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IMPROVING CANCER SURVIVOR QUALITY OF LIFE THROUGH EXERCISE
REHABILITATION

by

Vincent Falzone

B.S., Southern Illinois University, 2020

A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
Master of Science in Education

School of Human Sciences
in the Graduate School
Southern Illinois University Carbondale
May 2022

RESEARCH PAPER APPROVAL

IMPROVING CANCER SURVIVOR QUALITY LIFE THROUGH EXERCISE
REHABILITATION

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Vincent Falzone

A Research Paper Submitted in Partial
Fulfillment of the Requirements
for the Degree of
Master of Science in Education
in the field of Kinesiology

Approved by:

Phillip Anton, PhD, Associate Professor

Graduate School
Southern Illinois University Carbondale
April 1, 2022

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CHAPTER 1

INTRODUCTION

Cancer is the current leading cause of death worldwide. In 2018 alone, there were over nine million deaths caused by cancer. Cancer treatments are very strenuous and can cause many difficulties in a survivor's everyday activities. Fatigue, discomfort, and decreased strength are among the many physical issues that come with radiation and chemotherapy. Survivors also report sensory and behavioral fatigue during their everyday lives (Hayward, 2007) Exercise is a common tool used to improve the quality of life of many cancer survivors. Survivors may find themselves with lower fatigue, higher levels of energy and less anxiety when engaging in an exercise program. (Burnham & Wilcox, 2002). Research in the rehabilitation field shows us that exercise in most forms greatly benefits those who have been diagnosed with cancer by. In some cases, three and six-month programs have eliminated symptoms of depression and increased fitness by large margins (Sprod et al. 2010). Survivors need to be well-equipped to live their lives during and after cancer treatment, as this will help increase their quality of life, functionality, and overall health. Most studies utilize various exercise programs with some differing modes and intensity, however very few include information about social and psychological aspects alongside physical assessments.

Through SIUC's Strong Survivors program, one can see just how much the different aspects of exercise programs really matter. Strong Survivors utilizes a mix of resistance exercises as well as aerobic fitness training to increase physical fitness. It is known that progressive resistance training programs can increase muscular strength and physical functioning (Peddle-Mcintyre et al. 2012). Aerobic exercise programming is also administered alongside resistance training to increase participant's aerobic capacity. Interval and continuous style aerobic training

programs have been shown to increase VO₂ and bring levels into the healthy population threshold (Dolan et al. 2015).

Knowing the numerous benefits of daily exercise, it is hypothesized that post-program scores will be more positive with respect to how each assessment is scored. The overall purpose of this study is to identify the social, psychological, and physical aspects that can benefit those in cancer rehab programs. Existing Strong Survivors data that was recorded at the participant's admission into the program will be compared with data recorded at the end of their program.

CHAPTER 2

METHODS

Participants will be selected as follows: from current Strong Survivors records, 10 current Cancer survivors' as well as 10 Cancer caregivers' data will be analyzed and compared.

Survivors and caregivers were 60+/-9 years old. Five males and five females are present in both groups. Only survivors and caregivers that have completed the initial assessment and the final assessment will be utilized for information. Between the pre and post program assessments, participants engaged in numerous exercise sessions to increase their overall physical health, functional ability, and quality of life.

Access to the forms was provided by the Strong Survivor's Cancer Rehabilitation program at SIUC. The Berlin Social Support Scale, Quality of Life scale, Fatigue scale, Exercise Enjoyment scale, and CHAMPS physical activity scale are all utilized by the program and are readily available to all trainers for utilization. When survivors and caregivers participate in the program, they must also perform physical assessments at the beginning and end of the program. These assessment scores will also be used.

Scores from survivors and caregivers will be averaged and compared. The averages for Survivor and Caregiver QOL and Social Support were calculated separately as well, as the scales are different.

CHAPTER 3

RESULTS

From the scores taken Pre-program to the scores taken post-Program, average scores increased or decreased positively in every assessment. Based on the collected averages post exercise assessment as well as post-program questionnaire scores showed beneficial progress compared to pre-program questionnaires and exercise assessments. On average quality of life, perceived social support, exercise enjoyment, and CHAMPS scores positively increased for participants within the program. The same trend occurred in the opposite direction for caregiver's quality of life as well as their perceived social support, however this still represents a beneficial change. Average exercise assessment scores for the lift and carry, stand test, sit to stand test, and the stair climb test all showed a beneficial decrease in the amount of time taken to complete the test. Due to the nature of the treadmill test, average time increase from pre to post, however this represents a positive change.

