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Heart transplant rehabilitation: an occupational therapy program

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HEART TRANSPLANT REHABILITATION: AN OCCUPATIONAL THERAPY PROGRAM

By

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A Scholarly Project
Submitted to the Occupational Therapy Department of the University of North Dakota
In partial fulfillment of the requirements For the degree of Master’s of Occupational Therapy

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This Scholarly Project Paper, submitted by Amos Hartsell, MOTS & Kirsten Slominski, MOTS in partial fulfillment of the requirement for the Degree of Master’s of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

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Title  Heart Transplant Rehabilitation: An Occupational Therapy
Department  Occupational Therapy
Degree  Master's of Occupational Therapy

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# TABLE OF CONTENTS

LISTS OF FIGURES........................................................................................................vi.

ACKNOWLEDGEMENTS............................................................................................vii.

ABSTRACT................................................................................................................viii.

CHAPTER

I. INTRODUCTION........................................................................................................1

II. REVIEW OF LITERATURE....................................................................................4

III. METHOD...............................................................................................................20

IV. PRODUCT...............................................................................................................24

V. SUMMARY............................................................................................................105

REFERENCES..............................................................................................................108
<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Schedule</td>
<td>100</td>
</tr>
<tr>
<td>Energy Levels</td>
<td>101</td>
</tr>
</tbody>
</table>
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Thank you.
ABSTRACT

Rehabilitation of Heart Transplant Patients: An Occupational Therapy Program. Amos Hartsell, Kirsten Slominski, & Dr. Debra Hanson, Department of Occupational Therapy, University of North Dakota School of Medicine & Health Sciences, 501 North Columbia Road, Grand Forks, ND 58202.

Purpose: The purpose of this scholarly project was to develop a comprehensive rehabilitation program following the acute inpatient stay after heart transplantation. This project can be applied in community based and in home rehabilitation settings.

Methods: A literature review was conducted using the SCOPUS and Pub Med databases. Information was gathered regarding rehabilitation of cardiac transplant recipients, problems facing recipients, occupations/activities, and occupational therapist roles. In addition information was gathered from medical facility websites regarding existing cardiac rehabilitation programs.

Results: Designed from the perspective of the Occupation Adaptation Model, a rehabilitation home program was developed for heart transplant recipients. Four sections of the workbook guide the patient in education (precautions, energy conservation, and exercise guidelines); lifestyle adaptations (activity-specific and general); activity planning, quality of life, and energy conservation techniques. The workbook format includes charts and schedules that will provide structure to daily life activities. The program is to be completed by the patient in cooperation with an
occupational therapist and a therapist guide is included. The Occupational Adaptation (OA) Model was utilized to assist in the development of this program. OA provided the framework for making modifications to activities of daily living.

**Conclusions:** The rehabilitation program developed encourages independence in daily activities at home; for post-cardiac transplantation clients. As participants have the opportunity to make lifestyle changes and routinely evaluate their perception of quality of life in their daily routines; improvements in perceived quality of life are expected.
CHAPTER I

INTRODUCTION

A crucial step to recovery after a cardiac event appears to be the rehabilitation process. Lifestyle alterations are considered the single most important aspect of a successful cardiac rehabilitation program. Education that results in lifestyle changes plays an important role in managing heart disease and other cardiac events and preventing further problems. Patients need the knowledge of making lifestyle adaptations, as well as the teaching as to how to make the necessary changes (Patient Education Management, 2008).

The low survival rates need to be addressed. In 2008, the estimated survival rate of transplant recipients was broken down by years of survival and gender. One year post transplant, 87-88 percent of males survived, whereas 86 percent of females survived; at three years, 79 percent of males were still living, while only 76 percent of females were alive; at year five post transplant, 68-72 percent of males were still surviving, while females were at a 64 percent survival rate (American Heart Association, 2009).

Research indicates that there is a need for a cardiac rehabilitation program which reflects the individual’s ability to make adaptations to their lifestyle as well as modifications to their environment. An ideal program would provide the individual with examples of adaptations or modifications to a particular activity and allow time to
reflect on and adjust to barriers and challenges faced throughout the completion of the activity.

The following document proposes an occupational therapy rehabilitation program for heart transplant recipients using the model of occupational adaptation. Programming will be implemented during the end stages of the patient's inpatient stay at a transplant center. The bulk of the program will be completed by the patient in conjunction with the occupational therapist during the outpatient phase of treatment with independent continuation at the community level. Guides are provided for both the therapist and patient to follow during programming, including generalized activities as well as room for expansion and individualized treatment options.

Factors that will influence the success of this program include patient and therapist factors. The occupational therapist must be familiar with the model of occupational adaptation, its key concepts as well as proper implementation of the model in practice. Successful completion of this program for the patient requires commitment to lifestyle adaptations in familiar contexts in the home as well as the community environment. The patient must possess will power and the acceptance of change after transplantation.

The key concepts addressed in the proposed occupational therapy cardiac transplant rehabilitation are broad and generalized but can be modified, adapted, and individualized to each transplant recipient. The final goal of the program is to increase quality of life and longevity after transplantation through patient education materials, pain management concepts, psychosocial influences, and lifestyle adaptations.
The second chapter includes a thorough review of literature conducted through journal articles and databases accessed from the Harley French Library. Chapter three describes methodology relating the completed product to the literature findings. Chapter four contains the proposed product in its entirety following the model of occupational adaptation. The final chapter, chapter five is a brief summary of this scholarly project. The final pages of the project include a comprehensive reference list of documents used during all phase of the completion of this scholarly project.
CHAPTER II
REVIEW OF LITERATURE

General Information

Prevalence

Many Americans are in need of heart transplantation procedures for various reasons. The American Heart Association (AHA) identified some of the common reasons for candidacy for transplantation including; irreversible damage from a viral infection or heart disease, long-term heart failure, heart muscle disease, irreversible heart injury from coronary artery disease, and multiple heart attacks that have exhausted all other medical and/or surgical options. According to the AHA (2009) an individual qualifies for heart transplantation if the heart no longer can adequately work and a person is at risk of dying. Candidates for heart transplantation are approximately 74 percent male, 68 percent Caucasian, and over half are over the age of 50 (American Heart Association, 2009).

As of September, 2009, there are currently 103,485 individuals on the national waiting list for organ transplants (United States Department of Health and Human Services, 2009). In a 2007 release, the United States Census indicated that 2,613 individuals were on the waiting list for a donor heart. In that same year, 2,210 Americans underwent heart transplantation (American Heart Association, 2009; United States Census Bureau, 2009). Approximately 2,200 Americans currently on the waiting
list for a new heart, will receive a new heart within the next year based on the yearly heart transplant average (American Heart Association, 2009).

As technology continues to improve and progress, the number of cardiac transplants will also continue to rise. With this growing improvement of technology and tools in the operating room, there is a need for rehabilitation teams to recognize technological advances and reform programs to improve the morbidity rates of cardiac transplant patients after transplantation surgery. A cardiac rehabilitation program can reduce the risk of death after a cardiac event by 20 to 25 percent (Patient Education Management, 2008).

Survival Rates

In 2008, the estimated survival rate of transplant recipients was broken down by years of survival and gender. One year post transplant, 87-88 percent of males survived, whereas 86 percent of females survived; at three years, 79 percent of males were still living, while only 76 percent of females were alive; at year five post transplant, 68-72 percent of males were still surviving, while females were at a 64 percent survival rate (American Heart Association, 2009). The average rates have increase over time. Myaskovsky, et.al (2006) discovered that the one, three and five year survival rates were 86 percent, 78 percent, and 70 percent respectively. A research study conducted in Greece analyzing the clinical experience of heart transplant recipients ten years after transplantation indicated that of the 53 patients who received the “gold standard” treatment for end-stage heart failure, the survival rate was approximately 70 percent (not broken down by sex) (Manginas, et.al, 2008).
Problems After Transplantation

Physical Problems

Complications that arise after transplantation may add great difficulty to recipients’ recovery. Data from the National Heart Lung and Blood Institute (NHLBI), a division of United States Department of Health and Human Services, indicate that the five most common physical problems after a heart transplantation procedure are failure of the donor heart, complications of medications, infection, cancer, and problems from not following health care plans (National Heart Lung and Blood Institute, 2009).

Hoffman (2005) found the most harmful complications for recovery included primary graft dysfunction and rejection of the transplant. The first physical problem, failure of the donor heart, can occur for a variety of reasons. Heart failure may occur in a donor heart in the same manner that heart failure originally occurred in the previous heart of the recipient. The body may reject the donor heart. The donor heart may also develop a blood vessel disease called Cardiac Allograft Vasculopathy (CAV) that can cause the heart to fail. CAV is clinically defined as a chronic disease in which the walls of the new heart’s coronary arteries become thick, hard, and lose their elasticity. This process can destroy blood flow and cause serious damage. Hoffman (2005) noted that CAV is a leading cause of donor heart failure and death. This can occur years after the transplant surgery.

When heart failure occurs in an acute manner, within 30 days, it is more likely to be primary graft dysfunction. This dysfunction occurs when the donor heart is unable to function. Primary graft dysfunction can be caused by many things such as shock, trauma,
or narrowed blood vessels in the recipient’s lungs. Primary graft dysfunction can be treated with medications (nitric oxide or nitrates) that are inhaled or taken intravenously (NHLBI, 2009).

The National Heart Lung and Blood Institute (2009) reports that transplant recipients may die within the first year post-transplant due to rejection. Rejection occurs when the recipient’s immune system sees the new heart as a “foreign body” and attempts to destroy or reject it. About one-fourth of transplant recipients will have signs of organ rejection. Approximately 50 percent of organ rejections occur within six weeks of surgery. If a rejection occurs, it will occur within six months of surgery in most recipients. Medications are available to reduce the risk of rejection (NHLBI, 2009).

Medications that decrease organ rejection attempt to stop the immune system from trying to destroy the foreign body. At the same time, some of the combinations of medications prescribed to the recipient have major side effects. Some of the medications can cause kidney damage, with the end result for five percent of heart recipients being end-stage kidney disease in 7 years. When the medications are suppressing the immune system to decrease the risk of rejection, the recipient is at risk for infections. The National Heart Lung and Blood Institute (2009) identified that infections are a major cause of hospital admission for heart transplant patients and a leading cause of death in the first year after transplant. Not only can infections develop when the immune system is suppressed, but the recipient is also at risk for cancers and malignancies. The most common types of malignancies seen in transplant patients are skin and lip tumors or non-Hodgkin’s lymphoma. When these malignancies occur, they
are identified to be a major cause of late death in heart transplant patients with approximately 25 percent of heart transplant deaths 3 years after transplant. (NHLBI, 2009).

