



2008

Cardiac Rehabilitation: A Course for Occupational Therapy Students

Alison Cherney
University of North Dakota

Shauna Gregoire-Norrie
University of North Dakota

Follow this and additional works at: <https://commons.und.edu/ot-grad>

 Part of the [Occupational Therapy Commons](#)

Recommended Citation

Cherney, Alison and Gregoire-Norrie, Shauna, "Cardiac Rehabilitation: A Course for Occupational Therapy Students" (2008).
Occupational Therapy Capstones. 40.
<https://commons.und.edu/ot-grad/40>

This Scholarly Project is brought to you for free and open access by the Department of Occupational Therapy at UND Scholarly Commons. It has been accepted for inclusion in Occupational Therapy Capstones by an authorized administrator of UND Scholarly Commons. For more information, please contact zeinebyousif@library.und.edu.

Cardiac Rehabilitation: A Course for Occupational Therapy Students

by

Alison Cherney, MOTS

and

Shauna Gregoire-Norrie, MOTS

Advisor: Anne Haskins MA, OTR/L

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

Grand Forks, North Dakota

May, 10th 2008

This Scholarly Project Page, submitted by Alison Cherney, MOTS and Shauna Gregoire-Norrie, MOTS in partial fulfillment of the requirements for a 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.

Faculty Advisor

Date

PERMISSION

Title: Cardiac Rehabilitation: A Course for Occupational Therapy
Students.

Department: Occupational Therapy

Degree: Master's of Occupational Therapy

In presenting this Scholarly Project in partial fulfillment of the requirements of a graduate degree from the University of North Dakota, we agree that the Department of Occupational Therapy shall make it freely available for inspection. We further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised our work or in her absence, by the Chairperson of the Department. It is understood that any copying or publication or other use of this Scholarly Project or part thereof for financial gain shall not be allowed without our written permission. It is also understood that due recognition shall be given to us and the University of North Dakota in any scholarly use which may be made of any material in our Scholarly Project Report.

Signature_____ Date_____

Signature_____ Date_____

Signature_____ Date_____

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	v
CHAPTER	
I. INTRODUCTION.....	1
Course Design.....	1
Theoretical Model.....	3
Summary.....	4
II. REVIEW OF LITERATURE.....	5
Introduction.....	5
Role of Occupational Therapy in Cardiac Rehabilitation.....	6
Importance of Cardiac Rehabilitation.....	8
Theories and Strategies.....	9
Course for Cardiac Rehabilitation.....	23
Summary.....	25
III. METHOD.....	26
Methodology.....	26
IV. PRODUCT.....	29
Introduction.....	29
Theoretical Base.....	29
Design.....	30
Course Documents.....	32
V. SUMMARY.....	226
Limitations.....	227
Proposed Implementation.....	227
Conclusion.....	228
Recommendations.....	228
REFERENCES.....	229

ACKNOWLEDGEMENTS

We would like to thank our husbands and families for their continued love, support and encouragement throughout the development of the scholarly project and the program. Without your love and support we would not have been able to reach our goals and accomplishments.

We would like to thank Anne Haskins, MA, OTR/L, our advisor, for her support and encouragement throughout the development of our scholarly project and throughout the program. Your enthusiasm for occupational therapy and kind heart has guided us throughout the last three years.

It has been a privilege to work with you!

We would also like to thank Bonnie Hoff and LaVonne Fox for allowing us to utilize the scholarly project that they developed. Our scholarly project is a result of their hard work and collaboration with us. Thank you!

We would like to thank the University of North Dakota Occupational Therapy Faculty and Staff for their support and encouragement in the development of our careers as occupational therapists. You have all been truly inspirational and will always be remembered for your contribution to our lives.

We would like to thank our classmates for their friendship, support, and encouragement. The last three years have gone by so fast, we cannot imagine going on this journey with anyone but all of you.

ABSTRACT

There is limited information regarding the occupational therapists role in the cardiac rehabilitation setting. This lack of information may contribute to a limited amount of therapists working in this setting. Through the identification of this problem, the need for a course on cardiac rehabilitation for occupational therapy students was identified. The course was intended to expand the students' knowledge of cardiac rehabilitation and the position of an occupational therapist within this setting.

A literature review was conducted utilizing several research databases which include PubMed, ERIC, and SCOPUS in order to determine the depth of information available regarding educational theories, educational strategies, occupational therapy and cardiac rehabilitation. Information was also gathered from journals, textbooks and faculty knowledge. The information for the course was developed from the research on educational concepts but the content of the course was developed from Hoff's (2007) scholarly project: provide title.

The course, which was developed, is intended for occupational therapy students who are interested in further developing their knowledge in cardiac rehabilitation. The course is intended to be an elective study which spans over the period of one semester. There are a total of two quizzes, one treatment plan, fieldwork experience, and other assignment which are

projected to expand and assess the knowledge of the students. This course consists of four educational modules which contain 13 units regarding information on cardiac rehabilitation.

In conclusion, the occupational therapist has the ability to provide high quality services to various areas of practice. An area of practice which receives little attention in research in relation to occupational therapy is cardiac rehabilitation. Through the implementation of courses such as the one developed, occupational therapy will be able to expand its scope of practice to areas which can be complimented by the skills of an occupational therapists. The cardiac rehabilitation course is intended to provide occupational therapy students with additional information about this specialty, allowing for entrance into the cardiac rehabilitation clinic as an entry-level therapist

CHAPTER I

INTRODUCTION

According to the American Heart Association in 2004, approximately 79,400,000 Americans were affected by cardiovascular disease. Heart disease has accounted for 29% of all deaths making it the primary reason for death in America (Department of Health and Human Services, 2007). However, the development of new technology and improved treatment techniques has contributed to an increased survival rate for people who have been diagnosed with cardiovascular disease. The American Heart Association (2007) confirmed this proposition as they found that the survival rate had increased dramatically from 1994 to 2004. People who have survived cardiovascular disease have an increased risk of experiencing another cardiac episode. However, with the correct lifestyle changes and medical treatments, the risk of reoccurrence may be decreased drastically and quality of life may be improved. Occupational therapists are able to assist persons with cardiovascular disease in procuring lifestyle changes and improve their quality of life. Occupational therapists can offer a unique perspective on cardiac rehabilitation and quality of life for people diagnosed with cardiac disease.

While occupational therapists can offer important contributions to the cardiac rehabilitation team, there are few research studies supporting this role and few occupational therapists practicing in this area. Further information and knowledge about cardiac rehabilitation for entry-level occupational therapists is needed. Therefore, it is

beneficial to present the opportunity for occupational therapy students to engage in a course focused on cardiac rehabilitation and exemplify their potential role in this specialty area; a process that will prepare them ultimately to work effectively in cardiac rehabilitation settings. Finally, this results in a more comprehensive and complete healthcare team care in which the patient is the beneficiary. The intention of this scholarly project is to provide an entry-level cardiac rehabilitation course for graduate occupational therapy students.

Course Design

The product of this scholarly project is a cardiac rehabilitation course for occupational therapy students; specifically, it is composed of the instructional design of the course. The original education module was developed by Bonnie Hoff, MOT, OTR/L in 2007 in her scholarly project: *Cardiac Rehabilitation Education Module for Entry-level Occupational Therapists*. We utilized her product, with permission, as the foundation from which to provide both cognitive and constructivistic learning opportunities for occupational therapy students. The culmination of these efforts resulted in our scholarly project: *Cardiac Rehabilitation: A Course for Occupational Therapy Students* in which we addressed the issue of scarcity of occupational therapists in cardiac rehab. It is a comprehensive course, which is intended to educate the students about the cardiovascular system, remediation of the cardiovascular system, cardiac rehabilitation, and the role of occupational therapy. The course is intended to be offered as an elective course, implemented over the course of one full semester in the third year of the occupational therapy curriculum. The course developed consists of a syllabus, 13 educational units, assignments, quizzes, lecture materials, and a fieldwork experience.

Theoretical Model

An extensive literature review was completed as we investigated the need for occupational therapy in cardiac rehabilitation settings, the importance of cardiac rehabilitation, learning theories to guide course creation, learning strategies to enhance learning and the need for a course addressing this specialty. The theoretical model of Andragogy, developed by Malcolm Knowles, was utilized as the theoretical basis for which this course was developed. Andragogy is a process-learning model, which includes eight main elements which include: preparing the learner, climate, planning, diagnosis of needs, setting of objectives, designing learning plans, learning activities, and evaluation (Knowles, Holten III, & Swanson, 2005). These elements are all addressed in the developed course to ensure successful completion of each adult student. In the literature review, these eight elements and their relevance to this course are discussed in further detail.

In addition to Andragogy, other adult learning theories were utilized in the development of this course. The cognitive learning theory was utilized because it focuses on the internal components of the learner, including “learners’ perceptions, thoughts, memory, and ways of processing and structuring information” as written by Brien and Eastmond (as cited in Bastable, 2006, p.43). By identifying and acknowledging the learner’s needs and internal motivators, the educator can provide an optimal learning experience for the learner. In addition, the behaviorist learning theory proposes that the most advantageous learning experience occurs when the learner can identify a connection between two events (Bastable, 2006). Therefore, in-class discussion and case scenarios are used to facilitate learning. The final learning theory that was utilized was the

constructivist learning theory which identifies that the learner will apply information obtained to personal experiences and previous knowledge in order to learn the information (Bastable, 2006). The combination these theories is intended to address many different adult learning styles to provide an best learning experience for all students.

Summary

Occupational therapists provide a unique contribution to the cardiac rehabilitation setting; a contribution that needs to be emphasized further and may be especially effective beginning at the student level. We propose that this course be an elective during the third year of the occupational therapy curriculum. This course will encourage independent learning and the success of the adult student with an emphasis on adult learning theory.

This scholarly project is depicted through the four chapters. The following chapter is Chapter II, which is the review of literature discussing the following concepts: role of occupational therapy in cardiac rehabilitation, importance of cardiac rehabilitation, theories and strategies, and the proposed course. Chapter III describes the methodology of the development of this scholarly project. The next chapter, Chapter IV is the product depicting the course design entitled, “Cardiac Rehabilitation: A Course for Occupational Therapy Students.” Chapter V is the summary of the entirety of this course including key information, recommendations for implementation, and further work to be addressed.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Occupational therapists have the capability to practice in several different roles. One of those roles may include cardiac rehabilitation. Though little research exists that examines the occupational therapists role in cardiac rehabilitation, occupational therapists can make important contributions to the cardiac rehabilitation team through their training and expertise. This role is important to consider as the number of people being affected by a cardiac-related issues grows every year. While there is an increase in people being affected by a cardiac involvement, there is also a rise in the survival rate, indicating a need for more professionals specializing in this area. Occupational therapists have the ability to view the patient as a whole person considering his or her physical and mental well-being.

For more occupational therapists to practice in this area, increased awareness of this specialty needs to be identified. By increasing awareness about the occupational therapists role in cardiac rehabilitation at the student's level, it is possible that more occupational therapists will take the opportunity to practice in this specialty. The course will provide this information during the educational curriculum of the occupational therapy student. We will discuss factors which contribute to the development of a college level course. These factors include discussing the role of occupational therapy in cardiac

rehabilitation, the importance of cardiac rehabilitation, theories and learning strategies, and, finally, the course itself.

Role of Occupational Therapy in Cardiac Rehabilitation

Occupational therapists play an important role in the treatment of patients needing cardiac rehabilitation (CR). The occupational therapist is able to provide a treatment to the patient with a cardiac involvement in a holistic manner. A holistic approach would consider the person as a whole throughout the treatment; i.e. the therapist would recognize all contributing factors to the patient's condition and assist the patient in making a recovery to his or her full potential. Occupational therapists, through their education and treatment focus, incorporate an occupation-based approach in CR, which is important to the patient's recovery. An occupation-based approach includes the use of activities which are identified as meaningful to the patient with the intention of identifying and improving physical and mental status.

Occupational therapy offers a unique perspective on the process of cardiac rehabilitation. However, occupational therapy's involvement in cardiac rehabilitation seems to be limited despite the benefits of an occupational therapist's involvement. The lack of research of this topic may contribute to the absence of an occupational therapist in this treatment area. Booth and Hewison (as cited in De Wit, 2007) concluded occupational therapists focus more significantly on activities of daily living, leisure activities, cognitive, sensory, visual and perceptual aspects of the person when compared to a physiotherapist which focuses on balance, standing and walking. Researchers found that occupational therapy plays a distinct and important role in the rehabilitation of patients in cardiac care (Booth and Hewison, as cited in De Wit, 2007).

Understanding and defining the role occupational therapy holds in the CR setting is important to the development of the discipline and ensures the need for the profession. However, this task is difficult due to the complexity of the treatment process and intervention of the discipline. Therefore, the roles of the discipline can become intermingled and overlap with other professionals may occur (De Wit et al., 2006). It is important to advocate for the occupational therapy professions position in CR to ensure the understanding of the importance of an occupational therapist in the treatment of a patient with a cardiac involvement.