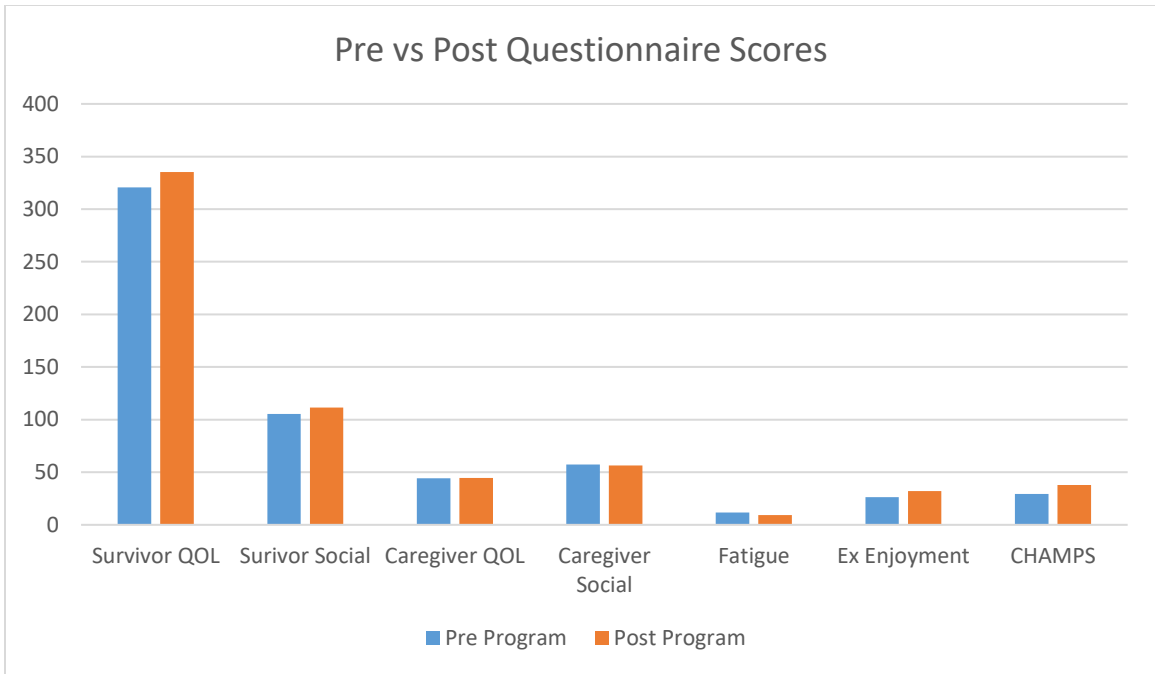


Figure 1

Pre vs Post Questionnaire Scores

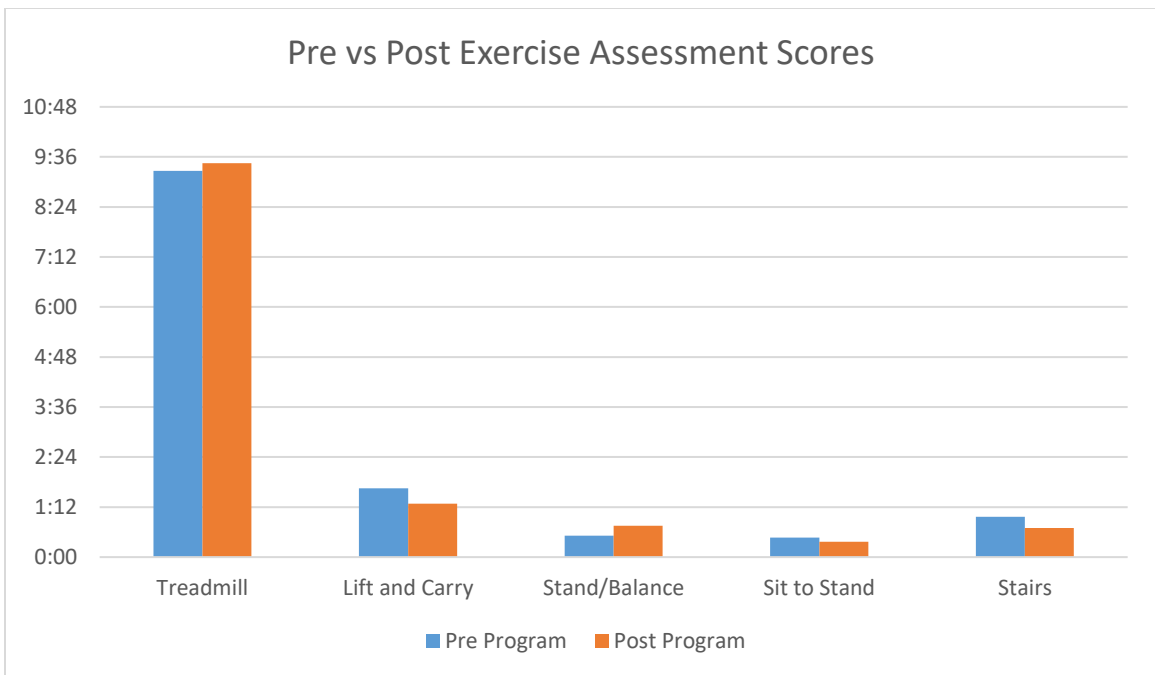


Figure 2

Pre vs Post Questionnaire Scores

CHAPTER 4

DISCUSSION

The results of this study yielded positive results in every regard. Regular exercise has been shown to be beneficial in many mental and physical ways. The stated hypothesis was proven correct. Due to the nature of Strong Survivors tests, some pre to post score averages will be lower, and some may appear higher. However, the positive benefit of each should not be doubted. QOL, perceived social support for survivors, exercise enjoyment, CHAMPS, and the Treadmill Test on the Physical Assessment are all scores that Strong Survivors seeks to increase from Pre to Post. Perceived social support for caregivers, fatigue, the Lift and Carry test, Stand test, Sit to Stand test, and Stair assessment are all scores that Strong Survivors seeks to decrease Pre to Post.

Large amounts of fatigue are felt by patients after radiation and chemotherapy (Hayward, 2007), and even so fatigue was successfully lowered in participants according to their post-assessment questionnaire. Participants were able to perform each physical assessment at a greater level in their post-program assessment. Strong Survivors, similar to other programs utilizes a multimodal exercise program. Multimodal programs have been shown to increase a participant's aerobic capacity as well as their muscular strength (Adamsen et al. 2009). Participants in this study received these same benefits in that they were able to perform aerobic exercise more efficiently in both sustained and shorter bouts of exercise.