The National Heart Lung and Blood Institute (2009) indicated that about 95 percent of heart transplant patients develop high blood pressure within five years. About 84 percent will develop high cholesterol and triglycerides in the blood. It has also been shown, that women who receive transplants are more likely to develop Osteoporosis, a degenerative disorder in which the bones become weaker.

Heart transplant patients who follow plans developed by doctors and other healthcare professionals achieve optimal recovery and avoid the risks of complications. Patients can monitor their health by taking their medications, becoming aware of signs and symptoms of complications, visiting the doctor regularly, and engaging in healthy lifestyles and behaviors (NHLBI, 2009). According to Hoffman (2005) the function of a transplanted heart does allow some return to pre-illness activities but at a decreased or limited exercise capacity due to denervation.

Exercise training programs have demonstrated improvements in patient’s health and recovery and the factors’ affecting the outcomes of such programs have been the focus of attention for many researchers. Sareyyupoglu, et.al, (2007) examined the differences between cardiac recipients surviving more than two years and those who did not. The study revealed significant differences in multiple areas between the two groups including areas of difference in donor age, obesity, gender, time on waiting list, rejection, infection, ischemic times, and quality of life after transplant. The researchers
stated that the main reason for early death after transplantation was the lower standards of home life of the patients. In lower social and economic classes, the life expectancy after transplantation was shorter. Poor health maintenance after surgery was noted as most of these patients were trying to become active too soon and were not following precautions and exercise programming at home.

The issues surrounding cardiac transplantation also point to a lack of patient education following surgery. Patient education appears to be a key factor in cardiac rehabilitation. Patients commonly receive written information to supplement techniques they were taught prior to discharge. This is a means of reinforcement to help retain the newly acquired information. When a patient is unable to read and comprehend the information they are provided, this decreases compliance to a rehabilitation program along with increasing morbidity rates and inappropriate use of healthcare facilities. The average reading level of American adults is eighth grade, but it is recommended that patient education materials be produced using fifth or sixth grade as the readability standard. This is not often the case; for example, current diabetes education materials are approximately four grade levels above recommended reading levels for patient education materials (Johnson & Stern, 2004). The reading and comprehension levels of highly educated patients are likely to decrease due to stress associated with cardiac events. Patient education materials produced at a lower readability level will increase comprehension among even the most literate cardiac patients (Johnson & Stern, 2004).
Johnson and Stern (2004) surveyed 16 cardiac rehabilitation facilities in both urban and rural Minnesota. In a study focused on word and sentence length, findings indicated that the longer the sentences and the more polysyllabic the words, the greater difficulty of readability for the reader. The study revealed that the average reading level for the provided materials was tenth grade and only eleven percent of all submitted materials were written at or below the eighth grade level. Johnson and Stern (2004) maintain that providing materials at a lower reading level, allows the reader to read more quickly, as materials provide only essential information.

A crucial step to recovery after a cardiac event appears to be the rehabilitation process. Materials from Patient Education Management (2008) stress the importance of patient education on lifestyle changes following a cardiac event. The materials stress patients must understand their heart surgery and the important fact that medications do not protect them completely from the progression of disease and symptoms. Lifestyle alterations are considered the single most important aspect of a successful cardiac rehabilitation program. Education that results in lifestyle changes plays an important role in managing heart disease and other cardiac events and preventing further problems. Patients need the knowledge of making lifestyle adaptations, as well as the teaching as to how to make the necessary changes.

Salyer, Sneed, and Corley (2001) found that heart transplant recipients consistently do not include health promoting behaviors in their lifestyles. They concluded that future research should be done to identify the factors associated with recipient’s abilities to adapt and sustain healthy changes to their lifestyle after
transplantation. Karapolat, et.al, (2008) completed a study looking at the effects of a cardiac rehabilitation program on exercise capacity and chronotropic variables in individuals who have underwent an orthotopic heart transplantation procedure. Hospital-based and home-based rehabilitation programs were compared and hospital-based programs provided better outcomes. The researchers concluded that the difference was due to the hospital-based program providing supervision. The group that was supervised during the program attended programming on the rehabilitation unit while the home-based group completed programming at home. Programs were individualized in relation to a patient’s muscle power, joint flexibility, and aerobic endurance. The program was progressive, in that by the end of programming the patient could normally complete flexibility exercises, aerobic exercises, strengthening exercises, breathing exercises, and relaxation exercises.

Pokan, et. al., (2004) examined the effects of high-volume and high-intensity endurance training in heart transplant recipients. Four groups were studied including: heart transplant recipients (HTR) with denervation, HTR with reinnervation, high-volume and high-intensity endurance training (HTR-ET), and sedentary healthy subjects. The entire HTR-ET group had re-innervation of the heart after the training. Improved fitness was noted in all patients who exercised aggressively. These individuals had similar results to the sedentary group with some exceeding the sedentary group when exercise performance was measured. High-volume and high-intensity endurance training helps stimulate muscle development while the transplant recipient is on immunosuppressive therapy. Indications show the recipient may greatly benefit from and achieve a level of
physical performance that is similar to or greater than that of healthy subject; although, increased exercise intensity may reveal the central limitation of exercise capacity after heart transplantation (Doutreleau, Di Marco, Talha, Charloux, Piquard, & Geny, 2009).

The maximum heart rate in heart transplant recipients should be calculated at 80 percent when performing any cardiopulmonary exercise testing which correlates to the limitations in exercise capacity (Carvalho, Pascoalino, Bocchi, Ferreira, & Guimarães, 2009).

Issues of pain may be a deterrent to a healthy lifestyle for many cardiac transplant recipients. Gevirtz (2009) stressed that too much emphasis is given to the success of the transplant and little to the quality of life post-operative. Karapolat, Eyigor, Durmaz, Yagdi, Nalbantgil, & Karakula (2007) examined the relationship between depressive symptoms, anxiety, quality of life, and functional capacity in heart transplant patients. They concluded that heart transplant patients have lower quality of life than the general population as well as greater frequency of depressive symptoms.

Many factors must be considered when working with the heart transplant recipient. Most patients suffer from lower back pain, generalized weakness and fatigue (Karapolat et.al, 2007). Issues of pain may cause patients to shy away from a rehabilitation routine and ultimately a healthy lifestyle. While a focus on the success of the transplant is important, the persistence of pain and decreased quality of life following surgery is a cause for concern. There appears to be a need for advocating for patients to gain optimal pain management treatment following surgery. Halles, Banner, and Wray (2009) identified that many of the psychological issues related to cardiac
transplantation are brushed aside during the rehabilitation process. In contrast, Karapolat et al. (2007) provides strong evidence to support cardiac rehabilitation programs benefitting transplant recipients. They found that symptoms of anxiety and depression decrease while quality of life increases in individuals who have taken part in these programs once their functional capacity has increased.

Herridge & Liton (2006) also agree that psychosocial factors should be considered when creating a rehabilitation program in a cardiac unit. They assert that transplantation affects many areas of occupation in an individual’s life and drastically changes roles and routines. They conclude that psychosocial factors such as support systems, self-efficacy, and a prior active lifestyle impact treatment and adherence to treatment programs in cardiac patients.

Cardiac Rehabilitation Programming

Cardiac rehabilitation is broken down into three key phases: inpatient, outpatient, and community based. Phase I of cardiac rehabilitation occurs at the inpatient level. The main goals of this phase are to prevent muscle loss, monitor and assess the patient’s functional abilities, provide the patient with appropriate home activities, provide education on risk factors and how these risks can be decreased. This phase of treatment does not begin until the patient is medically stable, on average within the first 1-2 days. The average length of stay for the inpatient phase can be anywhere between one and seven days. After this, the patient may be able to attend group therapy sessions if deemed appropriate. In this phase of treatment, the patient usually engages in up to ten minutes of exercise which may include: stair climbing,
treadmill, bicycle ergometer, and hall walking. The patient is also provided with IADL rehabilitation, nutrition, patient education, psychosocial/spiritual counseling, and discharge planning on a daily basis (Huntley, 2008). It is important to keep in mind that transplant patients may respond differently to treatment due to being deconditioned because of prior disease. Other factors that further compromise the transplant patient include prolonged recovery, immunosuppressant steroids and cyclosporine therapy and physical activity is important to preventing further weakness and disability (Kavanagh, 2006).

Home programs are developed in this phase before the patient is discharged to outpatient therapy services. Ideal home programs should always be individualized base on the recipient’s needs at discharge. Individualized home programs should contain easy to read instructions, precautions and risk factors, activity and exercise guidelines, recommendations for lifestyle modification, simplifications for the work environment, and signs and symptoms of activity and exercise intolerance. The therapist modifies the home program based on the client’s lifestyle (activities, work, and hobbies) including suggestions for how to safely return to these activities. Most home programs are set up at the 2-4 MET range initially, but can be increased or decreased based on patient tolerance/intolerance, but all home programs usually include an aerobic exercise program to have a positive impact on risk factors (Huntley, 2008).

Cardiac rehabilitation phase II is the outpatient phase. Goals of this phase include continuation of medical surveillance and exercise responses, limiting physiological and psychological effects, risk factors, and maximizing psychosocial status.
Phase II of rehabilitation lasts for one to two months and the patient is usually seen three days per week. Treatment is focused at the 5-6 MET range. Exercise engagement is discontinuous, the amount of time a patient stays on a piece of equipment is constant while the intensity increases at a gradual rate. The patient frequently switches equipment to minimize boredom and multiple muscle groups can be used. The patient begins weight training at approximately 2-4 weeks of phase II. Some hospitals may include education sessions prior to, during, and post exercise training at the outpatient level (Huntley, 2008).

Phase III of cardiac rehabilitation is the community-based phase. Programs are conducted in local community centers, schools gymnasiums, or fitness facilities. Not all patients partake in this phase of treatment because this phase is generally not covered by insurance companies (Huntley, 2008).

The Role of Occupational Therapy

Overview

Occupational therapy supports health and participation in life through engagement in activities that the individual completes on a daily basis (AOTA, 2008). Occupational therapists strive to provide services to allow for independence in daily activities using a client-centered approach allowing for individualization of treatment. Client-centered practice is defined by occupational therapy practitioners as involving the client in all aspects of the occupational therapy intervention process. A therapist using the client centered approach should possess willingness to enter the client’s world to
create a relationship that allows the client to enhance their engagement in meaningful activities (Creapeau, Cohn, & Schell, 2003).