Occupational therapists implement a treatment holistic in nature, which is found to be critical to the care of patients (Myers et al., 2007). As evidenced by the aforementioned article, occupational therapists have the potential to positively impact the rehabilitation process in CR; however, occupational therapy has limited involvement in the cardiac rehabilitation process. There is also a lack of current research to define the role of an occupational therapist in CR. This trend may be due to the current lack of educational curriculum focusing on cardiac rehabilitation in occupational therapy programs. Students are not significantly exposed to the specialty area of CR during their college level educational experience.

It is not fully understood why occupational therapy is not being readily involved in cardiac rehabilitation. However, we anticipate that creating a learning opportunities for a course specific to CR will improve the awareness of the role occupational therapy plays in cardiac rehabilitation. The awareness of the occupational therapists role will be presented to occupational therapy students who, at the beginning of their practice, may promote the occupational therapists place in the CR process. While recognizing the rapid

growth of people surviving cardiac episodes, it is important to recognize the importance of the rehabilitation that must occur to ensure the patient's return to previous activities. This return to daily function can be further facilitated through the expertise of an occupational therapist.

Importance of Cardiac Rehabilitation

Cardiovascular disease affected 79,400,000 Americans in 2004 according to the American Heart Association (2007). Cardiovascular diseases includes: myocardial infarction, cardiovascular accident, coronary heart disease, coronary obstructive pulmonary disease (COPD), high blood pressure, and angina pectoris. As the average age of the population in the United States increases, the risk of developing a cardiovascular disease increases. The increase of older adults in the United States can be attributed to the baby boomer population which was estimated to be approximately 78.2 million people in 2006 (U.S. Census Bureau, 2006). According to the American Heart Association (2007) the survival rate for cardiovascular disease has increased dramatically from 1994 to 2004. Technology is contributing to a decrease in the death rate of people who have experienced cardiovascular accidents. Therefore, the number of people who require cardiac rehabilitation (CR) after a cardiac episode is increasing.

Sandercock, Grocott-Mason and Brodie (2007) illustrated the importance of cardiac rehabilitation in the recovery of a cardiac accident. Researchers in this study reported that the post-cardiac rehabilitation group showed a significant improvement in heart rate variability when compared to the control group. Patients in the post cardiac rehabilitation group participated in eight weekly sessions in which they engaged in aerobic exercise and educational material concerning cardiac care and general health

topics. In comparison, the control group was given an eight week exercise log to record their participation in different exercises. The control group was not given guidelines with the exception of safety concerns. Myers et al. (2007) confirmed that diet, education, and exercise have an important role in the recovery of patients suffering from heart failure. Based on the results of Dewit (2007) and Sandercock, Grocott-Mason and Brodie (2007), it is evident that the involvement of an occupational therapist in the rehabilitation of patients who have experienced a cardiac event would be beneficial.

Theories and Strategies

Andragogy, or adult learning theory, identifies the adult learning experience as encompassing the following concepts: adults recognize and utilize life experiences, adults possess the need to understand the value of the material and its applicability, adults recognize their own responsibility for decisions, and adults respond to internal motivators more readily than external motivators (Bastable, 2006). Andragogy is a process learning model which includes eight main elements which are: preparing the learner, climate, planning, diagnosis of needs, setting of objectives, designing learning plans, learning activities and evaluation (Knowles, Holten & Swanson, 2005, p.115). These elements are considered throughout the development of the course being developed for occupational therapy students. In *preparing the learner*, the needs are considered in the beginning of the course through a discussion which addresses the learner's and the educator's expectations of the course. This discussion will assist the educator in the development of a deeper understanding of the needs and will prepare the learner for the objectives of the course (Kelly, 2006; Knowles, Holten III, & Swanson, 2005). *Developing the climate* of the learner requires the establishment of rapport between the

learner and educator. The development of rapport in the construct of this course is important as the learner and educator will establish a sense of collaboration, support, goal orientation, and openness. This is pertinent to the adult learner as it provides him or her with a sense of support and contribution to the learning experience, encouraging the best learning experience for this population. *Planning*, which is a mutual process conducted by the learners and the educator (Knowles, Holten III, & Swanson, 2005). The learners will have the opportunity to take on the role of facilitator in the planning and implementation of an educational topic chosen by the learner (Knowles, Holten III, & Swanson, 2005). Through the opportunity to plan and apply content, the learner will have improved retention of the information presented (Kelly, 2006). *Diagnosing the needs* of the learner involves application of what and why he or she needs to learn information regarding CR and how it applies to the occupational therapist's role. *Setting of Objectives* occurs through collaboration between the educator and learners. This collaboration facilitates the development of goals which meet criteria of the course as well as needs of the learner. The facilitator can present objectives to the learners and engage in negotiations to adjust these objectives accordingly in order to make the information learned meaningful to the learner. *Designing learning plans* need to be centered on the learner's abilities and adjusted as the course progressing through the semester. This occurrence needs to be an ongoing process which is further facilitated by the observed and stated needs of the learner and within the sequence of the course. *Learning activities* need to be reliable and centered upon resources which are identified and presented by the educator. The activities need to be implemented in a manner consistent with the needs of the learner (Knowles, Holten III, & Swanson, 2005). Evaluation is important to gain an

understanding of the techniques and resources which were beneficial to the learner and applied to their needs (Knowles, Holten III, & Swanson, 2005). Adult learners anticipate suggestions and feedback that they provide to be applied to the course content. This population feels most competent and motivated when taught material through methods which they have suggested (Kelly, 2006).

Adult learners are intrinsically motivated and are autonomous (Kelly, 2006). Intrinsic motivation is motivation which comes from within the person who has an internal drive which motivates towards accomplishment. Therefore, adult students tend to engage in self-initiated and exploratory techniques in their learning experiences (Sansone & Smith, 2000). Adults flourish in learning experiences in which they are intrinsically motivated towards and have chosen engagement (Knowles, Holton, & Swanson, 2005). Adults' desire for achievement is depicted through their goal-oriented nature. This desire and the learner's self esteem may be compromised if the learner does not have a sense of a safe and supportive environment (Kelly, 2006). Accommodating the intrinsically motivated adult and their goal oriented nature contributes to the creation of a comfortable learning environment. Extrinsic motivation, although not highly emphasized in adult learning, does have a role in the learning process of adults. Extrinsic motivation is attained through external reinforcement from the environment. Facilitation of an optimal learning experience requires the educator and learner to maintain a balance of intrinsic and extrinsic motivation (Bye, Pushkar, & Conway, 2007).

When creating a course for college level students in a professional program, it is important to consider the implementation of varying adult learning theories and strategies to encourage the best learning environment and experience possible. Employment of

these theories and strategies will utilize the adult learner's intrinsic motivation. Three theories will be explored and applied through the development of the learning experiences in this course. The strategies which were used in this course were developed from the constructs of three theories: cognitive learning theory, behaviorist learning theory, and constructivist learning theory.

Cognitive Learning Theory

Cognitive learning theory focuses on the internal components of the learner, including "learners' perceptions, thoughts, memory, and ways of processing and structuring information" as stated by Brien and Eastmond (as cited in Bastable, 2006, p.43). Intrinsic motivation is required to engage the adult in active participation which encourages the learning process through which the individual must develop new thoughts and perceptions (Bastable, 2006). The cognitive learning theory illustrates that motivation is developed through a sense of understanding and appreciation of the learning material. The educator must consider the person's insights, experiences, and general ways of incorporating information, all of which are intrinsic motivators of the learner. This theory requires the educator to have an awareness of students' needs and approach the learning experience in a comprehensive manner (Bastable, 2006). Through the application of the cognitive learning theory, the CR course being developed will focus on the construction of knowledge through the recognition of the internal motivators of the adult learner. This theory will be utilized in the development of course materials and discussion topics in order to facilitate the development of new thoughts and knowledge within the learner.

Behaviorist Learning Theory

The behaviorist learning theory identifies that learning takes place when a connection between two events is identified (Bastable, 2006). When desirable behaviors occur, positive reinforcement is established within the favorable conditions of the environment. Two assumptions of this theory are that the learner must be passive in nature and responsive to environmental conditions and that the learner is to have limited to no knowledge on the topic being discussed. Therefore, the educator is responsible for providing the knowledge necessary and the positive and negative reinforcement needed to identify the connection between two events. The concepts of the behaviorist learning theory will be applied through practices utilized in the course. These practices will include: grading learners on their achievement through a letter grading system, reinforcing learners on their abilities in class through positive and constructive feedback, and encouraging/reinforcing participation throughout the course (Bastable, 2006).

Constructivist Learning Theory

Constructivist learning theory suggests that the learner will apply information to his or her personal experiences and develop their own conclusions for learning to occur (Bastable, 2006). Intrinsic motivation is the driving factor which encourages the learner to draw these conclusions. It is the role of the learner to develop comparisons between past experiences and new knowledge (Bastable, 2006). The educator is responsible for facilitation and support of the development of the conclusion through presentation of the information being discussed. In this course, the educator will provide an environment which will challenge the learner's thinking process through the use of teaching strategies which include: in class discussion, problem based learning, blended learning and

evidence based learning. Knowledge will be developed by the learner through problem based learning opportunities provided by the educator (Knowles, Holton III, & Swanson, 2005).

Table 1. Examples of the Three Theoretical Basis Used in Construction of Course

Examples of:		
Constructivist	Cognitive	Behaviorist
<ul style="list-style-type: none"> • Problem based learning • Encourage active participation and application to previous experiences 	<ul style="list-style-type: none"> • Lectures • Assignments • Require readings and lecture notes 	<ul style="list-style-type: none"> • Quizzes • Providing reinforcements through positive and constructive feedback • Grading learners on their achievements

Bloom's Taxonomy

In development of the course content and objectives Bloom's Taxonomy was reviewed. The idea for the taxonomy was developed in 1948 at an informal meeting consisting of collegiate professors at the American Psychological Association Convention in Boston (Bloom, 1956). Educators established a need for a theoretical framework to classify objectives for educational courses to ensure a foundation for course content. This committee recommended the taxonomy be used to improve communication between educators and provide a consistent reference for determining levels of cognition.

Bloom's Taxonomy was contained three domains: cognitive, affective and psychomotor (Krathwohl, Bloom & Masia, 1964). The cognitive domain focuses on objective that includes knowledge of recall, recognitions and identification; commonly measure through tests. This domain is most commonly used in the development of courses (Krathwohl, Bloom & Masia, 1964). The second domain, affective domain, describes changes in attitude, interest, and values; however measurement of this domain can be difficult (Bloom, 1956). The third, and final, domain is the psychomotor domain which is rarely addressed in educational settings and has little research to support further definition of objectives (Bloom, 1956).

The cognitive domain is split into six classes or sections intended to assist in the establishment of cognitive objectives for educational curriculums. The classes are knowledge, comprehension, application, analysis, synthesis, and evaluation. These classes are in a hierarchical order and are intended to build sequentially from the preceding class (Anderson & Sosniak, 1994). The following table depicts each class and its content.

Six Major Classes of Bloom's Taxonomy

Knowledge	<ul style="list-style-type: none">• Recall, recognition• Remembering of ideas, patterns, material• Use of analogies• Concrete thinking
Comprehension	<ul style="list-style-type: none">• Lowest level of understanding• Does not involve relation of material, however, involves some use of material in a concrete manner
Application	<ul style="list-style-type: none">• Use of abstractions within concrete situations• General ideas, rules, procedures
Analysis	<ul style="list-style-type: none">• Relationships between ideas are expressed• Breaks down materials into parts in order to establish a conclusion• Development of skills
Synthesis	<ul style="list-style-type: none">• Development of a whole through knowledge elements• Creative expression is allowed within the limits of the material• Development of a plan• Development of abstract relations
Evaluation	<ul style="list-style-type: none">• Involves making judgments• Evaluate accuracy, consistency, and other criteria• Form opinions

Learning Strategies

It is important to accommodate a diverse student population within an occupational therapy program to facilitate the successful learning experiences. While acknowledging individual needs may be challenging for educators, the importance of tailoring the learning activities to the student learner is crucial to maximizing the learning experience. Students need to feel valued and have their unique life situations understood for success to take place. Acknowledgement of individual needs such as learning styles and life stages will create a learning environment that will facilitate an optimal educational experience (Ross-Gordon, 2003).

Beckert, Wilkinson, and Sainsbury (2003) evaluated the effectiveness of the implementation of a needs-based learning strategy in a course for fifth year medical students. The researchers found that the student based evaluation of the course and its procedures were rated highly, especially on value and relevance. The results of the year end examination showed increased test scores when the researchers compared them to medical students in different colleges and students from the previous year who completed for the same examination. Adult learners respond best to information that they chose to learn rather than information which is required to learn (Kelly, 2006). Beckert, Wilkinson, and Sainsbury's (2003) study was important for professionals evaluating a curriculum for medical students, and has relevance for adult learners as well. Professors and others who are developing courses may find it beneficial to understand and possibly implement needs based learning strategies into their developed (or developing) courses.

When implementing a course of study it is important to implement different learning styles, which correspond with the preferred learning styles of the audience

(Ross-Gordon, 2003). With the increase of diverse students entering college it is likely that more students with different learning styles will enter into an occupational therapy program. This emphasizes the importance of the implementation of different teaching techniques to ensure the success of each student (Rickerson & Deitz, 2003). Exposing learners to different teaching techniques will encourage and facilitate the learner to identify and utilize the technique(s) that is most beneficial to him or her based on the learner's intrinsic motivation.