This study is limited in that it does not measure other variables that may affect participants. Variables such as sleep quality, diet, and intensity of exercise they are performing during sessions can produce different exercise outcomes (Rogers et al. 2014). The average age of participant data utilized in this study was 60. A study including younger or older participants

may yield different results. The types of cancer each survivor was diagnosed with was also not considered when averaging scores.

CHAPTER 5

CONCLUSION

In conclusion, it was found that the Strong Survivors exercise program provides numerous physical benefits such as increased exercise performance, quality of life, and practical movement training. These benefits brought a plethora of perceived social support benefits, reduced fatigue, as well as an increase in achievable daily activities over pre-program. Both survivors and caregivers were able to benefit in similar ways from the exercise program. Based on the collected data, it is highly likely that increased exercise performance strongly correlates to an increase in perceived social support, quality of life, exercise enjoyment, and reduced fatigue. Further studies should be conducted to confirm this correlation.

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APPENDICES

APPENDIX A

Quality of Life Questionnaire (Survivor)

Name: _____ Date: _____ ID#: _____
(research use only)

Ferrans and Powers QUALITY OF LIFE INDEX® CANCER VERSION – III

Part 1. For each of the following, please choose the answer that best describes how **satisfied** you are with that area of your life based on how you have been feeling the past 3-4 weeks. Please mark your answer by circling the number. There are no right or wrong answers.