The role of Occupational therapy in the rehabilitation process offers uniqueness when it comes to client centeredness. Duggan (2005) described client-centered practice as the embrace of important concepts, partnership and justice that promote a client’s participation in activities that are meaningful in their daily lives. Occupational therapists engage in client-centered practice in so many different contexts, including genuine everyday settings of patients. Occupational therapists who demonstrate client-centered practice have received strong client satisfactory reports. During the rehabilitation process patients that feel they have control and an opinion in their treatment are more willing to engage and maintain a rehabilitation program continuously and over a longer period of time than patients that do not (Duggan, 2005).

Occupational therapy helps people reach their goals of returning to their everyday occupations successfully. Occupational therapists address not only the injuries at hand, but also issues relating to quality of life, pain management, education, psychological problems, or adaptations that may need to be addressed. Occupational therapy enables a wide range of patients obtain independence following various health problems including cardiac issues (Crepeau, Cohn, & Schell, 2003).

*Occupational Adaptation*

The occupational adaptation model provides a framework for the role of occupational therapy in cardiac rehabilitation. Each cardiac transplant patient has the same goal in mind following surgery, to return to all of their life roles. Schkade and
McClung (2001) describe occupational functioning as competency in desired life roles. The Model of Occupational Adaptation (OA) provides a process for all humans to respond masterfully and adaptively to the various occupational challenges that are encountered over a lifetime. The model provides the tools that humans need to develop and sustain competence in carrying out the tasks associated with various life roles or occupational functioning. Occupational adaptation is accomplished through attention to readiness skills, the occupational challenge, environmental conditions, the adaptive response, and the experience of relative mastery.

The demand on the occupational adaptation process is greatest when an individual must transition to changing life roles. The magnitude of the transition correlates to the risk of dysfunction. Heart transplantation is a significant transition for individuals and successful adaptation in life roles is essential. For an adaptation to occur, an evaluation of the occupational response is needed to avoid repetition of previous responses. Relative mastery is defined by Schkade & Schultz (2003) as an individual’s evaluation of occupational responses. There are three keys to relative mastery: efficiency, effectiveness, and satisfaction to self and society. Allowing the patient an opportunity to assess his or her own progress in terms of experience of relative mastery provides the patient with a tool for evaluating occupational responses after the therapy sessions are over and the patient returns home (Schkade & McClung, 2001).

In the cardiac rehabilitation process occupational therapy is designed to aid patients in making healthy lifestyle modifications to reduce risk factors. Occupational therapists use an approach that not only looks at the person’s impairments, or readiness
for occupational participation but also looks closely at the environment that are occupations are engaged in. To ensure quality of life after transplantation, occupational therapists strive to assist clients with environmental adjustments that will optimize independence in daily activities. Furthermore, occupational therapists help the client learn to make lifestyle adaptations for themselves and evaluate their effectiveness. Occupational therapists perform assessments and make recommendations based on a patient’s home environment, setup and routine activities to increase the patient’s overall independence and safety. The information an occupational therapist provides helps patients make changes to the home or workplace to ensure safety, use adaptive equipment or devices to aid with daily activities, and conserve energy while completing daily activities.

Following the concepts outlined in the model of Occupational Adaptation, main issues emphasized in cardiac rehabilitation programs include patient education, quality of life issues, pain management, psychological effects, and lifestyle adaptations. Johnson & Stern (2004) identified education as an important, overlooked, aspect of a cardiac rehabilitation program. Patient education is one of the most important areas of a rehab program. Proper patient education can help to reduce high risk behaviors following a cardiac event. Occupational therapists are trained in the knowledge and skills of offering understandable educational information to patients. For example, occupational therapists teach cardiac patients how to complete self-care and functional tasks while following sternal precautions to protect their chest incision after surgery.
They meet with patients before they go home from the hospital to ensure they are prepared for their recovery at home.

Pain management is of key significance following any cardiac event. Following the Occupational Adaptation model, occupational therapists work with patients while they are engaged in an occupation so they can suggest energy conservation techniques and deep breathing exercises to aid in reducing pain throughout the process. Furthermore, the occupational therapist will help the client evaluate the effectiveness of the techniques used and will help them learn to generalize skills to other situations.

Exercise programs are commonly developed to build physical endurance for the cardiac client. Occupational therapists are trained to strengthen the patient as to return to previous functioning but will also consider overall quality of the patient’s life. In most cases with cardiac events, patients do not return to the quality of life they once had. The goal of the rehab team is to rehabilitate the patient as close as possible to the function of being pre-illness.

There is a need for a cardiac rehabilitation program which reflects the individual’s ability to make adaptations to their lifestyle as well as modifications to their environment. An ideal program would provide the individual with examples of adaptations or modifications to a particular activity and allow time to reflect on and adjust to barriers and challenges faced throughout the completion of the activity.
CHAPTER III

Methodology

The Harley E. French database was utilized in the search for information regarding the topic of cardiac transplantation, occupational therapy, rehabilitation, and occupations/activities. The SCOPUS and Pub Med databases were utilized as search engines for literature consisting of information or research regarding rehabilitation of cardiac transplant recipients, problems facing recipients, occupations/activities, and occupational therapist roles. In addition medical facility websites were used to gather articles and information to occupational therapy and rehabilitation programs already in place in relationship to cardiac transplantation. Texts books were also used in the gathering of needed information to support this scholarly project.

The review of literature supports the need for a cardiac transplantation rehabilitation program in the outpatient and home care phase. Survival rates one year post transplant are at approximately 87-88 percent in men, whereas 86 percent of females survived; at three years, 79 percent of males were still living, while only 76 percent of females were alive; at year five post transplant, 68-72 percent of males were still surviving, while females were at a 64 percent survival rate (American Heart Association, 2008). Furthermore, a cardiac rehabilitation program can reduce the risk of death after a cardiac event by 20 to 25 percent (Patient Education Management, 2008).
Although the function of a transplanted heart does allow some return to pre-illness activities, it is at a decreased or limited exercise capacity due to denervation (Hoffman, 2005). Sareyyupoglu and associates found that life expectancy after transplantation was shorter due to poor health maintenance after surgery. The researchers stated that patients were trying to become active too soon and were not following precautions and exercise programming at home. With this information it was determined that recipients of heart transplants were in need of making modifications and adaptations to their lifestyle in order to compensate for the decrease capacity of their new heart.

Another problematic issue surrounding cardiac transplantation points to a lack of patient education following surgery. Johnson and Stern (2004) show that patient education is one of the key factors in cardiac rehabilitation. This information helped to determine that a comprehensive and simplified patient educational section should be incorporated within the rehabilitation program.

Literature also suggests that a deterrent to a healthy lifestyle may be directed at the issues of pain surrounding cardiac recipients. Gevirtz (2005) found that more emphasis is given to the success of the transplant and little to the quality of life post-operative. Karapolat, Eyigor, Durmaz, Yagdi, Nalbantgil, & Karakula (2007) completed a study examining the relationship between depressive symptoms and anxiety and quality of life and functional capacity in heart transplant patients. They concluded that quality of life scores among heart transplant patients has been reported to be lower than that of the general population and the frequency of depressive symptoms has also been
found to be higher (Karapolat, et al, 2007). It was determined with this information that cardiac transplant recipients would benefit from a reflective guide to track quality of life and identify ways to improve satisfaction in daily activities.

Individuals receiving a heart transplant do not maintain healthy rehabilitation habits after returning home. Salyer, Sneed, and Corley (2001) found that heart transplant recipients consistently do not include health promoting behaviors in their lifestyles. The study showed that patients who had supervision during rehabilitation exercise programs had a better outcome than those who completed exercises at home without supervision. With this information it was determined that a focus on future participation in healthy lifestyle adaptations after returning home was needed to sustain healthy changes in these patients.

From all the information gathered it was determined that a rehabilitation program designed for cardiac transplant patients in an outpatient and home program setting was needed. It was then determined that the program would focus on the main issues that were identified from the review of literature; patient education, quality of life issues, pain management, psychological effects, lifestyle adaptations, and quality of life. The result was a cardiac rehabilitation program consisting of four sections: Education, activity workbook, self reflection, and future planning.

Occupational therapy has provided a significant role in many areas of rehabilitation not only addressing the physical needs of patients, but also the psychosocial aspects as well. The American Occupational Therapy Association defines occupational therapy’s domain as: “supporting health and participation in life through
engagement in occupation" (AOTA, 2008). This was taken into consideration when developing the rehabilitation program for cardiac transplant patients returning home. An occupational therapist has the skills to perform activity analysis by addressing physical and psychosocial needs of a patient. With all the information gathered and provided in the rehabilitation program, the occupational therapist can then collaboratively assist the patient in making healthy effective lifestyle adaptations and sustain a lifestyle that ensures the quality of life of a patient is satisfactory.
CHAPTER IV

Product
Heart Transplant Rehabilitation: An Occupational Therapy Program

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University of North Dakota
2010
# Table of Contents

**Product Overview**

**Therapist Manual**
- Purpose 31 32
- Model of Practice 32
- Therapist Role 33

**Patient Manual**

**Introduction and Overview**
- Education 38 39
- Workbook 39
- Self Reflection 40
- Planning Future Activities 40

**Patient Education Section**
- Precautions 42 43
- Energy Conservation 44
- Exercise Guidelines 48

**Activity Workbook Section**
- Dressing 50 52
- Showering 57
- Self Care and Grooming 63
- Cleaning 67
- Cooking 72
- Laundry 77
- Lawn Care 83

**Self Reflection Section**
- Quality of Life Self Assessment 88 89

**Planning Future Activities Section**
- Introduction 94 95
- 3 Steps to Making Activities Easier 96
- Adaptations 97
- Weekly Schedule 100
- MET Energy Levels 101

**References** 103
Occupational Therapy Cardiac Rehabilitation Home Program Overview

What is the need for the product?

The needs of the cardiac transplant population were determined by a review of literature addressing cardiac rehabilitation programs already in place. In 2008, the estimated survival rate of transplant recipients was broken down by years of survival and male vs. female. One year post transplant, 87-88 percent of males survived, whereas 86 percent of females survived; at three years, 79 percent of males were still living, while only 76 percent of females were alive; at year five post transplant, 68-72 percent of males were still surviving, while females were at a 64 percent survival rate (American Heart Association, 2008).