Several different teaching strategies exist which may be utilized in the course of study to ensure the most beneficial learning experience. Some of the strategies will be further discussed to compare the benefits of each. These strategies include: universal design of instruction (UDI), problem based learning, learning through discussion, evidenced based practice applied to learning (EBVP), and application of a blended learning technique.

Implementation of the Universal Design of Instruction (UDI) can benefit all students who utilize many different learning styles. Using UDI, educators seek to provide educational experiences to all people regardless of their learning style or learning disability (Rickerson & Deitz, 2003). The seven principles of UDI include equitable use, flexibility in use, simple and intrusive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use (Rickerson & Deitz, 2003). These seven principles ensure that a student has access to information and accommodations needed to excel in course work. For example, students will have the freedom to sit where they choose in a classroom. This will give the student who is, for example, hard of hearing the opportunity to sit near the front of the room where he or she

could hear the instructor. Also, lecture notes can be posted on-line allowing students to follow along during a lecture and also for a student who has poor eyesight and requires use of media such as a screen reader to access and read the notes (Rickerson & Deitz, 2003).

UDI is important to consider when developing a curriculum for any college course and especially for courses in occupational therapy (Rickerson & Deitz, 2003). First, UDI is a non-intrusive way to accommodate to the diverse needs of students and to enhance the students' learning. The approach is not unlike interventions and frames of reference used commonly in occupational therapy, which are intended to provide appropriate support for people engaging in occupations. The inclusion of UDI in the occupational therapy curriculum may not only benefit the occupational therapy students' learning, but also provide an ancillary method of teaching that those students may eventually employ as they work with people who are seeking to become more independent with activities of daily living.

Problem-based learning was defined by Albanese and Mitchell as “the use of problems to focus learning” (as cited in Hammal et al., p. 71). Problem-based learning guides and facilitates students in exploring the process of solving problems within student facilitated discussions that are related to situations in a clinical setting (Hammel et al., 1999). Problem based learning is a technique that has been researched and explored to determine its effectiveness in classroom learning. Hammel et al. (1999) explained the importance of problem-based learning in the curriculum of occupational therapy programs and reported that it can enhance clinical skills as well as team and communication skills. Using this learning approach in the classroom will help students

develop greater depth of knowledge that encompasses the material being taught. When an educator uses this technique it teaches students the professional skills that they will utilize when practicing as an occupational therapist. The problem based learning approach enhances the students' initiation of, responsibility for and engagement in the learning process (Hammel et al., 1999). Students' engagement in learning may be illustrated and enhanced through the implementation of classroom discussions.

Learning through discussion provides students with an opportunity to explore topics with classmates in group discussions. During discussion students are able to express knowledge and have their ideas challenged by their peers; a process which may be critical to further developing the students' confidence. This style of learning encourages students to utilize their critical thinking and communication skills (Crabtree, Royeen, & Mu, 2001). Through teaching each others, students are able to understand concepts more readily than when learning concepts independently (Bastable, 2006). It is important to utilize the most effective learning strategies in teaching occupational therapy students. This method facilitates independent learning, which is a skill that will carry over to when the students are practicing clinicians (Crabtree et al., 2001).

In one qualitative study, Stube and Jedlicka (2007) found that classroom discussion facilitated students' learning of evidence based practice (EBP) concepts, thus supporting the application of discussion as a learning intervention. Despite improved comprehension, students gained the most insight of EBP when they were able to actively apply their knowledge to a clinical situation (i.e. fieldwork) (2007). This study highlighted the importance of a progression of learning in which students are able to explore and then apply knowledge in the classroom and clinic, respectively. "Fieldwork

provides an opportunity for occupational therapy students to connect didactic education and clinical practice (Lewis, 2005, p. 1).” Fieldwork is the bridge between classroom education and clinical practice; an experience that provides students with insight into the necessary application of knowledge that they will implement during their role as practicing clinicians. In addition to using traditional classroom techniques and fieldwork experiences, healthcare educators have also begun to explore the use of blended learning strategies.

The blended learning strategy, although not explored specifically in occupational therapy education literature, has been found to be a highly beneficial learning strategy among other areas of healthcare education. The blended learning technique includes online assignments and seminars, which replaced traditional classroom hours (Pereira et al., 2007). According to Pereira et al., students who participated in the blended learning group had a higher passing rate than traditional teaching participants, who engaged in lecture formatted educational strategies. Therefore, one may purport that the blended learning techniques may be more effective than traditional learning techniques when considering student retention and learning (Pereira et al., 2007).

It is important to consider the student’s satisfaction with his or her educational experience. One way of improving student satisfaction is the educator’s consideration of each student’s unique needs. Assisting the student in the identification of strategies that best facilitates the learning process early in the course will enhance the satisfaction and success of the student. Educating students for the clinical setting can be challenging at times, it is important to understand the student’s viewpoint in order to provide educational material in the most beneficial way. According to Hodgetts et al. (2007),

occupational therapy students, in their last years of their education, reported a lower satisfaction rating with quality of education and readiness for professional practice when compared to students in the beginning of their educational program. This is important to consider when creating a course or curriculum for students who are completing the last year of an occupational therapy program. Factors contributing to lower satisfaction scores must be considered and explored further to understand occupational therapy students and their individual needs. According to a survey conducted by Hodgetts et al. (2007) occupational therapy students reported that they feel they have not been receiving enough technical or intervention skills during their education. Implementation of technical and intervention skills into the learning experience of occupational therapy students involved in this course would improve the clinical skills of the students and their readiness for entrance into the clinic. The cardiac rehabilitation course presented in this scholarly product is intended to provide students with learning experiences in which they may master specific clinic skills and enhance their readiness for entrance into the occupational therapy clinical practice. The provision of opportunity for students to improve or grow their clinical skills will likely benefit not only the patients whom these students treat, but also provide students with reinforcement that the feedback that they are providing to occupational therapy educators is being considered as a method to improve the occupational therapy curriculum and student learning experience.

The implementation of student evaluation within a curriculum sends multiple messages to the student. These messages may include: willingness for adaptation of occupational therapy educators to diverse needs to provide students with an optimal learning environment, a commitment to instruction, intelligence of the educator, and a

regard for “learners’ perception, thoughts, memory, and ways of processing and structuring information” (Bastable, 2006, p. 43). Increased motivation is observed when a learner’s perceptions are being considered. Taking into consideration student’s needs, promoting the desire for positive growth, and improving feelings about oneself stimulate motivation (Bastable, 2006). Motivation is important to the student’s ability to understand, process, and incorporate information. Students, who have been provided an environment that increases motivation, have shown an increase in academic performance (Oliveira-Filho, & Viera, 2007). Encouraging clinical application of the information learned can be motivating to students. The development of clinical skills through this course is of concern to both the educators and the students involved. It is important to encourage the development of clinical skills through various learning techniques which are useful to the students within the curriculum (Babola & Peloquin, 1998).

Course for Cardiac Rehabilitation

The course that was developed is intended to be provided in a three-year masters level occupational therapy program and is designed to supplement the clinical skills that the occupational therapy students learn in the required occupational therapy curriculum. The course is intended to be an elective class worth two credit hours offered during the last year of the curriculum. The course is intended to take place for two hours, one time per week for sixteen consecutive weeks. The course content was based on a previously developed module for entry level therapists. This module, Cardiac Rehabilitation Education Module for Entry-level Occupational Therapists, was developed by Bonnie Hoff, MOT, OTR/L (2007), who obtained a master degree in occupational therapy, and has established a career in cardiac rehabilitation.

Occupational therapy programs in the U.S. are required to meet specific guidelines or standards to acquire accredited status. The standards have been designed and are regulated by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association to ensure that occupational therapy students who graduate from an accredited occupational therapy program are competent in multiple areas of practice and have mastered specific knowledge and clinical practice requirements prior to entry-level practice. The accredited status of an occupational therapy program is particularly relevant to the occupational therapy students as students must have graduated from an accredited occupational therapy program to apply to complete the national certification exam. There are three distinct categories of ACOTE standards: doctoral program standards, master's degree level standards, and standards for occupational therapy assistant programs (AOTA, 2007). The 2006 ACOTE standards were revised and accepted in August of 2006 and will be implemented in occupational therapy programs in the U.S. in 2006 (AOTA, 2007).

The ACOTE standards provide a framework for occupational therapy educators who are designing course curriculum and student learning opportunities and are presented in the following sections: *A. General Requirements* and *B. Curriculum Framework* (AOTA, 2007). The curriculum framework section has subsections that are further defined as *foundational content requirements, basic tenets of occupational therapy, occupational therapy theoretical perspectives, screening evaluation and referral, intervention plan: formulation and implementation, context of service delivery, management of occupational therapy services, research, professional ethics, values and responsibilities, and fieldwork education* (AOTA, 2007, pp. 11-24). The curriculum

framework section is composed primarily of student learning objectives which guides the creation and implementation of occupational therapy courses and will provide the foundation for the formation of the product for this scholarly project (AOTA, 2007).

Summary

Throughout the literature review we have discussed the need for occupational therapy to play a role in the rehabilitation process and have established the importance of cardiac rehabilitation. Most importantly we emphasized the need for the development of a course in cardiac rehabilitation within an occupational therapy curriculum which was initially promoted by Hoff (2007). We have also addressed learning theories and strategies needed for the development of such a course.

It is our intention that this course provide occupational therapy students with knowledge that is required to perform successfully as an entry level professional in cardiac rehabilitation. This course will prepare the entry-level therapist to effectively function on a cardiac rehabilitation team. It will also enable the entry-level therapist to successfully establish the importance of the occupational therapist's role in the cardiac rehabilitation setting. It is important to note that the content and knowledge foundation for this course was developed by Hoff (2007). Our contribution to the promotion of occupational therapy student learning in the area of cardiac rehabilitation and this scholarly project is the integration of Hoff's (2007) content with a specific course structure, syllabi, learning activities, and assessments of student learning.

CHAPTER III

METHODOLOGY

The Cardiac Rehabilitation Educational Module for Entry-level Occupational Therapists was developed by Hoff (2007) and provided the cardiac rehabilitation content/knowledge foundation for this project. After identifying a need for research about occupational therapy and the professions role in cardiac rehabilitation (CR), a need was identified for an occupational therapy course in CR and, therefore, a course for information pertaining to CR. The course, which was developed, is intended to provide entry level students with increased knowledge about this specialty area in occupational therapy. This need was first identified by Hoff (2007) as she described the lack of occupational therapy professionals in this area of practice. These realizations lead to the development of *Cardiac Rehabilitation: A Course for Entry-level Occupational Therapy Students* which was based on Hoff's (2007) scholarly project which was a cardiac rehabilitation module developed for entry level therapists.

A literature review was conducted to explore various aspects of adult learning, learning strategies, and other concepts related to cardiac rehabilitation. This literature review was conducted from May 2007 until October 2007. Several databases and search topics were utilized in the search for information about the aforementioned topics. These databases included: the ERIC database, Pub Med, CINAHL, Scopus and review of various journals available on the Harley E. French Library website through the University

of North Dakota. The databases were searched uses some of the following terminology: adult learning, adult learning strategies, occupational therapy and adult learning, cardiac rehabilitation, and occupational therapy and cardiac rehabilitation. Some of the journals utilized included the American Journal of Occupational Therapy, Journal of Allied Health, as well as others, which can be found in the reference section. Another source of information was obtained from the Chester Fritz Library at the University of North Dakota regarding Bloom's Taxonomy. The content in these resources was used to develop an understanding of concepts needed for the development of a course for adult students.

The information compiled confirmed our belief and Hoff's (2007) finding of limited resources regarding the occupational therapists role in CR, which lead to the development of this course. This course was developed directly from the information compiled by Hoff (2007). Permission was obtained from Hoff for the use of her developed education module. A syllabus, lecture materials, activities, assignments and methods of evaluation were developed for the content of this course. The material used to develop this course was obtained through OT 509: Principles of Education, a course focused on development of understandable education materials, course objectives, and becoming better, overall educators. Another resource of information was the faculty at the University of North Dakota Occupational Therapy Department through discussions and e-mails which were intended to map the development of the teaching module from Hoff's educational module.

One of the goals of developing this course was to increase the awareness of occupational therapy students of occupational therapy's role in cardiac rehabilitation.

This is being accomplished through the development of a course at the level of an occupational therapy student therefore, increasing the student's probability of practicing CR. The education module is intended to serve as a resource for occupational therapy educators.

This course (developed from the module by Hoff) is not considered to be all inclusive of information needed for CR, but is considered an addition to the curriculum. This course provides information that would benefit a student that expresses interest in cardiac rehabilitation and to show an emphasis on the specialty area when applying for jobs. In addition, this class also intends for participating students to have the ability to identify and promote the role of occupational therapy in the CR setting.