How satisfied are you with:	Very Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied
1. Your health?	1	2	3	4	5	6
2. Your health care?	1	2	3	4	5	6
3. The amount of pain that you have?	1	2	3	4	5	6
4. The amount of energy you have for everyday activities?	1	2	3	4	5	6
5. Your ability to take care of yourself without help?	1	2	3	4	5	6
6. The amount of control you have over your life?	1	2	3	4	5	6
7. Your chances of living as long as you would like?	1	2	3	4	5	6
8. Your family's health?	1	2	3	4	5	6
9. Your children?	1	2	3	4	5	6
10. Your family's happiness?	1	2	3	4	5	6
11. Your sex life?	1	2	3	4	5	6
12. Your spouse, lover, or partner?	1	2	3	4	5	6
13. Your friends?	1	2	3	4	5	6
14. The emotional support you get from your family?	1	2	3	4	5	6
15. The emotional support you get from people other than your family?	1	2	3	4	5	6
16. Your ability to take care of family responsibilities?	1	2	3	4	5	6
17. How useful are you to others?	1	2	3	4	5	6
18. The amount of worries in your life?	1	2	3	4	5	6
19. Your neighborhood?	1	2	3	4	5	6
20. Your home, apartment, or place where you live?	1	2	3	4	5	6
21. Your job (if employed)?	1	2	3	4	5	6
22. Not having a job (If unemployed, retired, or disabled)?	1	2	3	4	5	6
23. Your education?	1	2	3	4	5	6
24. How well you can take care of your financial needs?	1	2	3	4	5	6
25. The things you do for fun?	1	2	3	4	5	6
26. Your chances for a happy future?	1	2	3	4	5	6
27. Your peace of mind?	1	2	3	4	5	6
28. Your faith in your religion?	1	2	3	4	5	6
29. Your achievement of personal goals?	1	2	3	4	5	6
30. Your happiness in general?	1	2	3	4	5	6
31. Your life in general?	1	2	3	4	5	6
32. Your personal appearance?	1	2	3	4	5	6
33. Yourself in general?	1	2	3	4	5	6

(Please Flip Over To Back)

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Part 2. For each of the following, please choose the answer that best describes how **important** that area of your life is to you based on how you have been feeling the past 3-4 weeks. Please mark your answer by circling the number. There are no right or wrong answers.

	Very Unimportant	Moderately Unimportant	Slightly Unimportant	Slightly Important	Moderately Important	Very Important
How important to you is:						
1. Your health?	1	2	3	4	5	6
2. Your health care?	1	2	3	4	5	6
3. Having no pain?	1	2	3	4	5	6
4. Having enough energy for everyday activities?	1	2	3	4	5	6
5. Taking care of yourself without help?	1	2	3	4	5	6
6. Having control over your life?	1	2	3	4	5	6
7. Living as long as you would like?	1	2	3	4	5	6
8. Your family's health?	1	2	3	4	5	6
9. Your children?	1	2	3	4	5	6
10. Your friends's health?	1	2	3	4	5	6
11. Your sex life?	1	2	3	4	5	6
12. Your spouse, lover, or partner?	1	2	3	4	5	6
13. Your friends?	1	2	3	4	5	6
14. The emotional support you get from your family?	1	2	3	4	5	6
15. The emotional support you get from people other than your family?	1	2	3	4	5	6
16. Taking care of family responsibilities?	1	2	3	4	5	6
17. Being useful to others?	1	2	3	4	5	6
18. Having no worries?	1	2	3	4	5	6
19. Your neighborhood?	1	2	3	4	5	6
20. Your home, apartment, or place where you live?	1	2	3	4	5	6
21. Your job (if employed)?	1	2	3	4	5	6
22. Having a job (if unemployed, retired, or disabled)?	1	2	3	4	5	6
23. Your education?	1	2	3	4	5	6
24. Being able to take care of your financial needs?	1	2	3	4	5	6
25. Doing things for fun?	1	2	3	4	5	6
26. Having a happy future?	1	2	3	4	5	6
27. Peace of mind?	1	2	3	4	5	6
28. Your faith in your religion?	1	2	3	4	5	6
29. Achieving your personal goals?	1	2	3	4	5	6
30. Your happiness in general?	1	2	3	4	5	6
31. Being satisfied with life?	1	2	3	4	5	6
32. Your personal appearance?	1	2	3	4	5	6
33. Yourself as a member of society?	1	2	3	4	5	6

APPENDIX B

Quality of Life Questionnaire (Caregiver)



Name _____ ID # _____
 : _____ Date: _____
 (research use only)

CAREGIVER QUALITY OF LIFE - CANCER

Below is a list of statements that other people caring for loved ones with cancer have said are important. By circling one number per line, please indicate how true each statement has been for you during the past 7 days.