Complications that arise after transplantation may add great difficulty to recipients' recovery. Data from the United States Department of Health and Human Services (2009) indicate the five most common physical problems after a heart transplantation procedure to be: failure of the donor heart, complications of medications, infection, cancer, and problems from not following health care plans. As technology continues to improve and progress, the number of cardiac transplants will also continue to rise. With this growing improvement of technology and tools in the operating room, there is a need for rehabilitation teams to recognize these technological advances and reform their programs to improve the longevity of cardiac transplant patients after transplantation surgery. A cardiac rehabilitation program can reduce the risk of death after a cardiac event by 20 to 25 percent (Patient Education Management, 2008).
A study by Salyer, Sneed, and Corley (2001), found that heart transplant recipients consistently do not include health promoting behaviors in their lifestyles. The need for lifestyle adaptations is of growing concern for patients' education within a rehabilitation program. The main issues that were identified from the review of literature are patient education, quality of life issues, pain management, psychological effects, and lifestyle adaptations. We feel an emphasis on these areas will be most beneficial in a cardiac rehab program. Many of the existing cardiac rehabilitation programs do not utilize all of these areas. Many focus on one or two aspects needed for rehabilitation. For the most successful outcome, a comprehensive program that focuses on all areas together will provide the patient with a more complete and successful recovery.

**Who is the product designed for?**

This product was designed to be used by the outpatient occupational therapist in designing an activity program suitable for each cardiac transplantation patient as they are returning to their home environment and getting used to daily activities. Through collaboration, this will ensure the product is reaching its full potential for each user.

**What does the product consist of?**

This rehabilitation home program consists of four sections which will be completed by the patient in cooperation with the occupational therapist. The patient will be instructed to read some materials in advance of the occupational therapy session. Therapy sessions will focus on an assessment of the client's capabilities and weekly planning of activities along with recommendations. The four sections will guide
the patient in education (precautions, energy conservation, and exercise guidelines); lifestyle adaptations (activity-specific and general); activity planning, quality of life, and energy conservation techniques in a workbook format to be used by the client; and charts and schedules that will provide structure to daily life activities.

An educational component provides the patient with general precautions to follow after returning home from the hospital. The patient is provided with general and activity-specific energy conservation techniques to guide participation in daily activities. Exercise guidelines have been included listing out suggestions for activities the patient should and should not engage in after returning home from the hospital. Exercise is a vital component in the functional capacity of the heart and is a crucial part of the rehabilitation process.

An adaptation component provides the patient with general and activity specific adaptations to make activities easier and less energy consuming. The provided precautions should be usable with activities other than the listed activities to help the patient function to their best ability in all activities in which they desire to engage.

A workbook component of the patient manual provides the patient with a format of considerations for planning activities. Once the activities are complete, the patient is able to assess how the activity went and if any changes need to be made the next time they participate in the task. The patient is provided with a quality of life assessment that they will complete weekly to document progress in activity. This will provide an overview of specific activity areas to identify which areas the patient would
like to improve as well as tasks that they feel they can complete independently. This section also includes a listing of five general ideas to make activities easier.

The final section of the manual provides the patient with a metabolic equivalents (MET) chart to identify which activities are appropriate to complete and discuss with the therapist based on identified and documented functional levels. The patient manual also includes a weekly schedule for the patient to plan out their daily and weekly activities.

**How is it designed to be used?**

This rehabilitation program is designed to be used by cardiac transplant recipients in collaboration with occupational therapists to provide the most comprehensive rehabilitation for home use. It is designed for the patient to complete at home and be reviewed on a regular basis while participating in outpatient occupational therapy programming.

**What is the overall outcome?**

The overall outcome of this rehabilitation program is to encourage independence in daily activities at home, post-cardiac transplantation. As participants have the opportunity to routinely evaluate their perception of quality of life in their daily routines, improvements in perceived quality of life are expected.
Therapist Manual
Therapist Section

Purpose

The purpose of this product is to provide cardiac transplant patients with a rehabilitation program following the acute inpatient stay after surgery. This manual may also serve as a reference source for occupational therapists serving this population in an outpatient setting and for students who are interested in further study of this area.

This information expands on the outpatient cardiac rehabilitation programs available in the occupational therapy literature and focuses on the community based and in home rehabilitation settings. This manual is a resource to support the cardiac transplant patient in regards to proper education, pain management, psychological wellness, proper lifestyle adaptations, and overall quality of life.

Theoretical Base

Theoretical models provide support, structure, and a foundation for occupational therapists upon which to develop and implement programs. The Model of Occupational Adaptation provides the theoretical basis of this product. The Model of Occupational Adaptation provides a process for all humans to respond masterfully and adaptively to the various occupational challenges that are encountered over a lifetime. This process provides the tools that humans need to develop and sustain competence in carrying out the tasks associated with various life roles or occupational functioning (Schkade & McClung, 2001). This product focuses on the education and implementation of essential lifestyle adaptations to improve quality of life following cardiac
transplantation; concepts which are supported through application of the Model of Occupational Adaptation.

**Therapist Role**

This patient manual and workbook are intended to be completed by the patient in collaboration with the therapist. The role of the therapist will be to utilize the information the workbook gathers to assist the patient in identifying new lifestyle adaptations, addressing psychological issues a patient maybe experiencing, and/or provide pain management techniques to alleviate pain during activities. The patients are to be encouraged to share their completed activity evaluation workbook sheets with their therapist during routine visits. The therapist should work through the activity plan portion of the workbook with the patient to develop successful activity plans for daily life activities. The ultimate role of the therapist in using this manual is to assist the patient in improving their overall quality of life following transplant surgery.

The patient manual is broken up into four sections: education, the workbook section, self reflection, and planning for future activities. The first section of education is an overview of general precautions, energy conservation techniques, and exercise guidelines a patient should follow after transplantation. The patient is given an overview of precautions and guidelines at the hospital, but this guide offers more specific techniques and tips to use while engaging in activities at home. It is the therapist’s responsibility to review this section with the patient to make sure they understand it and answer any questions they may have. These techniques are an aid to assist the patient in reaching relative mastery of occupations. They will lead to the first part of an
adaptive response: a perception of the role expectations within an occupational challenge. The patient will use these guidelines and conservation techniques to gain a better understanding of their role expectations.

The second portion of the manual is the workbook section. This section relates to creating a response. The workbook sheets are for a single activity and are broken up into three parts: the preparatory section, the specific evaluation section, and an activity plan section. The preparatory section will allow the patients to evaluate an occupation and assess their readiness skills. The evaluation section ties into the preparatory and will assist the patient in breaking down the activity after participation. Within these sections are questions relating to the activity and what adaptive responses will be utilized. The sections will identify the energy expenditure to be used; it will also draw on the adaptive response mode to be utilized. These modes are existing ones, modified ones, or new responses. Finally the type of response behaviors will be identified. The last section of the workbook, the activity plan section, will draw from all of these areas and allow the patient to create a response. The role of the therapist in this section is to assist the patient in explaining how a response is created and helping to utilize the information gathered in the sections to create an adaptive activity plan individualized to the patient.

The third section, self reflection, is an evaluation process section. After an occupational response has been carried out in the workbook section it is very important for the patient to evaluate the outcome of that response. For an adaptation to occur, an evaluation of the occupational response is needed otherwise; the patient could just continue to repeat previous responses whether they were useful in achieving the
desired goal or not. To assess the response, the patient must take into account their relative mastery related to the occupation. This can be broken into three parts: efficiency, effectiveness, and satisfaction. This section of the manual takes these three ideas into consideration. It provides questions for the patient to self reflect on the effectiveness of the occupation, the efficiency or time and energy spent, and the overall satisfaction they felt from the occupation. Giving the patient an opportunity to assess his or her own progress in terms of experience of relative mastery, provides the patient with a tool for evaluating occupational responses after the therapy sessions are over and the patient returns home (Schkade & McClung, 2001). Not only does the self reflection portion of the manual offer the patient an assistive tool to identify his/her improvement and contribution to an improved status, it offers the knowledge to evaluate responses. The role of the therapist, while working through this portion of the manual with the patient, is to assist them in identifying the effectiveness, efficiency, and satisfaction of the occupational adaptation response. With this, the patient will possess the knowledge of evaluating responses in all areas of occupational life and will be able to identify when the responses are satisfactory or when they need to be changed.

The last section of the patient manual is planning for future activities. This section was created to provide some structure and ideas for creating new activity plans for ones that are not listed in the workbook. This section also acts as a reference to patients when comparing energy levels of various activities. Integration is the theme of this portion of the manual. The patient, with assistance of the therapist, will utilize all of the information learned and reflected on in the previous sections to plan for future
activities. These activities could be new or previously learned ones that have not been participated in since transplantation. The section provides a schedule and a larger adaptation section listing specific adaptations to activities not found in the workbook. Therapists are to encourage patients to make this portion of the rehabilitation manual as unique as possible. Every patient will have their own style of creating, evaluating, and integrating adaptive response. This final section allows them to use the knowledge to create new plans.
Patient Manual
Adapting Your Lifestyle after Heart Transplantation: Patient Manual

Introduction

Congratulations! You are going home from the hospital! As you are leaving the hospital and going back home, it is very important to think about your routine and how it relates to the healing of your new heart. In your first month home, your activities and routines will be changing. Healing happens at a different speed for everyone after a heart transplant. This will affect different activities in different ways. It is necessary to become aware of what may be difficult for you and what you should or should not be doing in activities to help you to a successful and speedy recovery.

The goal of this program is to help you get used to doing your normal activities with your new heart and find ways to effectively and efficiently change your routine to increase your quality of life after surgery. Changes to your routine will involve three areas: getting used to your new heart, making your regular life activities easier as needed, and adding harder activities for your muscles and heart to increase your strength. This manual is divided into four areas that will lead to successful healing and overall quality of life. It will educate you on the things you should or should not be doing, provide a workbook to guide you in making changes to your daily schedule, address emotional issues that you may deal with through self reflection, and provide guides for planning future activities. All of these sections will assist you in finding ways to change your activities to make things easier to do, direct you in tracking your progress, address any problems you may be having, and improve your overall quality of life.
life. It is essential that you share this manual with your occupational therapist during therapy sessions so that together you can design a successful lifestyle for you.