CHAPTER IV

PRODUCT

Introduction

The purpose of this scholarly project was to create a course for graduate level occupational therapy students focusing on cardiac rehabilitation. This course is intended to give the student a more in-depth knowledge base of the specialty of cardiac rehabilitation. The course is to be used by faculty members within an accredited occupational therapy program who have some basic knowledge of cardiac rehabilitation.

The information within this product is based on the education module created by Bonnie Hoff MOT,OTR/L (Hoff, 2007), an occupational therapist who specializes in cardiac rehabilitation. The information provided is by no means all inclusive of what is needed to practice within cardiac rehabilitation; however, it does provide the student with advanced information that may assist them in the development of a career in cardiac rehabilitation. It anticipated that the student will also seek out other learning experiences in order to specialize in cardiac rehabilitation.

Theoretical Base

This project has support and structure developed through the use of Malcolm Knowles's theory of Andragogy. Andragogy is defined as "the art and science of helping adults learn" (Bastable, 2006, p. 124). The content of the product is directed toward occupational therapy students in their graduate year of study. Assumptions of the theory

of Andragogy have major connotations in the education of adults. These assumptions are as follows:

Adults' self-concept moves from one of being a dependent personality to being an independent, self directed human being. Adults accumulate a growing reservoir of previous experiences that serve as a rich resource for learning. Readiness to learn becomes increasingly oriented to the developmental tasks of social roles in adulthood. Adults desire knowledge for immediate application in solving life's problems. (Bastable, 2006, p. 124).

Within the scope of andragogy, this project followed concepts of behaviorism, cognitive, and constructivism. These concepts provide a well-formed base of theoretical application for the development of a course for adults. The theoretical basis that has been reviewed and utilized in the development of this course will provide the best learning environment and experience possible for occupational therapy students.

Design

This project was developed off the information drawn from *Cardiac Rehabilitation Education Module for Entry-level Occupational Therapists*, authored by Bonnie Hoff, MOT, OTR/L, a therapist who specializes in cardiac rehabilitation. The course which was developed is intended for occupational therapy student who are interested in further developing their knowledge in cardiac rehabilitation. This course has been designed to follow several standards set by the Accreditation Council for Occupational Therapy Education and intended for use within an accredited occupational therapy program. The course contains several components which include a syllabus, power point presentation for lecture, assignments, and quizzes. It is intended that the

instructor of this course would have previous knowledge and experience with cardiac patients in the physical disabilities setting.

This course consists of four educational modules which contain 13 units regarding information on cardiac rehabilitation. The course is intended to be an elective study which spans over the period of one semester. There are a total of two quizzes, one treatment plan, fieldwork experience, and other assignments which are projected to expand and assess the knowledge of the students.



Cardiac Rehabilitation:

A Course for Occupational Therapy Students.

University of North Dakota
 Department of Occupational Therapy
 OT 520 – Cardiac Rehabilitation: A Course for Occupational Therapy Students (2 credits)

Course Description and Relationship to Curriculum and Essentials This course encourages the development of fundamental knowledge of cardiac rehabilitation essential for entry-level practice in cardiac rehabilitation. The student is required to apply knowledge and principles of occupational therapy's role in cardiac rehabilitation, through in class lectures, class discussion, assignments, quizzes and tests. This course builds on previously learned knowledge about physical disabilities.

ACOTE Standards The following 2006 ACOTE standards are met by this course: B.1.1., B.1.2., B.1.3., B.1.4., B.1.6., B.1.7., B.1.10., B.2.2., B.2.3., B.2.4., B.2.5., B.2.7., B.2.8., B.2.9., B.2.10., B.4.1., B.4.2., B.4.3., B.4.4., B.4.6., B.4.7., B.4.8., B.4.9., B.4.10., B.5.1., B.5.2., B.5.3., B.5.4, B.5.5, B.5.6., B.5.7., B.5.11., B.5.23., B.5.28., B.6.4., B.6.6., B.9.1., B.9.3., B.9.4., B.9.6.

Professor Ima Professor, MOT, OTR/L
 Office:
 Telephone:
 E-mail: imaproffessor@medicine.ot.com
 Office Hours:

Disability/Access Statement If you have emergency medical information to share, if you need special arrangements in case the building must be evacuated, or if you need accommodations in this course because of disability, please make an appoint to speak with the professor. Office hours are listed above. If you plan to request disability accommodations, you are expected to register with Disability Support Services (DSS) office.

Required Text Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Recommended It is highly recommended that you obtain a membership with the American Occupational Therapy Association. Information about membership is available at www.aota.org.

Required Software Every assignment completed for this course must be composed within Microsoft Word.

Course Meets Wednesdays; 7:00 pm -9:00 pm

Methods of Evaluation	<u>Written & Lab Assignments</u>	<u>Points</u>
	Treatment Plan	80 points
	Fieldwork at Local Hospital (2 days)	S/U
	Reflection each day of FW	10 points each
	Assessment Assignment	50 points
	Participation	50 points
	<u>Quizzes</u>	

Mid Term	44 points
Final	50 points
Total Course Points	294 points

Any student earning less than a 78% in written assignments or activities will be required to re-do that assignment/activities until the student achieves competency; however, the initial grade will be averaged with the secondary grade and that will be the student's final grade. Extra credit opportunities, if available, will not exceed 3% of the total course grade and will be offered to all students.

Academic Honesty as defined by the Institution's Code of Student Life is an expectation for all students' actions in the course and meeting its requirements.

Grading Rubric	<p>A student with less than 82% at midterm will receive a deficiency. The final grade will be a total of all course requirements.</p> <table> <tr> <td>94% - 100%</td> <td>A</td> </tr> <tr> <td>86% - 93%</td> <td>B</td> </tr> <tr> <td>78% - 85%</td> <td>C</td> </tr> <tr> <td>70% - 77%</td> <td>D</td> </tr> <tr> <td>Under 70%</td> <td>F</td> </tr> </table>	94% - 100%	A	86% - 93%	B	78% - 85%	C	70% - 77%	D	Under 70%	F
94% - 100%	A										
86% - 93%	B										
78% - 85%	C										
70% - 77%	D										
Under 70%	F										
Course Objectives	See attached.										
Late Assignments	Late assignments will be docked one letter grade per day unless other arrangements have been made with the professor.										
Attendance	The student is required to attend all classes and be on time. Refer to student manual for policies regarding absences.										
Drop Date	Month Day, Year										
Institution Policy	The mark, "I", Incomplete, shall be assigned only to the student who has been in attendance and has done satisfactory work up to a time within four weeks of the close of the semester, including the examination period, and whose work is incomplete for reasons satisfactory to the students instructor.										
Examination Policy	Each student will receive their examination score sheet in class. The test key will be posted in the department hallway outside of the professor's office door for three days' time following the return of the score sheet. No student is allowed to remove the test key nor to copy or duplicate any portion of the test. Any student possessing a duplicated or hand written copy of any test will be considered to be in violation of academic honesty. No test will be placed out or made available for students review during the final week of examinations.										
Channels of Communication	<p>It is student obligation to work through channels to resolve problems before going to the chairperson or dean.</p> <p>Student – Instructor – Chairperson – Dean – School of Medicine</p>										

Note: All of the goals and objectives in the following units have been adopted from the Hoff text which is required for this course.

Module One: Units I - IV

Upon the completion of this module the student will demonstrate the following competencies:

1. Generate goals for cardiac rehabilitation services.
2. Compare/contrast components of a cardiac rehabilitation program.
3. Understand diagnoses commonly observed in cardiac rehabilitation.
4. Recall contraindications for treatment in cardiac rehabilitation.
5. Apply knowledge of cardiac anatomy when considering signs and symptoms of cardiac disease.
6. Understand terms used to describe cardiac disease.
7. Understand/apply cardiac disease processes.
8. Identify/describe signs and symptoms of cardiac disease.
9. Differentiate invasive/non invasive medical procedures performed to evaluate/treat cardiac disease.
10. Recognize surgical procedures performed to treat heart disease.
11. Recall/apply post surgical precautions for clients.
12. Evaluate the role medications play in the management and treatment of cardiac disease.
13. Differentiate side effects according to various medications used to treat cardiac disease.
14. Create a plan for medication compliance.

Date	Topic	Readings
Week One	Review of Syllabus Introduction & Purpose of CR	Introduction, p. 2 – 8 Unit I, p. 9 – 13
Week Two	Overview of Anatomy and Disease Process	Unit II, p. 14 – 34
Week Three	Medical Procedures	Unit III, p. 35 – 56
Week Four	Medications	Unit IV, p. 57 - 65

Module Two: V - VI

Upon the completion of this module the student will demonstrate the following competencies:

1. Identify methods to monitor a client’s vital signs while participating in CR.
2. Differentiate between normal and abnormal physiological changes in vital signs during participation in CR.
3. Understand basic ECG monitoring of the client.
4. Analyze the importance of conducting an IADL and ADL evaluation of the client.
5. Identify the value of utilizing risk stratification.
6. Recall and apply the concepts of evaluation and documentation.

Date	Topic	Readings
Week Five	Monitoring of the Cardiac Patient/ Evaluation	Unit V, p. 66 – 74 Unit VI, p. 75 – 87
Week Six	Mid Term	

Module Three: Units VII – X

Upon the completion of this module the student will demonstrate the following competencies:

1. Describe the cardiovascular and psychological benefits of exercise.
2. Apply the contraindications of exercise to the clinical setting.
3. Recognize the physiological responses to exercise.
4. Analyze the five components of exercise prescription.
5. Apply principles of adult learning and components of basic counseling skills.
6. Evaluate a CR program educational objective, method and outcome pertaining to client care.
7. Identify the components of a “toxic climate” leading to coronary disease or poor recovery form a cardiac event.
8. Recognize the psychological effects of cardiac disease and how these affect the body.
9. Identify signs and symptoms of depression and the need for a referral for psychosocial intervention.
10. Evaluate and apply the components which affect special populations such as women, people with diabetes and elderly.

Date	Topic	Readings/Assignments
Week Seven	Planning and Intervention	Unit VII, p. 88 – 108 Assessment Assignment Due
Week Eight	Fieldwork	
Week Nine	Patient Education and Behavior Modification	Unit VIII, p. 109 – 121 FW Reflections Due
Week Ten	Psychosocial Issues /Special Populations	Unit IX, p. 122 – 128 Unit X, p. 129 – 137 Treatment Plan Due

Module Four: Unit XI – XIII

Upon the completion of this module the student will demonstrate the following competencies:

1. Identify and apply the components of documentation.
2. Evaluate the components necessary to include in a treatment plan.
3. Analyze the primary reason for conducting outcomes assessments in CR.
4. Recognize the possibility for medical emergencies and guidelines for response.

Date	Topic	Readings
Week Eleven	Documentation	Unit XI, p. 138 – 141
Week Twelve	Outcomes	Unit XII, p. 142 – 148
Week Thirteen	Managing Emergencies	Unit XIII, p. 149 – 152
Week Fourteen	Final Quiz	

Treatment Plan
80 points

The purpose of this assignment is to familiarize you with the construction of a treatment plan for a patient in cardiac rehabilitation, which will be a task completed daily in the clinic. The following is an outline for you to follow during completion of your assignment. Please ensure that all areas are addressed and grammatical/formatting errors will not be excused.

Outline:

Identifying Patient Information

- Initials only
- Age, functional status prior to illness
- Admit date: whether this is an acute, rehab, or long term setting
- Diagnosis, describe the circumstances are the injury/illness
- Identify and discuss medications and possible impact on therapy (be concise and create a chart)

Evaluation Outcomes (Use OT framework as a reference)

- Identify and describe evaluation/screenings used and specific scores from that assessment(s)
- Summarize overall results of assessments which should include: client's level of function in relevant areas of occupation (ADLs, IADLs, Education, Work, Play, Leisure, Social Participation)
- Client Factors, Performance Skills, and Performance patterns which promote or limit function

Context (Use OT framework as a reference)

- Identify relevant areas of context that influence occupational functional assessment summary (cultural, physical, social, personal, spiritual, temporal, and virtual)

Precautions

- Identify the precautions and specifically how you expect it to influence treatment

Long Term Goals (Minimum of 3)

- When writing goals remember to keep in mind RUMBA (relevant, understandable, measurable, brief and achievement)
- Should address an area of occupation (ADL, IADL, Education, Work, Play, Leisure, Social Participation)

Short Term Goals

- Should be more than one for each long term goal
- Could target client factors which inhibit occupational function
- Could be steps which would lead to accomplishing LTG

Intervention and Activities

- Identify and describe 2 intervention activities per short term goal to assist the patient in achieving their goals. Be creative, think about the activities you observed on your Level I, make sure they are relevant, realistic and client focused. Interventions should be meaningful to the client.

Reflections

2 Reflections worth 10 points each

Each reflection will be written at the conclusion of each day of your fieldwork. The information which needs to be included in these reflections is as follows:

- What and who did you see today? (What diagnoses, any complications, etc.)
- What precautions did the therapist follow in comparison with each patient (provide diagnosis and confounding conditions)?
- What were the interventions your therapist utilized? How did they relate to the patients' diagnoses, functional status and the patients' goals?
- How did you feel overall about today's experience?
- In what specific instances did you feel most comfortable?
- In which areas did you feel that you had limited knowledge?
- How did you address your knowledge deficits?