0	=	Not at all	2	=	Somewhat
1	=	A little bit	3	=	Quite a bit
		4	=		Very much

During the past 7 days:

1	It bothers me that my daily routine is altered.	0	1	2	3	4
2	My sleep is less restful.	0	1	2	3	4
3	My daily life is imposed upon.	0	1	2	3	4
4	I am satisfied with my sex life.	0	1	2	3	4
5	It is a challenge to maintain my outside interests.	0	1	2	3	4
6	I am under a financial strain.	0	1	2	3	4
7	I am concerned about our insurance coverage.	0	1	2	3	4
8	My economic future is uncertain.	0	1	2	3	4
9	I fear my loved one will die.	0	1	2	3	4
10	I have more of a positive outlook on life since my loved one's illness.	0	1	2	3	4
11	My level of stress and worries has increased.	0	1	2	3	4
12	My sense of spirituality has increased.	0	1	2	3	4
13	It bothers me, limiting my focus to day-to-day.	0	1	2	3	4

14	I feel sad.	0	1	2	3	4
15	I feel under increased mental strain.	0	1	2	3	4
16	I get support from my friends and neighbors.	0	1	2	3	4
17	I feel guilty.	0	1	2	3	4
18	I feel frustrated.	0	1	2	3	4
19	I feel nervous.	0	1	2	3	4
20	I worry about the impact my loved one's illness has had on my children or other family members.	0	1	2	3	4
21	I have difficulty dealing with my loved one's changing eating habits.	0	1	2	3	4
22	I have developed a closer relationship with my loved one.	0	1	2	3	4
23	I feel adequately informed about my loved one's illness.	0	1	2	3	4
24	It bothers me that I need to be available to chauffeur my loved one to appointments.	0	1	2	3	4
25	I fear the adverse effects of treatment on my loved one.	0	1	2	3	4
26	The responsibility I have for my loved one's care at home is overwhelming.	0	1	2	3	4
27	I am glad that my focus is on getting my loved one well.	0	1	2	3	4
28	Family communication has increased.	0	1	2	3	4
29	It bothers me that my priorities have changed.	0	1	2	3	4
30	The need to protect my loved one bothers me.	0	1	2	3	4
31	It upsets me to see my loved one deteriorate.	0	1	2	3	4
32	The need to manage my loved one's pain is	0	1	2	3	4

overwhelming.

33	I am discouraged about the future.	0	1	2	3	4
34	I am satisfied with the support I get from my family.	0	1	2	3	4
35	It bothers me that other family members have not shown interest in taking care of my loved one.	0	1	2	3	4

APPENDIX C

Berlin Social Support Scale (Survivor)



Name: _____ Date: _____

ID#: _____
(research use only)

Berlin Social Support Scale (Cancer Survivors)

Instructions: Read each of the following statements carefully and indicate the degree to which you agree with the statement, according to the following scale:

- 1 = Strongly Disagree
- 2 = Somewhat Disagree
- 3 = Somewhat Agree
- 4 = Strongly Agree

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. There are some people who truly like me.	1	2	3	4
2. Whenever I am not feeling well, other people show me that they are fond of me	1	2	3	4
3. Whenever I am sad, there are people who cheer me up.	1	2	3	4
4. There is always someone there for me when I need comforting	1	2	3	4
5. I know some people on whom I can always rely.	1	2	3	4
6. When I am worried, there is someone who helps me.	1	2	3	4
7. There are people who offer me help when I need it.	1	2	3	4
8. When everything becomes too much for me to handle, others are there to help me.	1	2	3	4
9. When I am down, I need someone who boosts my spirits.	1	2	3	4
10. It is important for me always to have someone who listens to me.	1	2	3	4
11. Before making any important decisions, I absolutely need a second opinion.	1	2	3	4
12. I get along best without any outside help.	1	2	3	4
13. In critical situations, I prefer to ask others for their advice.	1	2	3	4
14. Whenever I am down, I look for someone to cheer me up again.	1	2	3	4
15. When I am worried, I reach out to someone to talk to.	1	2	3	4
16. If I do not know how to handle a situation, I ask others what they would do.	1	2	3	4
17. Whenever I need help, I ask for it.	1	2	3	4

Instructions: Now think about the person who is closest to you, such as your spouse, partner, child, friend, and so on. How did this person react to you during the *last week*?