**Education**

While you were in the hospital you were told many different things. Right after surgery, it can be hard to remember everything that you are told. This workbook will help you to remember the things that you should or should not be doing (precautions). Precautions after surgery are important because they can help speed up the healing process. Not following precautions may cause harm to your new heart and you may end up having more pain then you should be having. It is also important to exercise to make your heart stronger. General guidelines for exercise are included in this workbook. You can refer to the “precautions” and “exercise” sections of this workbook to find out more about what you should and should not be doing.

When you are doing activities that are not in the precautions section, you may find the activity to be easy, just right, or hard. When activities are too hard to finish you can look at the list of energy saving ideas for general activities, or the specific activities listed in this book. The idea of energy saving is to use less energy and make activities easier for you. You will see that the ideas are the same in many of the activities; this will make it easier for you to find ideas to save energy when an activity is not listed in the workbook.

**Workbook**

This workbook has worksheets for you to plan activities. There are 7 common activities with examples shown. There are also blank activity worksheets for you to use
when you do other activities. These worksheets will help you to plan out the activity; when you are going to do it, how long it will take, what is needed to do the activity, and what movements are used during the activity. You will be able to plan out the steps of this activity before you start. After you are done with the activity, there is space for you to look at how the activity went for you. The sample activities in this section show you how you could make the activity easier and give you a list of the things you should not be doing (precautions). A weekly schedule has been included so you will be able to plan out your week. You will always need to remember to give yourself lots of time for meals because eating and digesting uses a lot of your energy.

**Self Reflection**

The quality of life survey is provided to help you look at how things are going. It will also help you decide what your goals are for the week. The survey asks you what activities you did during the week and how they went for you. If you made any changes in the activity you are asked to list them out. You will be asked to rate how you did on each activity, if you did it during the week. Your occupational therapist will go over this survey with you weekly and assist you in making changes to your lifestyle.

**Planning for Future Activities**

At the end of the workbook you have been given a metabolic equivalents (MET) chart. This chart puts activities into groups that start out easy and end hard. When you left the hospital, you should have been at a level that you can find on the chart. If you were not given a level, you can look at the activities in the chart and see what activities you were doing before you left the hospital. You should be able to figure out the level
you are near. Figuring out this level will help you plan your daily schedule and plan out activities that are at your level right now each day/week. Of course this chart does not include every possible activity, so you will need to think about activities that are not listed that you would like to do, and see if they would fit in the level you are at. If you have any questions, call your occupational therapist.
Patient Education Section
Precautions

There are many precautions that you were told following your transplantation. It is important to always keep those precautions in mind when doing your daily life activities. This list of general precautions will help you when you complete activities during your day. If you are not sure of an activity or movement that you might be doing, please refer to these precautions or contact your occupational therapist.

Precautions to Follow Unless Noted by Doctor

- Lifting
  - Do not lift anything that weighs more than 10 pounds for at least 8 weeks

- Pushing or pulling things
  - It's easy to hurt yourself this way. Don't push or pull anything heavy

- Driving
  - Don't - not until the doctors says it's okay. That will probably be about 6 weeks.

- Swimming
  - Do not swim in standing water, like a lake or a pond. Swimming in a pool or in the ocean is okay

- Hot tubs
  - Don't use one hotter than 99°

- Sex
  - As long as you don't strain your incision or get seriously short of breath

- Avoid sick people
  - If a family member is ill, do not sleep in the same room. Wear a mask, have them wear a mask, or both

- Record your weight daily
  - This allows you to spot fluid retention (edema) before it becomes serious. If you gain more than 2 to 3 pounds in 24 hours, follow your doctor's orders; probably to take an extra dose of diuretic. Weigh yourself in the morning before eating or going to the bathroom

- Record your body temperature daily
  - Do this between 5:00 - 7:00 PM. If your body temperature is higher than 100° F, call your doctor but do not take any over the counter medication

- Record your blood pressure daily
  - Remember to write this stuff down every day. Low blood pressure or irregular heart beat may indicate rejection

Adapted from: The American Heart Association, 2009
Energy Conservation

Time and energy management is an important part of the recovery process. Each activity will affect energy levels in a different way. The following educational guide will aid in planning and completing daily activities throughout the day and week. You may want to utilize some or all of these energy conserving tips. If you are having difficulty completing activities, the following information includes suggestions on how to save energy. Please refer to this list for general energy saving suggestions as well as activity-specific suggestions.

Guide to Conserving Energy and Planning Your Day

- Your energy will be impacted by
  - Physical demands of the activity
  - Positions required to perform the activity (sitting, standing, bending, etc.)
  - Time needed to accomplish the task
  - Emotional stress endured during the task

- When planning your day
  - Alternate between light and heavy activities (for example a sequence of tasks may be: vacuum, then pay bills; mow the lawn, then watch a movie or fold laundry).
    - Refer to the Metabolic Equivalent Table for energy levels of certain activities.
  - Spread activities throughout the day and week (frequency, duration, break down tasks into smaller steps)
  - Organization of your work area will decrease the amount of energy used by gathering and moving items (put utensils, tools, materials, at arm’s length away to avoid getting up)
• Elimination of unnecessary steps of a task
• Take frequent breaks

- Pace Yourself
  • Working at a fast pace takes 2-3 times more energy per minute than working at a moderate pace

- Environmental Factors to consider
  • Hot weather, direct sunlight, and humidity may increase fatigue (when working outdoors in the summer, avoid being outside in the hottest parts of the day, take rest breaks in shade)
  • Avoid very hot or cold showers, saunas, hot tubs, and whirlpools
  • Dress appropriately for cold and windy weather (when working outdoors in the cold use base layers that are not cotton material)
    - Sudden temperature changes may cause an increase in heart rate.
    - Wear a scarf or mask that covers your nose and mouth.
    - Wear a hat.
    - Avoid facing directly into the wind.

- Stress Management
  • Identify common stress-related signs and symptoms, increased stress in tasks and situations will lead to the use of more energy (physical, thoughts/feelings, and behavior signs and symptoms)
  • Develop a personal stress management plan (use relaxation techniques, positive self talk, laughter/humor, or spiritual wellness)
  • Having structure to a routine will aid in time management and reduce the stress of being overwhelmed

- General Energy Saving
  • Do not work with your hands over your head for long periods of time.
    - Try keeping your hands between your shoulders and hips.
    - Use long handled tools to reach farther.
    - Work in long motions.
Do not do isometric work for long periods of time.

- Isometric = work that contracts your muscles without moving the muscle.

Do not stay in the following positions for long periods of time:

- Squatting
- Bending
- Sitting on your legs
- Sitting with your legs crossed
- These activities do not let the blood return to your heart properly which makes your blood pressure go up.

Instead try the following:

- Kneel
- Sit on the floor with your knees slightly bent
- Sit on a stool

Avoid lifting or carrying heavy objects

- Instead:
  - Slide objects along counters or floors.
  - Use a cart, wagon, or dolly.

Keep frequently used items within easy reach.

Sit instead of standing.

- Standing makes your heart work harder.

Do not hold your breath.

Do not complete an activity if it is stressful.

- Stop immediately if you experience any of the following:
  - Shortness of breath
  - Heavy sweating
  - Increased heart rate

Do not take very hot or cold showers, use saunas, hot tubs, and whirlpools.
- Especially after exercising.
- Very hot or cold temperatures decrease blood pressure.
- You may faint or feel light-headed.
- Showering or taking a bath should not make you sweat.
  - If you are sweating, your heart is working too hard.
  - Be sure to rest after ALL meals.
    - Digesting food requires more blood.
    - The rest of your body loses blood including your heart.
      - This makes it harder for the heart to work when doing physical activities.

*Remember: If the work you are doing makes you short of breath and causes you to become tired or experience any pain in your chest, you are either working too fast or the work is too hard for your heart.

Adapted from: Mayo Clinic, 2005
Exercise

Exercise is a big part of rehabilitation after your transplantation. You began with exercise while in the hospital and it is important to continue doing this after you leave the hospital. You are encouraged to use exercise in your daily routine to increase your strength and ability to do tasks that are more difficult. Below guidelines are provided to follow when exercising.

Exercise Guidelines

- What to Do:
  - Do exercises daily
  - Start slowly but do some exercise at least once a day
  - Make sure to warm up adequately
  - Exercising in short amounts of time with rest in between is better for you at first instead of one or two long exercise periods in a day
  - Push yourself to a peak level of activity and try to maintain it for several minutes to ensure a good workout for your heart and other muscles. Any exercises like cycling, rapid walking and swimming are great (make sure to build up to these higher energy expending exercises)
  - Cool down by repeating the slow stretching exercises or walking

- What NOT to Do:
  - For the first eight weeks after surgery, avoid the following activities to allow your chest bone and incisions to fully heal:
    - Do not lift heavier than ten pounds
    - Do not push or pull objects heavier than ten pounds unless instructed to do so by your therapist or nurse
    - Do not do sit-ups, push-ups, or pull-ups
- Stop any activity that causes pain or pulling across your chest
  - Do not get so short of breath that you cannot speak while exercising
  - Do not do any sit-ups, pull-ups, push-ups or free weights without your doctor’s okay
  - Do not just stop exercising suddenly. Slow down gradually, then stop
  - Do not exercise right after eating
  - If you get dizzy or lightheaded, sick to your stomach, or really short of breath while exercising, stop immediately

Adapted from: University of Southern California School of Medicine Website (Cardiothoracic Surgery), 2009
Activity Workbook Section
Activity Workbook

This workbook has worksheets for you to plan activities. There are 7 common activities with examples shown. There are also blank activity worksheets for you to use when you do other activities. These worksheets will help you to plan out the activity: when you are going to do it, how long it will take, what is needed to do the activity, and what movements are used during the activity. You will be able to plan out the steps of this activity before you start. After you are done with the activity, there is space for you to identify how the activity went. The sample activities in this section show you how to make the activity easier and gives you a list of the things you should not be doing (precautions). You will always need to remember to give yourself lots of time for meals because eating and digesting uses a lot of your energy.
Activity Preparation

1. Activity: Dressing

A. Movements Required: (standing, sitting, bending, lifting, twisting, reaching, putting on shirt, socks, pants, etc.)

- Movements done without pain or difficulties

- Movements done with pain or difficulties

B. Materials Needed: (clothing, dressing stick, reacher, assistance from someone else, etc.)

C. Time of the day completed:

- Activity done before this activity

- Activity engaged in after this activity

D. Emotional stress: (any emotional strain/stress that may be involved in this activity)

E. Fears or worries related to activity:
Activity Evaluation

1. Activity: Dressing

A. Amount of Time taken: (Was the task completed in a satisfactory amount of time or were you unhappy with the amount of time taken?)