Assessment Assignment
50 Points

The purpose of this assignment is to familiarize you with an assessment commonly used in the CR setting. Working with a partner, you are required to administer and evaluate the Quality of Life Assessment given to each other. You will submit the results and a reflection. The reflection will be submitted independently and should illustrate how you felt while administering the assessment and how the student felt when taking the assessment. The results on each student will be submitted as a pair. You should further reflect on your understanding of the assessment components and identify methods of clarifying “muddy points” in your knowledge of the assessment that you used.

Participation
50 Points

Each student will be responsible to participate fully in each class not only by being attentive but also but by engaging in discussion and providing information to class lectures. This will also be a method to evaluate each student's timely completion of assignments. Students should be ready for each class period and should always be on time.

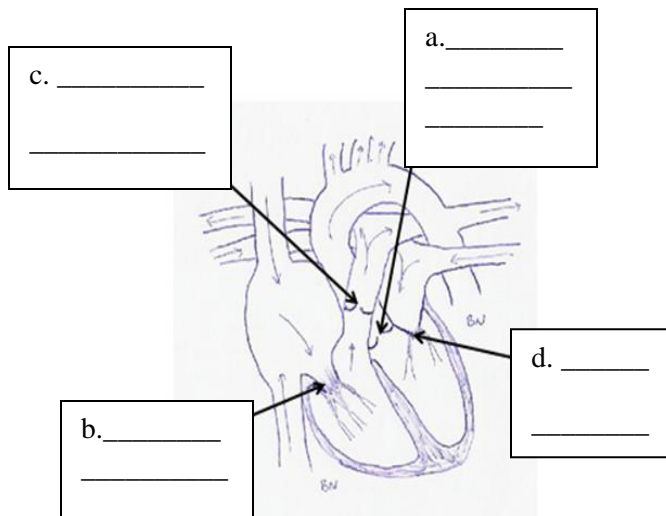
University of North Dakota
Department of Occupational Therapy
Introduction to Cardiac Rehabilitation
Midterm Quiz: Units 1-6 (44 points)

1. Identify two common areas in which OT's commonly treat patients in Cardiac Rehabilitation.

a.

b.

2. Identify the valves of the heart. (4 pts.)



3. What are three reasons to conduct a chart review prior to meeting with a client?

a.

b.

c.

4. List three symptoms of Congestive Heart Failure.
 - a.
 - b.
 - c.
5. A strategy to encourage medication compliance is to inform the patient about the side effects about the medication.
 - a. True
 - b. False
6. Where can Cardiac Rehabilitation services take place?
 - a. Hospitals
 - b. Rehabilitation Centers
 - c. Free standing clinics
 - d. All of the above
7. Which of the following is a non-invasive medical procedure?
 - a. Treadmill Cardiac Exercise Stress Test
 - b. Angiogram
 - c. Pharmacologic Stress Testing
 - d. Both A & C
8. This treatment option restores the function of a bradycardic heart.
 - a. Coronary Artery Bypass Graft
 - b. Arthrectomy
 - c. Pacemaker
 - d. Valve repair
9. Which of the following medication would alter vital signs?
 - a. Nitrates
 - b. Diuretics
 - c. Lipid Lowering
 - d. Beta Blockers

10. To establish the target heart rate for a CR patient you would:
- Add 50 bpm to resting heart rate
 - Add 20-30 bpm to resting heart rate
 - Subtract 10 bpm from resting heart rate
 - Subtract 20 bpm from resting heart rate
11. Identify the technique a CR professional may use to teach client to self monitor during ADLs and IADLs.
- MET levels
 - Monitor Oxygen Saturation
 - Borg's Scale
 - Self Administer ECGs
12. What is the tool used prior to and during exercise training?
- Risk Stratification
 - Treadmill Test
 - ADL training
 - None of the above
13. What is a commonly used assessment of functional capacity?
- 10 Minute Treadmill Run
 - Blood Pressure
 - 20 Minute Walk/Run
 - 6 Minute Walk Test
14. Which node is responsible for beginning the electrical current in the right atrium?
- SA
 - IV
 - AV
 - DC

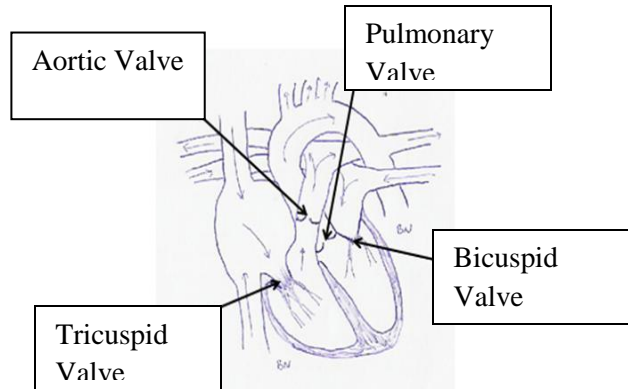
15. Which condition is characterized by insufficient oxygenated blood supply to meet the needs of heart function?
- a. Myocardial Infarction
 - b. Cardiomyopathy
 - c. Angina Pectoris
 - d. Congestive Heart Failure
16. This test is used when a patient is unable to complete the Treadmill Cardiac Stress Test.
- a. Treadmill Sprint Test
 - b. Arthrectomy
 - c. 6 minute walk Test
 - d. Pharmacologic Stress Testing
17. Which test is used immediately after an angiogram?
- a. Arthrectomy
 - b. Percutaneous Transluminal Coronary Angioplasty (PTCA)
 - c. Valve Replacement
 - d. Stent Placement
18. Which type of pacemaker only functions when needed?
- a. Single chamber pacemaker
 - b. Triple chamber pacemaker
 - c. Dual chamber pacemaker
 - d. Reactive chamber pacemaker
19. Your patient has oxygen saturation consistently at 85%, what should you do?
- a. Continue to monitor their oxygen saturation level for any changes.
 - b. Discontinue therapy and return patient to their room for rest.
 - c. Discontinue therapy and notify physician.
 - d. Do nothing, it is common for oxygen saturation to be at this level.

20. Which of the following is a good way to build rapport with your patient beginning with the first meeting?
- a. Review their chart.
 - b. Yell at the nurse for not telling you about a medication change, just prior to coming into therapy. It is helpful to be respected!
 - c. Talk to the family about the patient's progress outside of the patient's room.
 - d. Tell the patient you are going to fix their problems.

University of North Dakota
Department of Occupational Therapy
Introduction to Cardiac Rehabilitation
Midterm Quiz: Units 1-6 (44 points)

Answer Key

1. Identify two common areas which OT's commonly treat in Cardiac Rehabilitation.
 - a. **Decreased participation in occupational roles**
 - b. **Decreased endurance**
 - c. **Decreased strength**
 - d. **Increased fatigue**
 - e. **Psychosocial issues**
 - f. **Pulmonary compromise**
 - g. **Precautions**
2. Identify the valves of the heart. (4 pts.)



3. What are three reasons to conduct a chart review prior to meeting with a client?
 - a. **To understand the patient's cardiovascular disease**
 - b. **Interventional procedures, cardiovascular functioning status post intervention**
 - c. **Potential for further intervention at a later date**
 - d. **Functioning following the cardiac event**

4. List three symptoms of Congestive Heart Failure.
 - a. **Shortness of breath (SOB)**
 - b. **Fatigue**
 - c. **Weakness**
 - d. **Swelling in ankles and feet**
 - e. **Rapid weight gain**
 - f. **Swollen or distended neck veins**
 - g. **Inability to lay flat due to SOB**
 - h. **Coughing**
 - i. **Dizziness**
 - j. **Irregular heart beat**
5. A strategy to encourage medication compliance is to inform the patient about the side effects about the medication.
 - a. **True**
 - b. False
6. Where can Cardiac Rehabilitation services take place?
 - a. Hospitals
 - b. Rehabilitation Centers
 - c. Free standing clinics
 - d. **All of the above**
7. Which of the following is a non-invasive medical procedure?
 - a. Treadmill Cardiac Exercise Stress Test
 - b. Angiogram
 - c. Pharmacologic Stress Testing
 - d. **Both A & C**

8. This treatment option restores the function of a bradycardic heart.
 - a. Coronary Artery Bypass Graft
 - b. Arthrectomy
 - c. Pacemaker**
 - d. Valve repair

9. Which of the following medication would alter vital signs?
 - a. Nitrates
 - b. Diuretics
 - c. Lipid Lowering
 - d. Beta Blockers**

10. To establish the target heart rate for a CR patient you would
 - a. Add 50 bpm to resting heart rate
 - b. Add 20-30 bpm to resting heart rate**
 - c. Subtract 10 bpm from resting heart rate
 - d. Subtract 20 bpm from resting heart rate

11. Identify the method a CR professional may use to teach client to self monitor during ADLs and IADLs.
 - a. MET levels
 - b. Monitor Oxygen Saturation
 - c. Borg's Scale**
 - d. Self Administer ECGs

12. What is the tool used prior to and during exercise training?
 - a. Risk Stratification**
 - b. Treadmill Test
 - c. ADL training
 - d. None of the above

13. What is a commonly used assessment of functional capacity?
- a. 10 Minute Treadmill Run
 - b. Blood Pressure
 - c. 20 Minute Walk/Run
 - d. 6 Minute Walk Test**
14. Which node is responsible for beginning the electrical current in the right atrium?
- a. SA**
 - b. IV
 - c. AV
 - d. DC
15. Which condition is characterized by insufficient oxygenated blood supply to meet the needs of heart function?
- a. Myocardial Infarction
 - b. Cardiomyopathy
 - c. Angina Pectoris**
 - d. Congestive Heart Failure
16. This test is used when a patient is unable to complete the Treadmill Cardiac Stress Test.
- a. Treadmill Sprint Test
 - b. Arthrorectomy
 - c. 6 minute walk Test
 - d. Pharmacologic Stress Testing**
17. Which test is used immediately after an angiogram?
- a. Arthrorectomy
 - b. Percutaneous Transluminal Coronary Angioplasty (PTCA)**
 - c. Valve Replacement
 - d. Stent Placement

18. Which type of pacemaker only functions when needed?
- a. **Single chamber pacemaker**
 - b. Triple chamber pacemaker
 - c. Dual chamber pacemaker
 - d. Reactive chamber pacemaker
19. Your patient has oxygen saturation consistently at 85%, what should you do?
- a. Continue to monitor their oxygen saturation level for any changes.
 - b. Discontinue therapy and return patient to their room for rest.
 - c. **Discontinue therapy and notify physician.**
 - d. Do nothing, it is common for oxygen saturation to be at this level.
20. Which of the following is a good way to build rapport with your patient right from the first meeting?
- a. **Review their chart.**
 - b. Yell at the nurse for not telling you about a medication change, just prior to coming into therapy. It is helpful to be respected!
 - c. Talk to the family about the patient's progress outside of the patient's room.
 - d. Tell the patient you are going to fix their problems.

University of North Dakota
Department of Occupational Therapy
Introduction to Cardiac Rehabilitation
Final Quiz: Units 7-13 (50 points)

1. According to the American Association of Cardiovascular and Pulmonary Rehabilitation _____% of adults and _____% of young people who live in the USA live sedentary or inactive lifestyles.

- A. 90% and 50%
- B. 10% and 70 %
- C. 20% and 30%
- D. 70 % and 50%

2. The exercise test is a tool used to assist the cardiac rehabilitation specialist establishes which of the following?

- A. Baseline functioning
- B. Implement an exercise program
- C. Asses patients progress/ monitor for improvements in performance
- D. Evaluate outcomes
- E. All of the above

3. Which of the following are components to an exercise prescription?

- A. Intensity
- B. Heart rate
- C. Speed
- D. Duration
- E. Both A and D

4. You are working with a 52-year-old female who is post myocardial infarction. She has required moderate assistance with all ADL's secondary to SOB, fatigue and anxiety. You notice that she is now taking more control of her treatments and is initiating change. Which of the following stages most likely represents your patient now?

- A. Antecedent Stage
- B. Adoption Stage
- C. Maintenance Stage

5. Which of the following are signs or symptoms of depression?

- A. Low energy restlessness
- B. Suicidal thoughts
- C. Change in sleep pattern
- D. All of the above

6. Treatment of women with heart disease includes all of the following except?

- A. Education on signs and symptoms
- B. Risk factor reduction
- C. Evaluation of caffeine intake
- D. Participation in an exercise program

7. Which of the following are clinical problems that could arise in CR and require OT intervention?

- A. New or changing pattern of angina
- B. Depression
- C. Hypoglycemia
- D. Hypertension
- E. All of the above

8. What are the required components for documentation?

- A. Evaluation, intervention, progression, outcome measures
- B. Evaluation progression, intervention
- C. Intervention, progression, outcome measure
- D. Evaluation, progression, outcome measure

9. Which of the following is an important outcome to measure in order to evaluate you patient's perceived improvements?

- A. Cardiac Output
- B. Beats per Minute
- C. Quality of Life
- D. Self Awareness

10. Four domains of measuring outcomes, as recommended by the AACVPR, should include all of the following except.

- A. Health
- B. Clinical
- C. Behavioral
- D. Cognitive

11. Patients are usually referred to CR _____ post coronary artery bypass grafts (CABG)?

- A. 3-4 weeks
- B. 1-2 days
- C. 4-5 weeks
- D. 1-2 weeks

12. Educating the patient on his or her condition and the factors associated with his or her condition contributes to which of the following?