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. This person showed me that he/she loves and accepts me	1	2	3	4
2. This person was there when I needed him/her.	1	2	3	4
3. This person comforted me when I was feeling bad.	1	2	3	4
4. This person left me alone.	1	2	3	4
5. This person did not show much empathy for my situation.	1	2	3	4
6. This person complained about me.	1	2	3	4
7. This person took care of many things for me.	1	2	3	4
8. This person made me feel valued and important.	1	2	3	4
9. This person expressed concern about my condition.	1	2	3	4
10. This person assured me I can rely completely on him/her.	1	2	3	4
11. This person helped me find something positive in my situation.	1	2	3	4
12. This person suggested activities that might distract me.	1	2	3	4
13. This person encouraged me not to give up.	1	2	3	4
14. This person took care of things that I could not manage on my own.	1	2	3	4
15. In general, I am very satisfied with the way this person behaved.	1	2	3	4
16. I kept all bad news from this person.	1	2	3	4
17. I avoided everything that could upset him/her.	1	2	3	4
18. I showed strength in his/her presence.	1	2	3	4
19. I did not let him/her notice how bad and depressed I really felt.	1	2	3	4
20. I avoided any criticism.	1	2	3	4
21. I pretended to be very strong, although I did not feel that way.	1	2	3	4

APPENDIX D

Berlin Social Support Scale (Caregiver)



Name: _____ Date: _____

ID#: _____
(research use only)

Berlin Social Support Scale (Caregivers)

Instructions: Read each of the following statements carefully and indicate the degree to which you agree with the statement, according to the following scale:

- 1 = Strongly Disagree
2 = Somewhat Disagree
3 = Somewhat Agree
4 = Strongly Agree

Think about the person for whom you are caring. How did you interact with this person during the *last week*?

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. I showed them how much I cherish and accept them.	1	2	3	4
2. I was there when they needed me.	1	2	3	4
3. I comforted them when they were feeling bad.	1	2	3	4
4. I left them alone.	1	2	3	4
5. I did not have much empathy for them.	1	2	3	4
6. I criticized them.	1	2	3	4
7. I did a lot for them.	1	2	3	4
8. I made them feel valued and important.	1	2	3	4
9. I expressed my concern about their condition.	1	2	3	4
10. I reassured them that they can rely completely on me.	1	2	3	4
11. I helped them find something positive in their situation.	1	2	3	4
12. I suggested an activity that might distract them.	1	2	3	4
13. I encouraged them not to give up.	1	2	3	4
14. I took care of daily duties that they could not fulfill on their own.	1	2	3	4
15. I kept all bad news from this person.	1	2	3	4
16. I avoided everything that could upset him/her.	1	2	3	4
17. I showed strength in his/her presence.	1	2	3	4
18. I did not let him/her notice how bad and depressed I really felt.	1	2	3	4
19. I avoided any criticism.	1	2	3	4
20. I pretended to be very strong, although I did not feel that way.	1	2	3	4

APPENDIX E

Exercise Regulations Questionnaire



Name: _____ Date: _____ ID#: _____
 (research use only)

EXERCISE REGULATIONS QUESTIONNAIRE (BREQ-2)

Age: _____ years Sex: male female (please circle)

WHY DO YOU ENGAGE IN EXERCISE?

We are interested in the reasons underlying peoples' decisions to engage, or not engage in physical exercise. Using the scale below, please indicate to what extent each of the following items is true for you. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about exercise. Your responses will be held in confidence and only used for our research purposes.

				Not true for me	Sometimes true for me	Very true for me
1	I exercise because other people say I should	0	1	2	3	4
2	I feel guilty when I don't exercise	0	1	2	3	4
3	I value the benefits of exercise	0	1	2	3	4
4	I exercise because it's fun	0	1	2	3	4
5	I don't see why I should have to exercise	0	1	2	3	4
6	I take part in exercise because my friends/family/partner say I should	0	1	2	3	4
7	I feel ashamed when I miss an exercise session	0	1	2	3	4
8	It's important to me to exercise regularly	0	1	2	3	4
9	I can't see why I should bother exercising	0	1	2	3	4

	Not true for me		Sometimes true for me		Very true for me
10 I enjoy my exercise sessions	0	1	2	3	4
11 I exercise because others will not be pleased with me if I don't	0	1	2	3	4
12 I don't see the point in exercising	0	1	2	3	4
13 I feel like a failure when I haven't exercised in a while	0	1	2	3	4
14 I think it is important to make the effort to exercise regularly	0	1	2	3	4
15 I find exercise a pleasurable activity	0	1	2	3	4
16 I feel under pressure from my friends/family to exercise	0	1	2	3	4
17 I get restless if I don't exercise regularly	0	1	2	3	4
18 I get pleasure and satisfaction from participating in exercise	0	1	2	3	4
19 I think exercising is a waste of time	0	1	2	3	4

APPENDIX F

Fatigue Subscale



Name: _____ Date: _____

ID#: _____
(research use only)

Profile of Mood States Short form fatigue subscale (F_POMS-sf).