________________________________________________________________________

B. Breaks Needed: (How many taken, duration of each break, time between breaks, etc.)

________________________________________________________________________

C. Any Difficulties or Pain that occurred during the task:

________________________________________________________________________

D. Changes made during the task to alleviate the difficulties or pain: (if any)

________________________________________________________________________

E. Factors that affected the completion of the task (both positive and negative):

________________________________________________________________________

F. Energy Involved:

- Energy spent on activity (circle one)

1  2  3  4  5  6  7  8  9  10
No energy                        Exhausted
* Consider these precautions and adaptations when making revisions to your activity plan

**Precautions for Dressing**

- Avoid movements that cause pulling or stretching of your chest
- Do not lift anything heavier than 10 pounds for at least 8 weeks following surgery
- If exhausted and getting extremely short of breath during this activity stop immediately
- Avoid extremely painful movements
- Make sure to dress appropriately for cold and windy weather
  - Sudden temperature changes may cause an increase in heart rate

**Adaptations to use for Dressing**

- Use a dressing stick or reacher while dressing to avoid movements that put strain on your chest
- Sit while dressing the upper body and while putting socks and shoes on
- Make sure to have all clothes ready at an arm’s length away to avoid moving around the room to retrieve clothing
Dressing Plan

Date: ________________

Plan:
1. Gather clothing items and place by the area where you will dress
2. Dress lower body first
3. Use a reacher if necessary to avoid bending
4. Sit to dress the upper body to conserve energy
5. Use a dressing stick to reduce strain on chest

Changes Made:

Date: ________________

Plan:
1.
2.
3.
4.
5.

Changes Made:

Date: ________________

Plan:
1.
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Changes Made:

Date: ________________
Plan:
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Changes Made:


Date: __________

Plan:
1.
2.
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5.

Changes Made:


Activity Preparation

2. Activity: Showering

A. Movements Required: (standing, sitting, bending, lifting, twisting, reaching, etc.)
   - Movements done without pain or difficulties
   - Movements done with pain or difficulties

B. Materials Needed: (towels, long handle sponge, soap on a rope, assistance from someone else, etc.)

C. Time of the day completed:
   - Activity done before this activity
   - Activity engaged in after this activity

D. Emotional stress: (any emotional strain/stress that may be involved in this activity)

E. Fears or worries related to activity:
Activity Evaluation

2. Activity: Showering

A. Amount of Time taken: (Was the task completed in a satisfactory amount of time or were you unhappy with the amount of time taken?)

B. Breaks Needed: (How many taken, duration of each break, time between breaks, etc.)

C. Any Difficulties or Pain that occurred during the task:

D. Changes made during the task to alleviate the difficulties or pain: (if any)

E. Factors that affected the completion of the task (both positive and negative):

F. Energy Involved:

- Energy spent on activity (circle one)

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* Consider these precautions and adaptations when making revisions to your activity plan

**Precautions for Showering**

- Avoid movements that cause pulling or stretching of your chest
- Do not use water that is hotter than 99 degrees
- If exhausted and getting extremely short of breath during this activity stop immediately
- Avoid extremely painful movements
- Do not take very hot or cold showers, especially after exercising  
  - Very hot or cold temperatures decrease blood pressure, this may lead to feeling light headed
  - Showering or taking a bath should not make you sweat, if you are sweating, your heart is working too hard

**Adaptations to use for Showering**

- Have door open and fan on to improve ventilation for better breathing.
- Have a shower bench installed if you are having difficulty breathing while in the shower.
- Use shower brushes and soaps that are attached to ropes to avoid dropping, this will reduce bending and reaching down while showering which can increase heart rate, blood pressure, and fatigue.
- Use a long handle sponge to wash hard to reach areas, this will reduce fatigue and help avoid painful movements
- Have grab bars installed for balance and safety
- Lower the temperature of the water, taking cooling or just warm showers helps to reduce the amount of energy used
- Use a hand held shower head for ease and convenience
- While drying off sit on a bench or chair, take precautions to prevent slipping
Showering Plan

Date: ____________

Plan:
1. Put fan in bathroom to improve ventilation
2. Install a hand held shower head
3. Set temperature of water lower than you normally would
4. Use a long handled sponge to wash hard to reach areas
5. Sit while drying off

Date: ____________

Plan:
1.
2.
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Changes Made:

_________________________________________________________________________
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Date: ____________

Plan:
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Changes Made:

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Date: ____________
Plan:
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Changes Made:

Date: ____________

Plan:
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Changes Made:


Activity Preparation

3. Activity: Self Care and Grooming

A. Movements Required: (standing, sitting, bending, lifting, twisting, reaching, brushing, etc.)

- Movements done without pain or difficulties

- Movements done with pain or difficulties

B. Materials Needed: (towels, long handle sponge, long comb, soap, assistance from someone else, etc.)

C. Time of the day completed:

- Activity done before this activity

- Activity engaged in after this activity

D. Emotional stress: (any emotional strain/stress that may be involved in this activity)

E. Fears or worries related to activity:
Activity Evaluation

3. **Activity**: Self Care and Grooming

A. **Amount of Time taken**: (Was the task completed in a satisfactory amount of time or were you unhappy with the amount of time taken?)

B. **Breaks Needed**: (How many taken, duration of each break, time between breaks, etc.)

C. **Any Difficulties or Pain** that occurred during the task:

D. **Changes made during the task to alleviate the difficulties or pain**: (if any)

E. **Factors that affected the completion of the task** (both positive and negative):

F. **Energy Involved**:

   - Energy spent on activity (circle one)

     1 2 3 4 5 6 7 8 9 10
     No energy Exhausted
*Consider these precautions and adaptations when making revisions to your activity plan*

**Precautions for Grooming and Self Care**

- Avoid movements that cause pulling or stretching of your chest
- Do not use water that is hotter than 99 degrees
- If exhausted and getting extremely short of breath during this activity stop immediately
- Avoid extremely painful movements
- Take precautions when lifting arms to apply deodorant or combing hair, do not raise arms enough to cause strain on chest

**Adaptations to use for Grooming and Self Care**

- Have door open and fan on to improve ventilation for better breathing.
- Have a chair or bench in front of the sink to reduce fatigue from standing
- Lower mirror to seated height, or use a small adjustable mirror for shaving, combing, etc.
- Gather all necessary grooming utensils and place within an arm’s length away, this will reduce reaching and extra strain
- Use a long comb to avoid exhausting and straining movements
- Have grab bars installed for balance and safety
- Avoid holding your breath during brushing teeth and using mouth wash
  - Holding your breath reduces oxygen intake causing fatigue
Self Care and Grooming Plan

Date: ____________

Plan:
1. Have chair placed in front of sink
2. Gather all necessary grooming tools and place at arm’s length
3. Sit while doing self care tasks
4. Use long handled grooming tools to avoid strain
5. Pay attention to breathing while brushing teeth, Do Not Hold Breath

Date: ____________

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Date: ____________

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Date: ____________
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Changes Made:
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Date: _________________________

Plan:
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Changes Made:
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Activity Preparation

4. Activity: Cleaning

A. Movements Required: (standing, bending, lifting, twisting, carrying, reaching, etc.)
   - Movements done without pain or difficulties
   - Movements done with pain or difficulties

B. Materials Needed: (cleaning supplies and equipment, a bucket, paper towels, etc.)

C. Time of the day completed:
   - Activity done before this activity
   - Activity engaged in after this activity

D. Emotional stress: (any emotional strain/stress that may be involved in this activity)

E. Fears or worries related to activity:
Activity Evaluation

4. Activity: Cleaning

A. Amount of Time taken: (Was the task completed in a satisfactory amount of time or were you unhappy with the amount of time taken?)

____________________________________________________________________________________________________________________________________________________

B. Breaks Needed: (How many taken, duration of each break, time between breaks, etc.)

____________________________________________________________________________________________________________________________________________________

C. Any Difficulties or Pain that occurred during the task:

____________________________________________________________________________________________________________________________________________________

D. Changes made during the task to alleviate the difficulties or pain: (if any)

____________________________________________________________________________________________________________________________________________________

E. Factors that affected the completion of the task (both positive and negative):

____________________________________________________________________________________________________________________________________________________

F. Energy Involved:

- Energy spent on activity (circle one)

1 2 3 4 5 6 7 8 9 10
No energy Exhausted
* Consider these precautions and adaptations when making revisions to your activity plan

**Precautions for Cleaning**

- Avoid movements that cause pulling or stretching of your chest
- Do not lift anything heavier than 10 pounds for at least 8 weeks following surgery
- If exhausted and getting extremely short of breath during this activity stop immediately
- Avoid extremely painful movements
- Make sure to take frequent rest breaks

**Adaptations for Cleaning**

- Make sure all equipment is working.
- Make sure the handles allow for good posture.
- Do all upstairs cleaning at one time to eliminate unnecessary climbing of stairs.
- Keep a set of cleaning supplies on each level of the house.
- Use a basket or cart to transport cleaning supplies.
- Complete one area before moving on to the next.
- Vacuum with long, easy strokes instead of short, choppy ones.
- Purchase a newer, lighter, self-driven vacuum.
- Use vacuum cleaner and its attachments to complete other cleaning tasks.
- Wash windows a few at a time.
- Ask your family to put things away after use.
- Ask family members to help with cleaning.
Cleaning Plan

Date: _______________

Plan:
1. Have cleaning supplies available on all levels of home.
2. Clean one room at a time.
3. Complete one cleaning task at a time.
4. Take rest breaks between tasks.
5. Do light cleaning before heavy cleaning.

Date: _______________

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Activity Preparation

5. Activity: Cooking

A. Movements Required: (standing, sitting, bending, lifting, twisting, reaching, etc.)

- Movements done without pain or difficulties

- Movements done with pain or difficulties

B. Materials Needed: (items for cooking task: food, utensils, stove, refrigerator, etc.)

C. Time of the day completed:

- Activity done before this activity

- Activity engaged in after this activity

D. Emotional stress: (any emotional strain/stress that may be involved in this activity)

E. Fears or worries related to activity:
Activity Evaluation

5. Activity: Cooking

A. Amount of Time taken: (Was the task completed in a satisfactory amount of time or were you unhappy with the amount of time taken?)