- A. Medication Compliance
- B. Improved Outcomes
- C. Recognition of signs or symptoms
- D. All of the above

13. There is a not a strong correlation between depression and coronary heart disease.

- A. True
- B. False

14. Patients who suffer from psychological issues which are left untreated are more likely to be less compliant with medication and less likely to pursue a healthy life style.

A. True

B. False

15. CHF is the leading cause of death in the elderly.

A. True

B. False

16. Women, without diabetes, will typically present with heart disease 10 years later than men.

A. True

B. False

17. A patient in CR with diabetes will present with typical cardiac symptoms and/or responses to angina.

A. True

B. False

18. CR outpatient services are not reimbursable purchased service that can only be implemented with a physician's referral.

A. True

B. False

19. Patients with a cardiac history are 60-100 times at greater risk for another cardiac event, during exercise testing and training than patients who do not have a cardiac history.

A. True

B. False

20. List two contraindications to exercise testing.

A.

B.

21. Self-efficacy is influenced by four main factors, list below.

A.

B.

C.

D.

22. An introduction to adaptive equipment is essential when a patient does not have the cardiac reserve to complete ADL's without what?

A.

B.

C.

23. The AHA recommends that CR staff be trained in what?

A.

B.

C.

24. List three ways outcome measures could benefit your facility.

A.

B.

C.

25. Identify and describe 2 factors which may influence an individual's perception of QOL.

A.

B.

University of North Dakota
Department of Occupational Therapy
Introduction to Cardiac Rehabilitation
Final Quiz: Units 7-13 (50 points)

Answer Key

1. According to the American Association of Cardiovascular and Pulmonary Rehabilitation _____% of adults and _____% of young people who live in the USA live sedentary or inactive lifestyles.

- A. 90% and 50%
- B. 10% and 70 %
- C. 20% and 30%
- E. 70 % and 50%**

2. The exercise test is a tool used to assist the cardiac rehabilitation specialist to establish which of the following?

- A. Baseline functioning
- B. Implement an exercise program
- C. Assess patients progress/ monitor for improvements in performance
- D. Evaluate outcomes
- E. All of the above**

3. Which of the following are components to an exercise prescription?

- A. Intensity
- B. Heart rate
- C. Speed
- D. Duration
- E. Both A and D**

4. You are working with a 52-year-old female who is post myocardial infarction. She has required moderate assistance with all ADL's secondary to SOB, fatigue and anxiety. You notice that she is now taking more control of her treatments and is initiating change. Which of the following stages most likely represents your patient now?

A. Antecedent Stage

B. Adoption Stage

C. Maintenance Stage

5. Which of the following are signs or symptoms of depression?

A. Low energy restlessness

B. Suicidal thoughts

C. Change in sleep pattern

D. All of the above

6. Treatment of women with heart disease includes all of the following except?

A. Education on signs and symptoms

B. Risk factor reduction

C. Evaluation of caffeine intake

D. Participation in an exercise program

7. Which of the following are clinical problems that could arise in CR and require OT intervention?

A. New or changing pattern of angina

B. Depression

C. Hypoglycemia

D. Hypertension

E. All of the above

8. What are the required components for documentation?

A. Evaluation, intervention, progression, outcome measures

B. Evaluation progression, intervention

C. Intervention, progression, outcome measure

D. Evaluation, progression, outcome measure

9. Which of the following is an important outcome to measure in order to evaluate you patient's perceived improvements?

- A. Cardiac Output
- B. Beats per Minute
- C. Quality of Life**
- D. Self Awareness

10. Four domains of measuring outcomes, as recommended by the AACVPR, should include all of the following except.

- A. Health
- B. Clinical
- C. Behavioral
- D. Cognitive**

11. Patients are usually referred to CR _____ post coronary artery bypass grafts (CABG)?

- A. 3-4 weeks
- B. 1-2 days
- C. 4-5 weeks
- D. 1-2 weeks

12. Educating the patient on their condition and the factors associated with their condition contributes to which of the following?

- A. Medication Compliance
- B. Improved Outcomes
- C. Recognition of signs or symptoms
- D. All of the above**

13. There is a not a strong correlation between depression and coronary heart disease.

- A. True
- B. False**

14. Patients who suffer from psychological issues and are left untreated are more likely to be less compliant with medication and less likely to pursue a healthy life style.

A. True

B. False

15. CHF is the leading cause of death in the elderly.

A. True

B. False

16. Women, without diabetes, will typically present with heart disease 10 years later than men.

A. True

B. False

17. A patient in CR with diabetes will present with typical cardiac symptoms and/or responses to angina.

A. True

B. False

18. CR outpatient services are not reimbursable purchased service that can only be implemented with a physician's referral.

A. True

B. False

19. Patients with a cardiac history are 60-100 times at greater risk for another cardiac event, during exercise testing and training than patients who do not have a cardiac history.

A. True

B. False

20. List two contraindications to exercise testing.

A. Acute MI

B. Unstable Angina

C. Uncontrolled cardiac arrhythmias

D. Symptomatic sever aortic stenosis

E. Uncontrolled heart failure

F. Acute pulmonary embolus or pulmonary infarction

G. Acute myocarditis

H. Acute aortic dissection

21. Self-efficacy is influenced by four main factors, list below.

A. Information and Persuasion

B. Observation of others

C. Successful performance of behavior

D. Physiological feedback

22. An introduction to adaptive equipment is essential when a patient does not have the cardiac reserve to compete ADL's without what?

A. Undue fatigue

B. Energy saving techniques

C. Work simplification

23. The AHA recommends that CR staff be trained in what?

A. BLS

B. AED training

C. ACLS

24. List three ways outcome measures could benefit your facility.

A. Proves valuable data pertaining to quality improvement, accreditation and reimbursement

B. Improves understanding of patients in CR

C. Helps to prove the importance of CR

25. Identify and describe 2 factors which may influence an individual's perception of QOL.

A. Physical functioning and mobility

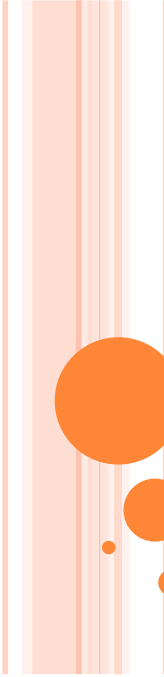
B. Ability to complete self-cares

C. Intellectual functioning and emotional function

D. Interpersonal contacts and intimacy

E. Meaningful work

F. Feelings of well being, comfort, self-efficacy and communication membership



WHAT IS CARDIAC REHABILITATION?

Unit I

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

OVERVIEW

- What is CR?
- Goals of CR
- OT Performance Areas
- CR Team & Setting
- Implementation
- Components of Outpatient CR
- Referral Diagnoses



DEFINITION

“Cardiac rehabilitation refers to the coordinated, multifaceted interventions designed to optimize a cardiac patient’s physical, psychological, and social functioning, in addition to stabilizing, slowing, or even reversing the underlying atherosclerotic process, thereby reducing morbidity and mortality.

As such, cardiac rehabilitation/secondary prevention programs provide an important and efficient venue in which to deliver effective, preventative care.”

- What does this definition mean to you?

- American Association of Cardiovascular and Pulmonary Rehabilitation. (n.d.). Fast Facts/Resource pages. 2005 AHA/AACVPR scientific statement. Retrieved February 5, 2007, from website via: <http://www.aacvpr.org/dmtf/cardiacspecific.cfm>

Ask the students what their interpretation of the expansive definition of cardiac rehabilitation means to them. The intent of asking this question is for the students to reflect on what they interpret cardiac rehabilitation is and how occupational therapy fits within cardiac rehabilitation.

GOALS OF CR

- Reduce disability from a recent event
- Reduce a current heart condition from progressing
- Reduce the risk of another cardiac event
 - According to AHA, 2005.
- Decrease morbidity and mortality
- Reduce symptoms of angina, dyspnea, fatigue and improve QOL



GOALS OF CR

- Increase physical performance to meet the demands of life, work and leisure activity
- Decrease dysfunction brought about by anxiety, fear, and depression
- Reduce medical expenses and financial burden of poor health
- Increase self-efficacy, empowerment and knowledge to make healthy choices

PERFORMANCE AREAS

- Occupational Therapy plays an important role in the recovery of a client in CR.



PERFORMANCE AREAS (CONT.)

- OT can address the following areas commonly treated in CR:
 - Decreased participation in occupational roles
 - Decreased endurance
 - Decreased strength
 - Increased fatigue
 - Psychosocial issues
 - Pulmonary compromise
 - Precautions

CR TEAM AND SETTING

- Which disciplines can play a role in CR?
 - Roles of each discipline are blended
- Where can CR take place?
 - Variety of settings including inpatient and outpatient rehabilitation
 - Hospitals, Rehabilitation Centers, Free Standing Clinics, Community Health and Wellness Centers.



IMPLEMENTATION

- Outpatient rehabilitation

Diagnosis	Approximate time line for initiation of CR
MI, PTCA, Stent	One week
Placement of an assist device	Three weeks
Valve replacement and CABG	Three to four weeks

- Note: These are general guidelines. Timelines are unique to each individual and vary by facility.



Hoff, 2007

COMPONENTS OF OUTPATIENT CR

- Evaluation
- Therapeutic exercise training
 - Development of an exercise prescription
- Daily physical activity counseling
- Nutritional counseling
- Diabetes management



Hoff, 2007

COMPONENTS OF OUTPATIENT CR (CONT.)

- Lipid management
- Blood pressure management
- Smoking cessation
- Psychosocial management
- Facilitating a life-long commitment to life-style change

REFERRAL DIAGNOSES

- Myocardial Infarction (MI)
- Stable Angina
- Coronary Artery Bypass Graft Surgery (CABG)
- Valve repair or replacement
- Percutaneous transluminal coronary angioplasty (PTCA)



REFERRAL DIAGNOSES

- Stent placement
- Arthroctomy
- Chronic Stable Heart Failure (CHF)
- Ventricular Assist Devices
- Heart Transplant





REFERENCES

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.



Cardiac Anatomy & The Diseases Process

Unit II

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

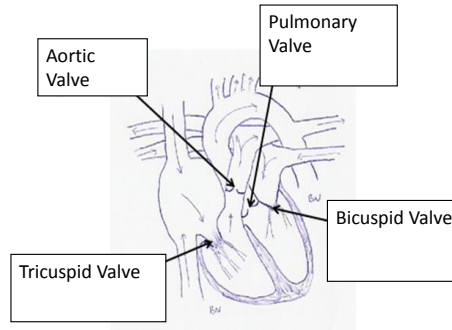
Anatomy

- Chambers
 - Right Atria
 - Left Atria
 - Right Ventricle
 - Left Ventricle

• (Hoff, 2007)

Anatomy

- Heart Valves
 - Tricuspid valve
 - Pulmonary valve
 - Mitral valve
 - Aortic valve



- (Hoff, 2007)

Anatomy

- Coronary Arteries
 - Right coronary
 - Left main coronary
 - Left circumflex coronary
 - Left anterior descending coronary

• (Hof, 2007)

Anatomy

- Electrical System
 - Regulated by the autonomic nervous system
 - Regulates heart rate (60 -100 beats per minute)
 - Electrical current
 - Starts in the right atrium at the sinus node (SA node)
 - Travels to the atrioventricular node (AV node)

• (Hoff, 2007)

Coronary Heart Disease (CHD)

- CHD is synonymous with
 - Coronary artery disease (CAD)
 - Atherosclerotic heart disease (ASHD)
 - Ischemic disease (IHD)

• (Hoff, 2007)

Atherosclerotic disease process of coronary arterial circulation

Atherosclerosis

- Theories of formation of plaque
 - Response to injury
 - Inflammatory process
 - Role of infection

• (Hoff, 2007)

Angina

- Short in duration
- Symptoms:
 - Tightness, squeezing, dull pressure or uncomfortable ache of the sternum or center of chest
 - Shortness of breath
 - Fatigue
 - Diaphoresis
 - Irregular heart rate

• (Hoff, 2007)

May radiate to Angina pectoris - insufficient oxygenated blood supply to meet the needs the jaw, neck, scapula and arm

Myocardial Infarction

(Commonly known as a heart attack)

- Myocardial infarction (MI)
 - Caused by a blockage and cessation of blood flow
 - Results in permanent damage to myocardial muscle cells
- Symptoms:
 - Tightness in chest
 - Pain radiating into arm
 - Nausea

• (Hoff, 2007)

Myocardial infarction (MI)

Caused by a blockage and cessation of blood flow

Results in permanent damage to myocardial muscle cells

Cardiovascular Disease (CVD)

- Term used to describe all diseases of the cardiovascular system
- Stroke
- Hypertension
- Disease of the arterioles and capillaries
- Peripheral vascular disease (PAD)

• (Hoff, 2007)