Below is a list of words that describe feelings people have. Please read each item carefully. Then circle the answer that best describes how you have been feeling over the course of the past 3-4 weeks.

1.) **Worn-Out**

Not at all A little Moderately Quite a bit Extremely

2.) **Fatigued**

Not at all A little Moderately Quite a bit Extremely

3.) **Exhausted**

Not at all A little Moderately Quite a bit Extremely

4.) **Weary**

Not at all A little Moderately Quite a bit Extremely

5.) **Bushed (Sleepy)**

Not at all A little Moderately Quite a bit Extremely

APPENDIX G

CHAMPS Questionnaire

CHAMPS Activities Questionnaire for Adults

CHAMPS: Community Healthy Activities Model Program
 Institute for Health & Aging, University of California San Francisco
 Stanford Center for Research in Disease Prevention, Stanford University
 (11/06/00) © Copyright 1998
 Do not reproduce without permission of the CHAMPS staff
 Contact: Anita L. Stewart, Ph.D., UCSF, anitast@itsa.ucsf.edu

Date: _____
 Name: _____
 ID: _____
 (Research use only)

This questionnaire is about activities that you may have done in the past 4 weeks. The questions on the following pages are similar to the example shown below.

INSTRUCTIONS

If you DID the activity in the past 4 weeks:

Step #1 Check the YES box.

Step #2 Think about how many **TIMES a week** you usually did it, and write your response in the space provided.

Step #3 Circle how many **TOTAL HOURS in a typical week** you did the activity.

Here is an example of how Mrs. Jones would answer question #1: Mrs. Jones usually visits her friends Maria and Olga twice a week. She usually spends one hour on Monday with Maria and two hours on Wednesday with Olga. Therefore, the total hours a week that she visits with friends is 3 hours a week.

In a typical week during the past 4 weeks, did you...	
1. Visit with friends or family (other than those you live with)? <input checked="" type="checkbox"/> YES How many TIMES a week? <u>2</u> → <input type="checkbox"/> NO	How many TOTAL hours a week did you usually do it? → Less than 1 hour 1-2½ hours <u>3-4½ hours</u> 5-6½ hours 7-8½ hours 9 or more hours

If you DID NOT do the activity:

- Check the NO box and move to the next question

In a typical week during the past 4 weeks, did you ...							
1. Visit with friends or family (other than those you live with)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
2. Go to the local community center? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
3. Do volunteer work? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
4. Attend church or take part in church activities? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
5. Attend other club or group meetings? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
6. Use a computer? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
7. Dance (such as square, folk, line, ballroom) (do <u>not</u> count aerobic dance here)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
8. Do woodworking, needlework, drawing, or other arts or crafts? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
9. Play golf, carrying or pulling your equipment (count <u>walking time</u> only)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
10. Play golf, riding a cart (count <u>walking time</u> only)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
11. Attend a concert, movie, lecture, or sport event? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
12. Play cards, bingo, or board games with other people? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours

13. Shoot pool or billiards? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
14. Play singles tennis (do <u>not</u> count doubles)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
15. Play doubles tennis (do <u>not</u> count singles)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
16. Skate (ice, roller, in-line)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
17. Play a musical instrument? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
18. Read? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
19. Do heavy work around the house (such as washing windows, cleaning gutters)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours

20. Do light work around the house (such as sweeping or vacuuming)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
21. Do heavy gardening (such as spading, raking)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
22. Do light gardening (such as watering plants)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
23. Work on your car, truck, lawn mower, or other machinery? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours

****Please note: For the following questions about running and walking, include use of a treadmill.**

24. Jog or run? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours
25. Walk uphill or hike uphill (count only uphill part)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO	How many TOTAL <u>hours a week</u> did you usually do it? →	Less than 1 hour	1-2½ hours	3-4½ hours	5-6½ hours	7-8½ hours	9 or more hours