B. Breaks Needed: (How many taken, duration of each break, time between breaks, etc.)

C. Any Difficulties or Pain that occurred during the task:

D. Changes made during the task to alleviate the difficulties or pain: (if any)

E. Factors that affected the completion of the task (both positive and negative):

F. Energy Involved:
   - Energy spent on activity (circle one)

   1  2  3  4  5  6  7  8  9  10
   No energy                      Exhausted
* Consider these precautions and adaptations when making revisions to your activity plan

Precautions for Cooking

- Avoid movements that cause pulling or stretching of your chest
- Do not lift anything heavier than 10 pounds for at least 8 weeks following surgery
- If exhausted and getting extremely short of breath during this activity stop immediately
- Avoid extremely painful movements
- Make sure to take frequent rest breaks

Adaptations for Cooking

- Gather utensils and necessary items from refrigerator and storage areas.
- Use a cart with wheels.
- The cart can be used to move items to and from stove or other work areas.
- Slide heavy objects along counter.
- Serve hot items from stove rather than moving the pans to another surface.
- Use non-slip pad or wet cloth under a mixing bowl to help hold it still.
- Use the microwave, dishwasher, toaster oven, or food processors.
- Use pre-cut meats and frozen vegetables.
- Keep knives sharpened.
Cooking Plan

Date: ____________

Plan:
1. Plan out meals the day before.
2. Make sure all of the supplies for the task are available.
3. Have all supplies needed within easy reach for task.
4. Take rest breaks between tasks.
5. Sit whenever possible.

Date: ____________

Plan:
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Date: ____________

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Date: ____________
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Date: _________________

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Changes Made:

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Activity Preparation

6. Activity: Laundry

A. Movements Required: (standing, sitting, bending, lifting, twisting, carrying, reaching, etc.)

- Movements done without pain or difficulties

- Movements done with pain or difficulties

B. Materials Needed: (laundry basket, clothing, laundry detergent, fabric softener, bleach, etc.)

C. Time of the day completed:

- Activity done before this activity

- Activity engaged in after this activity

D. Emotional stress: (any emotional strain/stress that may be involved in this activity)

E. Fears or worries related to activity:
Activity Evaluation

6. Activity: Laundry

A. Amount of Time taken: (Was the task completed in a satisfactory amount of time or were you unhappy with the amount of time taken?)

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B. Breaks Needed: (How many taken, duration of each break, time between breaks, etc.)

________________________________________________________________________

C. Any Difficulties or Pain that occurred during the task:

________________________________________________________________________

D. Changes made during the task to alleviate the difficulties or pain: (if any)

________________________________________________________________________

E. Factors that affected the completion of the task (both positive and negative):

________________________________________________________________________

F. Energy Involved:

- Energy spent on activity (circle one)

1  2  3  4  5  6  7  8  9  10

No energy                              Exhausted
* Consider these precautions and adaptations when making revisions to your activity plan

**Precautions for Laundry**

- Avoid movements that cause pulling or stretching of your chest
- Do not lift anything heavier than 10 pounds for at least 8 weeks following surgery
- If exhausted and getting extremely short of breath during this activity stop immediately
- Avoid extremely painful movements
- Make sure to take frequent rest breaks

**Adaptations for Laundry**

- Keep soaps, bleaches, and spot removers in a convenient area of the laundry room.
- Use detergents with bleach or softener already in them.
- Pre-treat stains and soil.
- Avoid heavy scrubbing.
- Have a family member carry loads up and down steps if your laundry room is not on the same level of the house.
- If you have a front loading washer and dryer, raise them to the correct level for you.
- Use a cart to transport clothes from washer and dryer to storage area.
- Make only one trip to the laundry room.
- Use a cart or slide the laundry basket instead of lifting it.
- Eliminate long wash days by doing one light load of laundry each day or every other day.
- Use a nylon mesh bag to hold bras, socks, etc., to eliminate tangles in the washing machine.
- Have heavier items laundered by a commercial cleaner.
- To eliminate ironing, remove items from the dryer before they are completely dry.
Smooth out wrinkles while folding.

Hang wash-and-wear clothing immediately to eliminate wrinkles.

Use fabrics that do not require ironing.

Do not untangle clothes before putting them in the dryer. The heat will do this for you.

Have a table near the washer and dryer for sorting and folding.

Let family members help with sorting clothes.

Ask family members to turn their clothing right-side-out so it is ready to fold after drying.

Hanging Clothes

- Have clothesline no higher than shoulder height to avoid reaching above your head.
- Use a cart to reduce bending when handling wet and dry clothes.
- Use a clothespin container that slides along the clothesline.

Ironing:

- Iron on the days you do not wash.
- If possible, buy a light-weight iron.
- If possible, use a steam iron.
- An adjustable ironing board makes sitting and standing comfortable.
- Do not iron unnecessary items: dish towels, sheets, overalls, and pajamas.
- Select materials that require little or no ironing.
Laundry Plan

Date: ____________

Plan:
1. Have a family member bring laundry to laundry room if on a different level.
2. Sort clothing into small, light loads.
3. Have detergents within easy reach.
4. Sit if possible when doing laundry.
5. Have washer and dryer close together to make transferring wet clothing easier.

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Activity Preparation

7. Activity: Lawn Care

A. Movements Required: (standing, sitting, bending, lifting, twisting, carrying, reaching, pushing, etc.)

- Movements done without pain or difficulties

- Movements done with pain or difficulties

B. Materials Needed: (lawnmower, rake, shovel, garbage cans, garbage bags, etc.)

C. Time of the day completed:

- Activity done before this activity

- Activity engaged in after this activity

D. Emotional stress: (any emotional strain/stress that may be involved in this activity)

E. Fears or worries related to activity:
Activity Evaluation

7. Activity: Lawn Care

A. Amount of Time taken: (Was the task completed in a satisfactory amount of time or were you unhappy with the amount of time taken?)

B. Breaks Needed: (How many taken, duration of each break, time between breaks, etc.)

C. Any Difficulties or Pain that occurred during the task:

D. Changes made during the task to alleviate the difficulties or pain: (if any)

E. Factors that affected the completion of the task (both positive and negative):

F. Energy Involved:

   - Energy spent on activity (circle one)

   1 2 3 4 5 6 7 8 9 10
   No energy                             Exhausted
* Consider these precautions and adaptations when making revisions to your activity plan

**Precautions for Lawn Care**

- Avoid movements that cause pulling or stretching of your chest
- Do not lift anything heavier than 10 pounds for at least 8 weeks following surgery
- If exhausted and getting extremely short of breath during this activity stop immediately
- Avoid extremely painful movements
- Make sure to take frequent rest breaks

**Adaptations for Lawn Care**

- Do outdoor work in the early morning or the evening to avoid extreme heat and direct sunlight.
- Use a power mower with electrical starter.
- Do not groom the entire lawn in one day.
- Use long-handled trimmers for clipping edges of lawn to avoid bending or crawling.
- Use a platform with wheels to sit on when edging or weeding along sidewalks.
- Use long, easy strokes when sweeping the sidewalk or raking.
- Use a hose to clean sidewalks.
- Switch positions frequently.
- Alternate use of arms.
- Take rest breaks.
- Work in comfortable positions.
- Use wheeled carts for hauling.
- Hire outside help.
Lawn Care Plan

Date: ______________

Plan:
1. Complete tasks in the early morning or evening.
2. Make sure all supplies are working properly.
3. Have all supplies needed within easy reach for task.
4. Take rest breaks between tasks.
5. Sit whenever possible.

Date: ______________

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Self Reflection Section
Quality of Life Self Assessment

This quality of life self assessment is an inventory of questions that are based on your perceived thoughts and feelings of your functional independence. By using this reflection based part of the assessment, you will be able to gain a better understanding of what goals you have reached, what lifestyle adaptations are working and which ones are needed, and your perceived attitude toward their progress. The second portion of the self assessment is a self rating system that will allow you to target specific areas of ADLs and IADLs and track the progress of each individual activity each week.
How would you rate yourself in the following areas within the last week? (Check only those that apply)

Week of: ______________________

Dressing

Doing well____  Fair___ Some Difficulty____  Struggling____  Unable to do____
If having difficulties explain: ______________________________________________________

________________________________________________________________________________

Shower/Bathing

Doing well____  Fair___ Some Difficulty____  Struggling____  Unable to do____
If having difficulties explain: ______________________________________________________

________________________________________________________________________________

Self Care/Grooming

Doing well____  Fair___ Some Difficulty____  Struggling____  Unable to do____
If having difficulties explain: ______________________________________________________

________________________________________________________________________________
Cleaning

Doing well ___ Fair ___ Some Difficulty ___ Struggling ___ Unable to do ___
If having difficulties explain: _____________________________

Cooking

Doing well ___ Fair ___ Some Difficulty ___ Struggling ___ Unable to do ___
If having difficulties explain: _____________________________

Laundry

Doing well ___ Fair ___ Some Difficulty ___ Struggling ___ Unable to do ___
If having difficulties explain: _____________________________

Lawn care

Doing well ___ Fair ___ Some Difficulty ___ Struggling ___ Unable to do ___
If having difficulties explain: _____________________________
Other activities not listed in the workbook (check only those that apply)

Sleep
Doing well____ Fair____ Some Difficulty____ Struggling____ Unable to do____
If having difficulties explain:__________________________________________________________

Getting around the house
Doing well____ Fair____ Some Difficulty____ Struggling____ Unable to do____
If having difficulties explain:__________________________________________________________

Social Interactions/Involvement
Doing well____ Fair____ Some Difficulty____ Struggling____ Unable to do____
If having difficulties explain:__________________________________________________________

Getting around in the community
Doing well____ Fair____ Some Difficulty____ Struggling____ Unable to do____
If having difficulties explain:__________________________________________________________
Reflection

1. How would you rate your overall satisfaction with your pattern of activity participation over the past week?

2. Have you made any changes/adaptations to your routines to be more successful?

3. How have these modifications worked out?

4. What are your thoughts/attitudes while doing something difficult that was not difficult prior to your heart transplantation?

5. What are your thoughts on your progress so far?

6. How would you rate your overall quality of life as of today?
   1  2  3  4  5  6  7  8  9  10
   Poor  Excellent

7. What goals have you set for yourself over the past week/month?

8. What efforts have you made to reach your goals?
Planning Future Activities
Adaptations

This section will help you change activities when they become too difficult or too easy. Changes can be made to activities using the provided information in the adaptation section. This section has specific modifications as well as general adaptations that can be used when a specific activity is not listed. Of course, every possible activity is not in this manual, but the general adaptations can be used with other activities. This will take some getting used to, but you should be able to find things that work for you.