Congestive Heart Failure

- Result of several health problems
 - Ventricular dysfunction
 - Diseased valves
 - Untreated high blood pressure
- Symptoms:
 - Shortness of breath (SOB)
 - Fatigue
 - Weakness
 - Swelling in ankles and feet
 - Rapid weight gain
 - Swollen or distended neck veins
 - Inability to lay flat due to SOB
- (Hoff, 2007)

Shortness of breath (SOB)

Fatigue

Weakness

Swelling in ankles and feet

Rapid weight gain

Swollen or distended neck veins

Inability to lay flat due to SOB

Coughing

Dizziness

Irregular heart beat

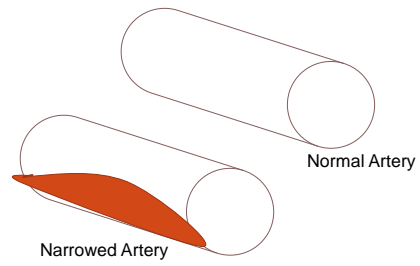
Heart Disease (HD)

- Term used to describe all disease that affect:
 - Coronary circulation
 - Electrical system
 - Anatomical structures of the heart
- Examples:
 - Valvular heart disease
 - Cardiomyopathy
 - Congestive heart failure (CHF)
- (Hoff, 2007)

Atherosclerosis

- Most common cause of heart disease
- Cholesterol and other particles form plaque
 - Plaque can be soft, hard, stable or unstable

• (Hoff, 2007)



Four classifications of CHF According to the New York Heart Association

- I. No limitations of physical activity, no symptoms with ordinary activity
- II. Slight limitation, symptoms with ordinary activities
- III. Marked limitation, symptoms with less than ordinary activities
- IV. Severe limitation, symptoms of heart failure at rest

- (Hoff, 2007)

Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Grand Forks, ND: University of North Dakota

MEDICAL PROCEDURES TO EVALUATE AND TREAT CARDIOVASCULAR DISEASE

Unit III

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Overview



- Evaluation
 - Non-Invasive
 - Invasive
- Treatment Options
- Percutaneous Transluminal Coronary Angioplasty
- Stent Placement
- Arthrorectomy
- Coronary Artery Bypass Graft

Overview (cont.)

- Valve Repair/Replacement
- Precautions
- Implantable Devices
- Pacemakers
- Internal Cardiac Defibrillator
- Left Ventricular Assist Device



Evaluation: Non-invasive

- ◉ Treadmill Cardiac Exercise Stress Test
 - According to standard protocols
 - Monitor vital signs throughout
 - Isotope injection
- ◉ Pharmacologic Stress Testing
 - Used when patient is unable to complete the treadmill test
 - Medications are used to speed the heart

Evaluation: Invasive

- Angiogram
 - Cardiac catheterization
 - Assists to diagnose:
 - Seven steps for procedure
 - 1. A catheter is inserted at the groin into the femoral artery.
 - 2. A guide wire is inserted.
 - 3. (Please Identify steps 3-7 out loud)
 - 4.
 - 5.
 - 6.
 - 7.

This activity is intended for the students to have the opportunity to read through each step and hear each step in order for improved understanding and recognition of the steps.

Treatment Options...

- Percutaneous Transluminal Coronary Angioplasty (PTCA)
- Stent Placement
- Arthroectomy
- Coronary Artery Bypass Surgery (CABG)

Treatment Options

- ⦿ Valve Repair or Replacement
- ⦿ Heart Transplant
- ⦿ Implantation of a Pacemaker
- ⦿ Internal Cardiac Defibrillator
- ⦿ Left Ventricular Assist Device

Percutaneous Transluminal Coronary Angioplasty (PTCA)

Hoff, 2007

- Conducted immediately after an angiogram
- Its purpose is to reduce anginal symptoms, risk of heart attack and emergent coronary bypass surgery.
- 10 Step Process
 - Describe the Process!
 - Going around the class, read one step in order, out loud

This activity is intended to improve the student's recognition and understanding of each step of the process.

Stent Placement

- ⦿ Stents are metal coil springs
- ⦿ Placed during PTCA procedure in order to keep the vessel open
- ⦿ Several stents may be placed along an artery
- ⦿ If a blockage occurs inside of a stent, another stent may be placed within the first stent

Arthrorectomy

- ⦿ Utilized when blockage occurs which is hard and calcified
- ⦿ A drill shaves/sucks hard plaque from the arterial walls
- ⦿ A laser method may be used as well



Coronary Artery Bypass Surgery (CABG) Hoff, 2007

- ⦿ Procedure which re-routes blood flow around deficient coronary arteries utilizing a graft from another area of the body
 - Common grafts used: Right Internal Mammary Artery (RIMA), Left Internal Mammary Artery (LIMA), or saphenous vein
- ⦿ Requires a sternotomy
- ⦿ Surgery lasts approximately 4 to 6 hours

Coronary Artery Bypass Surgery (CABG) Hoff, 2007

- Other procedures used as alternatives to sternotomy
 - MIDCAB
 - Small incision is made near the left breast and then surgeon removes a part of the rib overlying the heart muscle
 - Robotic CABG
 - Use is limited
 - Performed by a highly skilled surgeon

Coronary Artery Bypass Surgery (CABG) Hoff, 2007

- ⦿ Positive outcomes
- ⦿ Improves symptoms in 90% of patients
- ⦿ Prolongs life
- ⦿ 40% develop new blockage within 10 years

Valve Repair or Replacement

- ◉ Surgical repair or replacement of heart valve
- ◉ Performed in the case that valve disease is present
- ◉ Requires sternotomy

Precautions Following a CABG & Valve Replacement Hoff, 2007

- Open Lab Time
- Form Pairs
- Search out these precautions



Implantable Devices

- ⦿ Pacemaker
- ⦿ Internal Cardiac Defibrillator
- ⦿ Left Ventricular Assist Device

Pacemaker

- ◉ Restores function of a slow heart or “bradycardia”
 - Symptoms of Bradycardia?
- ◉ 2 Main Types
 - Single Chamber Pacemaker
 - One wire
 - Functions when needed

Pacemaker (cont.)

- ◉ 2 Main Types
 - Dual Chamber Pacemaker
 - Two wires
 - AV pacing capabilities
 - Simulates intrinsic electrical conductivity

Pacemaker Precautions

- ⦿ No driving for two weeks.
- ⦿ No vigorous activity above shoulder height for one month.
- ⦿ Avoid direct impact at the insertion sight.
- ⦿ Avoid lifting, pushing, pulling or carrying more than 15 pounds.
- ⦿ Avoid strong magnetic fields.

Internal Cardiac Defibrillator

- ⦿ Used when a person is at risk for another cardiac arrest caused by ventricular tachycardia (VT)
- ⦿ Functions:
 - Recognizes abnormal rhythms and automatically corrects them through electric shock
- ⦿ Need to know when a shock is going to be delivered through ECG

Internal Cardiac Defibrillator

- ⦿ Shocks can be described to feel like a 'kick in the chest'
- ⦿ Set for heart rate (HR) between 60 and 160 beats per minute
- ⦿ Patients are instructed to take note of the shocks and when they occur
- ⦿ Precautions follow those used with a pacemaker

Left Ventricular Assist Device

- ◉ Used in severe end stage heart failure to prolong life while waiting for transplant
- ◉ Implanted intra-abdominally
- ◉ A pump attached to a hose is connected to the apex of the left ventricle and leads into the aorta.
 - Pumps blood from left ventricle into the aorta to the rest of the body

Left Ventricular Assist Device

- Light to moderate exercise is appropriate
- Tolerate surface walking and U/E exercise
- Need to collaborate with physician closely when prescribing exercise
- Patient education programs must be utilized to identify symptoms

Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Medications

Unit IV

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Role of medications

- Prescribed to
 - Manage heart disease
 - Prevent further heart damage
 - Control symptoms
 - Assist in optimal cardiac functioning

- (Hoff, 2007)

What is the role of the occupational therapist in medication management?

- Observe for side effects
- Have general knowledge of medication

Medications

- Beta-blockers- slow heart rate and protect the heart during recovery
- Common Symptoms:
 - Lack of energy
 - Easily fatigued with activity
 - Lightheadedness/dizziness

- (Hoff, 2007)

Angiotensin Converting Enzyme (ACE) Inhibitors

- Lower blood pressure
- Heal heart tissue after a MI
- Protect kidneys in diabetic patients
- Used in the treatment of heart failure
- Side effects:
 - Dry cough
 - Dizziness
 - Rash
 - Facial swelling

- (Hoff, 2007)

Diuretics

- Stimulate the kidneys to expel urine
- Reduce fluid retention and swelling that may put pressure on the heart
- Side effects:
 - Dizziness
 - Electrolyte imbalance
 - Dehydration
 - Irregular heart rhythm
 - Fatigue
 - Nighttime urination

- (Hoff, 2007)

Digoxin

- Increase the pumping efficiency of the heart and contractibility to increase cardiac out-put
- Side effects:
 - Nausea
 - Slowed heart rate
 - Irregular heart rate
 - Blurred vision (yellow and green halos and confusion)

- (Hoff, 2007)

Calcium Channel Blockers

- Decrease the work load of the heart
 - Increase the oxygen delivered to the heart and lowers blood pressure
- Side effects:
 - Constipation
 - Dizziness
 - Nausea

- (Hoff, 2007)

Beta Blockers

- Lower blood pressure and decreases the workload of the heart
- Side effects:
 - Low energy
 - Increased sleep
 - Headache
 - Dizziness

- (Hoff, 2007)

Nitrates

- Increase the amount of blood delivered to the heart by dilating coronary arteries
- Reduce symptoms of angina
- Delivered in tabs, sprays, and patches
- Side effects:
 - Dizziness
 - Headache

- (Hoff, 2007)

Anticoagulants

- Referred to as “Blood thinners”
- Reduce the risk of blood clotting
- Side effects:
 - Bruising
 - Bleeding

- (Hoff, 2007)

Lipid Lowering Medications

- Reduces the amount of cholesterol manufactured by the liver
- Side effects:
 - Muscle weakness or aching
 - Upset stomach
 - Rash

- (Hoff, 2007)

Promoting Medication Compliance

- Non-compliance is related to
 - Patients lack of knowledge about medications
 - Experience of un-pleasant side effects
 - Cost of medications
- OT can address each with the patient and discuss implications or lifestyle changes to ensure compliance

- (Hoff, 2007)

It is important as an occupational therapist to understand possible reasons behind non-compliance.

Promoting Medication Compliance

- Strategies to increase compliance
 - Inform patient of:
 - How to take the medications
 - Why they are taking the medications
 - What the medications do
 - How they may make the person feel (side-effects)

- (Hoff, 2007)

Make sure to reinforce the importance of the medications to their health and give information in a way that the patient can understand.

Activity

- Get into 3 groups.
- Create a plan to encourage patient adherence to medication compliance.
- Present/discuss with class.

The purpose of this activity is for the students to gain the ability to plan and promote medication compliance with their patients. Although this role is that primarily of nursing, OTs will have a role during treatment.

Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Grand Forks, ND: University of North Dakota

Monitoring of the Cardiac Rehabilitation Patient

Unit V

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Overview

- Methods of Monitoring
- Heart Rate
- Blood Pressure
- Oxygen Saturation
- Rate of Perceived Exertion (RPE)
- Electrocardiographic (ECG) Monitoring



Methods of Monitoring

Hoff, 2007

- Heart Rate
- Blood Pressure
- Oxygen Saturation
- Rate of Perceived Exertion (RPE)
- Electrocardiographic (ECG) Monitoring

Heart Rate

Hoff, 2007

- Target Heart Rate (THR) determined by
 - Data obtained through exercise stress test
 - Volitional fatigue or appearance of adverse signs
 - Symptoms or using a mathematical calculation
 - Adding 20-30 beats to resting heart rate

Heart Rate (cont.)

Hoff, 2007

- Never increase more than 50 bpm from resting bpm
- Not an adequate monitor to be used alone



Blood Pressure

Hoff, 2007

- Systolic pressure increases with exercise
 - Normal increase is 30 mm Hg
 - It is abnormal for SBP to drop or fail to rise with exercise

Oxygen Saturation

Hoff, 2007

- Simple & non invasive
- Oxygen Saturation Monitor
- O₂ Saturation should be above 90% at rest and with activity
- Physician should be notified if O₂ saturation is consistently under 88% and patient shows signs of dyspnea or labored breathing

Rate of Perceived Exertion (RPE)

Hoff, 2007

- Indicator of exertional physiological effects of exercise
- Correlates with HR



Rate of Perceived Exertion (RPE)

Hoff, 2007

- Borg's Scale: Rates exercise intensity on scale from 6 to 20
 - Subjective
 - Refer to page 70 in your text
- Patient may self monitor using this tool to assess need for energy saving techniques, work simplification techniques, or to stop activity.

Electrocardiographic (ECG) Monitoring

Hoff, 2007

- Diagnostic tool used by physicians
- OTs need to be able to:
 - Read results of ECGs in medical reports
 - Recognize changes in current ECG
 - Recognize significant life threatening arrhythmias during exercise training

Electrocardiographic (ECG) Monitoring

Hoff, 2007

- Activity!
- Get into groups.
- Discuss and develop an understanding of the concepts in your paragraph.
- Share your results with the class!

