eduaimonia	5.84±1.18	6.43±0.77	6.46±0.56
Control	Hedonia	5.52±0.63	5.34±1.03	5.34±1.36
	Eduaimonia	5.76±1.05	5.72±0.90	5.90±1.13

**Table 2: Repeated measures analysis of the hedonism and eudaimonia motivation in three times measurement in the study subjects**

Source	Variable	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time (Original effect)	Hedonic motivation	2.29	1.94	1.17	1.28	0.28	0.03
	Eudaimonic motivation	3.25	1.97	1.68	1.71	0.18	0.04
Time * Groups (Interactive effect)	Hedonic motivation	6.02	1.94	3.10	3.38	0.04	0.07
	Eudaimonic motivation	2.27	1.92	1.18	1.2	0.30	0.02
Intergroup	Hedonic motivation	11.18	1	11.18	11.78	0.001	0.22
	Eudaimonic motivation	6.37	1	6.37	7.73	0.009	0.15

lower level. In explaining why this finding can be said, the fact being discussed by Aristotle, and later by prominent psychologists in this field, including Waterman (1993), Deci and Ryan (2001), and Huta (2013), that virtue-oriented behavior (eudamonia) is a more effective indicator of a good and meaningful life in people; while hedonism is effective solely for a short-term period and for fun and temporal programs. In fact, this approach is approved by the Iranian women society who survived breast cancer.<sup>[14,17,18]</sup>

Ultimately, it is suggested that experts in the field of cancer-related diseases to consider regular and systematic training exercise as an effective intervention in mental health as well as utilize the desire of these people for improving their health. In addition, for further practical research in cancer patients, it is suggested that not only the role of exercise after cancer treatment to be considered but also the simultaneous role of exercise and cancer treatment to be investigated. Also, due to the positive influence of exercise activities on the well-being parameters related to physical health, the role of sport activities in physical health has to be studied in this group of people.

## Conclusion

Taken together, the results showed that both motivations increased with the duration of the exercise. However, during the exercise sessions, hedonistic motivation in the experimental group was higher than the control group. These fact is that hedonism is effective for a short-term period and Eudemonia is effective for a longer time period.

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## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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