<p>26. Walk <u>fast or briskly</u> for exercise (do <u>not</u> count walking leisurely or uphill)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>27. Walk <u>to do errands</u> (such as to/from a store or to take children to school (<u>count walk time only</u>))? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>28. Walk <u>leisurely</u> for exercise or pleasure? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>29. Ride a bicycle or stationary cycle? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>30. Do other aerobic machines such as rowing, or step machines (do <u>not</u> count treadmill or stationary cycle)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>31. Do water exercises (do <u>not</u> count other swimming)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>32. Swim moderately or fast? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>33. Swim gently? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>34. Do stretching or flexibility exercises (do <u>not</u> count yoga or Tai-chi)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>35. Do yoga or Tai-chi? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>36. Do aerobics or aerobic dancing? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>37. Do moderate to heavy strength training (such as hand-held weights of <u>more than 5 lbs.</u>, weight machines, or push-ups)? <input type="checkbox"/> YES How many TIMES a week? _____ → <input type="checkbox"/> NO</p>	<p>How many TOTAL <u>hours a week</u> did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>

<p>38. Do light strength training (such as hand-held weights of <u>5 lbs. or less</u> or elastic bands)?</p> <p><input type="checkbox"/> YES How many TIMES a week? _____ →</p> <p><input type="checkbox"/> NO</p>	<p>How many TOTAL hours a week did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>39. Do general conditioning exercises, such as light calisthenics or chair exercises (do <u>not</u> count strength training)?</p> <p><input type="checkbox"/> YES How many TIMES a week? _____ →</p> <p><input type="checkbox"/> NO</p>	<p>How many TOTAL hours a week did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>40. Play basketball, soccer, or racquetball (do <u>not</u> count time on sidelines)?</p> <p><input type="checkbox"/> YES How many TIMES a week? _____ →</p> <p><input type="checkbox"/> NO</p>	<p>How many TOTAL hours a week did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>
<p>41. Do other types of physical activity not previously mentioned (please specify)?</p> <p>_____</p> <p><input type="checkbox"/> YES How many TIMES a week? _____ →</p> <p><input type="checkbox"/> NO</p>	<p>How many TOTAL hours a week did you usually do it? →</p> <p>Less than 1 hour 1-2½ hours 3-4½ hours 5-6½ hours 7-8½ hours 9 or more hours</p>

Thank You

APPENDIX H

Physical Assessment

Subject Name: _____
 Test #: I II III IV
 Clothing Worn: _____
 Assessor Name: _____



Day/ Date: _____
 Time: _____

Functional Activity Testing

Height: _____ Weight: _____ Gender: _____
 Resting HR: _____ Resting BP: _____ Age: _____ % Body Fat: _____
 R: ___ L: ___

Time on Treadmill:

Target Heart Rate: _____ $THR = [(HR_{max} - HR_{rest}) \times .65] + HR_{rest}$

STAGE	SPEED	GRADE	HR	BP	RPE
1	1.7	0%			
2	1.7	5%			
3	1.7	10%			
4	2.5	12%			
5	3.4	14%			
6	4.2	16%			
Cool Down (1min)	2.5	0%			
Cool Down	1.7	0%			

Cool Down Time to Reach HR within 10 BPM of stage 1 HR: _____

Time on Treadmill to reach target heart rate: _____ sec.

Did the subject use the handrails? Yes / No

If Yes, during what minute of exercise did he/she begin to use the handrails? ____

Lift and Carry:

Time to Complete 10 Repetitions: _____ sec.

Post-test HR: _____

One Foot Stand Test:

Balance on one foot flat on floor: R _____ sec L _____ sec

Balance on one foot flat on floor (EC): R _____ sec L _____ sec

Balance on toes with opposite leg up: R _____ sec L _____ sec

Sit to Stand:

Time taken to complete 10 repetitions: _____ sec.

Post-test HR: _____ Width of Feet: _____ cm

Depth of Feet: _____ cm

Were the arms used? Yes / No

If yes, on repetition were the arms used 1st: _____

Stair Climb and Descent:

Time taken to complete 3 consecutive Stair climb/descents: _____ sec.

Post-test HR: _____ Side of Stairwell: *UP*: L / R; *DOWN*: L / R
 (facing stairs)

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Southern Illinois University Carbondale
Bachelor of Science, Kinesiology, May 2020

Research Paper Title:

Improving Cancer Survivor Quality of Life Through Exercise Rehabilitation

Major Professor: Dr. Phillip Anton