When using adaptations, you will find that you are able to do more activities independently. With the independence, you will find that you will be able to rate your quality of life. Keep in mind that you may become tired when completing activities. Adaptations will help you save energy when completing your daily routine. The included weekly schedule will help you with planning out your daily activities. Remember that you can make activities easier or more difficult as needed, and the way you do things may change as you become stronger the farther away from surgery that you are.
3 Steps to Making Activities Easier

1. **Select** activity to be completed.
   a. Why is it necessary?
   b. What is its purpose?
   c. How long do you think this activity will take to finish?
   d. When do you plan on doing this activity?
   e. How much energy will this activity take?

2. **Break down** the activity.
   a. Get ready: what supplies are needed for the activity?
   b. Do: what movements are needed for the activity?
      i. Where will the activity be completed?
   c. Clean up: what is required for cleaning up and putting away all supplies during the activity?

3. **Evaluate**: how can the activity be done differently?
   a. Get rid of unneeded steps.
   b. Combine parts of the activity and/or movements.
   c. If possible, do the activity in a different order.
   d. Give yourself more time to finish the activity.
   e. Use suggested adaptations and energy saving techniques.
   f. Have the supplies ready to go where they will be used.
   g. Rearrange the area that the activity will be completed in.
   h. Get rid of unneeded supplies.
Adaptations: Making Tasks Easier

*Here is a list of common activities and some changes that can be made to them.*

**House Work**
- Use long-handled tools for reaching high or low places.
- Store frequently used tools where they are used most often.
- Have a family member complete household work that is too difficult.
- Hire others to do tough jobs.

**Bench Work**
- Use power tools instead of using hand tools.
- Avoid holding tools for long periods of time (isometrics).
  - Stop and rest your hands frequently.
  - Use clamps and vises to hold objects.
- Slide heavy items such as buckets, cans, and boards instead of carrying them.
  - *Do not hold your breath when moving equipment.*
- Organize workbench.
  - Have tools within easy reach.
    - On a pegboard
    - In a storage unit
    - On a wheeled cart
  - Position tools so they are ready to use.
- Sit while completing work.
- Get fresh air: leave a door open, or take rest breaks outside.

**Car Maintenance**
- Washing the car.
  - Use one-step cleaners.
  - Go to a car wash.
  - Have a family member wash your car.
- Changing tires.
  - Work slowly.
  - Call for help.
  - Make sure your tires are checked regularly.
• Changing oil.
  o Take breaks to avoid isometrics.
  o Use an extended handled wrench.
  o Use a dolly.
  o Have a family member or auto center change your oil for you.

Household & Kitchen
• Rearrange work and storage areas.
  o If possible, the sink, refrigerator, stove, and work counters should be as close together as possible.
• Store food utensils near where they will be used.
  o Frequently used items should be between your hip and shoulder level.
• Throw away gadgets you never use.
• Use safe step ladder for reaching high shelves or store needed items at a lower level.
• Serving Meals:
  o Use a cart when setting or clearing tables.
  o Use paper plates, cups, placemats, and napkins.
  o Cook and serve in the same baking dish.
  o Serve directly from stove to plates.
• Washing Dishes:
  o Use a cart or tray to carry items back to the sink.
  o Have family members carry, scrape and stack their own dishes.
  o Rinse all cooking utensils and dishes immediately after use.
    ▪ Soak dishes if necessary.
  o Place towel holder at sink.
  o Sit on a stool rather than standing.

• Bed Changing/Bed Making:
  o Position bed away from wall to leave room for changing bedding.
  o Putting sheets on your bed:
    ▪ Fold non-fitted sheets lengthwise in half, then in half again.
    ▪ Lay down the sheet in the center of the bed so you can make one side of
the bed at a time to avoid unnecessary steps around the bed.

- Lifting the mattress is usually unnecessary if sheets are tucked in using an open hand.
  - Pillows/Pillowcases:
    - Gather pillowcase up at sides, and then unroll over the pillow.
    - Use sponge rubber or polyester-filled pillows which do not need fluffing.

- Grocery Shopping:
  - Find out if your local grocery store offers delivery.
  - Have someone go shopping with you for lifting and carrying.
  - Shop at a store that takes the groceries out of the cart and places them in your car for you.
  - Ask to have groceries packed so the bags are light.
  - Use a light-weight grocery cart to bring groceries into the house from the car.
  - Leave heavier items in the car for a family member to carry into the house.

- Office/Clerical:
  - Position keyboard at a height which allows you to relax your shoulders while typing.
  - Avoid slouching.
  - Use a cart to move heavy items.
  - Sit while working.
  - To reduce reaching, sit on a high stool when filling in top drawers.
  - Arrange most frequently used file drawers at chest level to reduce extra bending, stooping or reaching.
  - Take advantage of desk drawer organizers, bulletin boards and metal vertical bins to hold frequently used paper and supplies.
  - Suggest using an intercom system to eliminate extra trips to and from rooms.
  - Set priorities and realistic schedule to avoid rushing through last-minute work.
  - Leave the office area during coffee breaks and lunch.
  - Go to a quiet area where you may relax.

Adapted from: Mayo Clinic, 2005
This weekly schedule has been included so you will be able to plan out your week. Use this schedule to plan out your activities by day or week. It is important to include rest breaks throughout your day. You will always need to remember to give yourself lots of time for meals because eating and digesting uses a lot of your energy.

### Weekly Schedule

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<td>1.0-2.5 METS</td>
<td>• Sponge Bath</td>
<td>• Light Sweeping</td>
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<td>• Shaving</td>
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<td></td>
<td>• Dressing or Undressing</td>
<td>• Preparing Light Meals</td>
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<td></td>
<td>• Grooming hair</td>
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<td></td>
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<td>• Serving Food</td>
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<td>• Mixing Batter while Sitting</td>
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<td>• Washing Dishes</td>
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<td></td>
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<td>• Knitting</td>
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<td>• Crocheting</td>
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<td></td>
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<td>• Putting Away Groceries</td>
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<td>• Mowing the Lawn with a Riding Mower</td>
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<td>• Sleeping</td>
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<td>• Polishing Shoes</td>
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<td>• Showering</td>
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<td>• Washing and Setting Hair</td>
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<td>• Making the Bed</td>
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<td>• Vacuuming</td>
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<td>• Ironing</td>
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<td>• Washing Floors with Sponge Mop</td>
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<td>• Walking downstairs</td>
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<td>• Sweeping – garage or sidewalk</td>
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<td></td>
<td></td>
<td>• Raking</td>
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<td>• Light Gardening</td>
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<td>• Walking and carrying 10-15lbs</td>
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<td>• Driving</td>
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<td>&gt;4.0-6.0 METS</td>
<td>• Sexual Activity</td>
<td>• Major house cleaning – washing windows,</td>
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<td>Moving furniture</td>
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<td>Scrubbing floors on hands and knees</td>
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<td>Cleaning gutters</td>
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<td>Painting and wallpapering inside of the house</td>
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<td>Carrying groceries upstairs</td>
<td>&lt;6.0-10.0</td>
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<td>Moving household items in boxes</td>
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<td>Shoveling Snow more than 16lbs per minute</td>
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<td>Walking or standing with objects weighing 50-74lbs</td>
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<td>Splitting Wood</td>
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<td>Sawing Hardwoods by Hand</td>
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<td>Pushing a Wheelbarrow</td>
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From Ainsworth et al., 1998; Allina Health System Press, 2006
References


CHAPTER V

Summary

The development of this product was based on the results of the literature findings. In 2008, the estimated survival rate of transplant recipients was broken down by years of survival and male vs. female. One year post transplant, 87-88 percent of males survived, whereas 86 percent of females survived; at three years, 79 percent of males were still living, while only 76 percent of females were alive; at year five post transplant, 68-72 percent of males were still surviving, while females were at a 64 percent survival rate (American Heart Association, 2008). These findings point to a need of a cardiac transplantation rehabilitation program in the outpatient and home care phase.

It is intended that this rehabilitation program for cardiac transplantation patients be implemented in an outpatient occupational therapy setting. This product was designed to be used by the outpatient occupational therapist in designing an activity program suitable for each cardiac transplantation patient as they are returning to their home environment and are getting accustomed to daily activities. It is designed to be used by cardiac transplant recipients in collaboration with an occupational therapist to provide comprehensive rehabilitation for home use. It is designed for the patient to complete at home and be reviewed on a regular basis while participating in outpatient occupational therapy programming. The designed product has two manuals; one for the
therapist and another for the patient. There are four sections that make up the patient manual: Patient education, activity workbook, self reflection, and planning for future activities. The therapist manual identifies the role of the therapist in each of the four sections of the patient’s rehabilitation program.

There are limitations to this product that need to be taken into consideration. The first limitation is that this rehabilitation program is for patients that do not have major cognitive impairments. This program is designed for the patient to complete at home and problem solve with the collaboration of the occupational therapist to reach complete independence and quality of life that is satisfying to the patient. The authors of the product feel it would be beneficial to expand the patient manual to include a section that would be directed at caregivers of patients with cognitive impairments.

Another limitation that is noted is in the rehabilitation program workbook. The workbook focuses specifically on seven activities that the authors identified as the most common areas for patient adaptation following cardiac transplantation. This list of activities may not relate as well to one patient as another. The future planning section of the patient manual assists the patient in making adaptations, but does not specifically give examples as in the workbook section. To eliminate this limitation, it is recommended that the activity list in the workbook be expanded to include other areas of occupation and other activities.

An additional recommendation for this product is to explore the possibility of using the patient manual in group settings. The authors feel that the program would be beneficial when used in support group for individuals who have received a heart
transplant. Personal experiences in different activities following transplantation might assist others in finding a variety of adaptation techniques used to improve quality of life.

It is concluded that this product will be beneficial for cardiac transplantation recipients, family members and the occupational therapists who are offering care to these patients following their discharge from the hospital after surgery. This product is designed to assist in promoting support for cardiac transplant patient in regards to proper education, pain management, psychological wellness, proper lifestyle adaptations, and overall quality of life in their transition and adjustment to returning home and living independently. This will decrease the likelihood and occurrence of setbacks that patients experience following transplantation.
REFERENCES