Divide the paragraphs equally among the groups beginning with the very last paragraph on page 71 and ending on page 74.

Explain to the students that they need to discuss the assigned paragraph and present the content to the rest of the class.

Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Patient Evaluation and Chart Review

Unit VI

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Chart Review

- ▶ Need to develop an understanding of the following:
 - ▶ Patients cardiovascular disease
 - ▶ Interventional procedures, cardiovascular functioning status post intervention
 - ▶ Potential for further intervention at a later date
 - ▶ Functioning following the cardiac event

- (Hoff, 2007)

Reviewing the patient's chart reassures the patient of your knowledge of their condition and that you are aware of their specific situation which helps to build rapport.

Patient Interview

▶ **Helps to identify:**

- ▶ Patient goals
- ▶ Concerns
- ▶ Occupational histories
- ▶ Interventional strategies
- ▶ Risk factor reduction
- ▶ Beneficial educational programs
- ▶ Resources to reach patient's full potential

- (Hoff, 2007)



Assessments are an important aspect of treatment.


The interview can give the therapist important information that may not be included in the chart.

Can be the basis of the development of a treatment plan.

Risk Stratification

- ▶ A tool used prior to and during exercise training
- ▶ Identifies level of risk sometimes requiring the use of ECGs and hemodynamic monitoring
- ▶ Refer to page 82 for risk stratification guidelines

- (Hoff, 2007)



Cannot be used with patients with:

Non diagnostic exercise test

Significant co-existing diagnoses

Underlying abnormal resting arrhythmias

Paced rhythms

Left ventricular hypertrophy or dysfunction

Digitalis therapy

Inability to reach 85% of maximum heart rate with a negative diagnostic test for ischemia

Activities of Daily Living Evaluation

- ▶ Address ADLs and IADLs
- ▶ Need to develop of an understanding of what the patient wants or needs to do
- ▶ Need to identify barriers to function in desired activities
- ▶ Helps the therapist motivate the patient to take an active role in their recovery

▶ (Hoff, 2007)

Possible limitations

- ▶ Decreased upper body flexibility post surgical procedure
- ▶ Dyspnea with exertion or respiratory compromise
- ▶ Weakness
- ▶ Irregular heart rhythm
- ▶ Obesity
- ▶ Orthopedic limitations
- ▶ Physical deconditioning
- ▶ Psychological fear or lack of confidence in abilities
- ▶ Patient safety issues

▶ (Hoff, 2007)

Some patients may experience difficulty in completion of the evaluation it is important to be aware of and understand the possible limitations that they may be experiencing.

Physical Exam

- ▶ Assessment of strength, flexibility, posture, musculoskeletal stability, neurological status and orthopedic conditions
- ▶ Cognitive ability to participate in assessment or need for presence of a family member or caregiver

- (Hoff, 2007)

Areas that are also assessed include:

- Potential barriers such as hearing problems, visual or language barriers
- Weight bearing, non weight bearing activity tolerance and initial exercise capacity
- Heart rate, rhythm
- Resting blood pressure
- Auscultation of lung sounds (uniformity of breath)
- Palpation and visual examination of lower extremities for edema and skin integrity
- Assessment of surgical site and incision (potential infection)
- Assessment of dyspnea at rest or with activity
- Oxygen saturation
- Body weight, height, body mass index, and waist hip ratio

Initial Exam Includes:

- ▶ Assessment of patient endurance
- ▶ Patient physiological responses post procedure
- ▶ Prior to exercise, during exercise, and post exercise
- ▶ 6 minute walk test is a commonly used assessment of functional capacity
 - ▶ Results are used to guide exercise prescription

- (Hoff, 2007)

It is important to establish rapport with the client.

Reference

- ▶ Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Grand Forks, ND: University of North Dakota



CARDIAC REHABILITATION TREATMENT PLANNING AND INTERVENTION

Unit VII

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Overview

- Exercise
- Contraindications
- Physiological Response to Exercise
- Determining Functional Capacity
- Exercise Prescription
- Home Program Instruction

Exercise & Coronary Heart Disease

Hoff, 2007

- Exercise helps prevent Coronary Heart Disease (CHD)
 - Exercise reduces the following risk factors of CHD:
 - Hypertension
 - Dyslipidemia
 - Obesity
 - Psychosocial stress
 - Metabolic syndrome

Hoff, 2007

Psychological Benefits of Exercise

- Discuss in small groups.



Contraindications for Exercise

- First, you must have a physicians referral prior to treatment.
- Second, patients must sign a consent form.
- Third, Equipment should be available in the event of an emergency.
- Always be cautious, aware and go with your gut feeling if something does not feel right.

Contraindications for Exercise Testing Hoff, 2007

- Acute myocardial infarction (within 2 days)
- Unstable angina
- Uncontrolled cardiac arrhythmias causing symptoms or hemodynamic compromise
- Symptomatic severe aortic stenosis

Contraindications... (cont.)

- Uncontrolled symptomatic heart failure
- Acute pulmonary embolus or pulmonary infarction
- Acute myocarditis
- Acute aortic dissection



Relative Contraindications

- Left main coronary stenosis
- Moderate stenotic valvular heart disease
- Electrolyte abnormalities
- Severe arterial hypertension

Relative Contraindications (cont.)

- Tachyarrhythmias or bradyarrhythmias
- Hypertrophic cardiomyopathy
- Mental or physical impairment leading to inability to exercise adequately (safety issues)
- High degree of atrioventricular block

Contraindications for Exercise Training

Hoff, 2007

- Unstable ischemia
- Heart failure that is not compensated
- Uncontrolled arrhythmias
- Severe and symptomatic aortic stenosis
- Hypertrophic obstructive cardiomyopathy

Contraindications... (cont.)

Hoff, 2007

- Severe pulmonary hypertension
- Blood Pressure of 180/110
- Myocarditis, pericarditis, dissecting aneurysm, thrombophlebitis
- Systemic embolus

Activity:

Hoff, 2007

- In 3 equal groups define and explain the following three terms:
 - Physical Activity
 - Exercise
 - Cardiorespiratory Fitness



The intent of this activity is for the students to develop a further understanding of the terms listed through discussion.

After each group is done with their discussion, have them explain their findings with the other groups.

Physiological Response to Exercise

Hoff, 2007

- Entire body plays a role in the generation of energy for muscle contraction; the main player of this role is the cardiovascular and pulmonary systems
- Cellular Respiration: Oxidative process occurring at the cellular level in order for the generation of energy for muscle contraction

Physiological Response to Exercise (cont.)

Hoff, 2007

- Heart's Role
 - Must receive venous return (low O₂)
 - Delivers low O₂ blood to lungs
 - Delivers O₂ blood to the arterial system

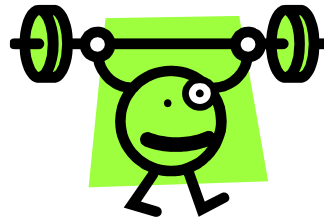
Physiological Response to Exercise (cont.)

Hoff, 2007

- Lung's Role
 - Oxygenates the blood
 - Delivers O₂ blood to the heart
- One with decreased cardiac output will have a decreased exercise capacity

Determining Functional Capacity

- VO_2 Max or Maximal cardiac output X arteriovenous O_2 difference = Functional Capacity
- MET



Exercise Prescription

Hoff, 2007

- Intent is to improve cardiovascular function for safe return to demands of daily life
- Created after initial evaluation
- Based off collection of all data in patient profile

Exercise Prescription

Hoff, 2007

- 5 components
 - Intensity
 - Progression
 - Duration
 - Frequency
 - Mode

Exercise Prescription (cont.) Hoff, 2007

- May be modified in the following areas
 - Interval conditioning
 - Circuit conditioning
 - Circuit interval conditioning
 - Continuous conditioning

- Let's look at the Exercise Prescription Guideline example worksheet in your book on page 100.

The exercise prescription guideline referral reference is mentioned with the intent of going through each component of the guideline with the students for the development of a further understanding of the guideline.

Assignment

Hoff, 2007

- Form 5 groups
 - Angina
 - MI
 - CHF
 - CABG
 - Heart Transplant
- Discuss and develop an understanding of your assigned section and present to the class.



Each of the five groups are assigned one of the 5 topics listed above. Each group is to discuss their topic and understand the topic to present the content to the class. The students are able to utilize other resources but this activity is intended to be completed within the time allowed for this class period.

Home Program Instruction

- Focus on 4 elements
 - The need to adhere to CR exercise guidelines
 - Follow post-surgical precautions
 - The need to implement patient educational principles necessary to make lifestyle changes
 - Ensure that the patient understands all instructions

Resources

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

PATIENT EDUCATION AND BEHAVIOR MODIFICATION FOR RISK FACTOR MANAGEMENT

Unit VIII

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Educational Topics

- ▣ Basic Cardiac Anatomy
 - Understand basic coronary anatomy
 - Methods: lecture, group discussion, etc
 - Goals: understand and identify structures pertaining to the disease
- ▣ Coronary Heart Disease (CHD)
 - Factors which contribute to CHD
 - Treatment methods to reduce symptoms and avoid development of this disease

-(Hoff, 2007)

Education Topics

- ☐ Myocardial Infarction
 - Understand the cause
 - Identify symptoms
- ☐ Signs and Symptoms of Angina
 - Understand causes of angina
 - Recognize symptoms of angina
- ☐ Medication Compliance
 - Ensure patient comprehension of protocol for their prescribed medications (including the appropriate use of nitroglycerin)

-(Hoff, 2007)

Patients may be unfamiliar with the disease that they are experiencing and therefore may feel confused and vulnerable.

Patients may also want to research information on their own (using the internet is very common). Therefore, it is important to provide the patient with accurate information about the disease they are experiencing and also educate the patient about how to research accurate information.

Activity

- ❑ Form 3 groups
- ❑ Turn to page 114 in your book
- ❑ Group one has Educational Needs 1-4, group two has 5-8, group three has 9-12
- ❑ Look through each need and present the content of each need to the class.

-(Hoff, 2007)

Each group will be responsible to review over their assigned section and create a short (5-10 min) presentation of the general concepts of each need.

Give groups 10 –15 minutes to discuss and create presentation.

Behavior Modification

- ▣ Patients need to make life changes both psychologically and physically
 - Including: diet, weight loss, increasing physical activity, medication adherence and smoking abstinence

-(Hoff, 2007)

It is the role of OT to help the patient establish new habits and routines.

Social Learning Theory: Self Efficacy

- ▣ Four main factors
 - Information and persuasion
 - Observation of others
 - Successful performance of behavior
 - Physiological feedback

-(Hoff, 2007)

Social Learning Theory

Suggests that human behavior is influenced by social interaction, cognitive perception and environmental systems that behavioral changes comes about when the patient believes that they can perform the behavior

Self Efficacy: major component

Facilitating Change

- Basic Counseling Skills
 - Includes providing patient with support tools and skills to identify behavior modifications which need to be made
- Three stages of Behavior Modification
 - Antecedent Stage
 - Adoption Stage
 - Maintenance Stage

-(Hoff, 2007)

Antecedent Stage- the patient is contemplating change

Adoption Stage- the patient begins to initiate change

Maintenance Stage- the patient adheres to the changed behavior over time

Forms

- ▣ Turn to page 120
- ▣ Let's discuss the Home Activity Guideline and measure METs
- ▣ Cardiac Rehab Exercise Precautions
 - Read through them and discuss in small groups

-(Hoff, 2007)

In class discussions, have student read through precautions and discuss implementation on therapy.

Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Grand Forks, ND: University of North Dakota

Psychosocial Issues

Unit IX

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Overview

- Toxic Climate
- Tools for Psychosocial Evaluation
- Questions for Evaluation
- Physiological Symptoms
- Signs & Symptoms of Depression

Toxic Climate

- Created by emotional difficulties
- Emotional difficulties produce changes in the autonomic nervous system which lead to:
 - Decreased immune functioning
 - Lipid level elevation
 - Changes in neurotransmitters

Toxic Climate (cont.)

- Patients with unattended to psychological issues tend to:
 - be less compliant with medications
 - Less likely to pursue a healthy life style
 - Continue with unhealthy behaviors (i.e. smoking, poor nutrition, sedentary lifestyle)

Tools for Psychosocial Evaluation

- Screening Tools:
 - Medical Outcomes Study Short Form (MOS SF 36)
 - Beck Depression Inventory Scale (BDI)
 - Herridge Cardiopulmonary Questionnaire (HCQ)
- Usually self administered; easy to score

Tools for Psychosocial Evaluation (cont.)

- Cost effective
- May determine the need for further evaluation/referral
- Need to conduct a full review of patient history to identify any pre-event issue

Tools for Psychosocial Evaluation

- Questions for Psychosocial Initial Interview:
 - What do you see as your biggest challenge in regards to improving your health?
 - How have you been able to change unhealthy behaviors in the past?



Hoff, 2007

Questions for Psychosocial Initial Interview

- How have things changed for you since your cardiac event?
- What kind of concerns do you have about meeting with a counselor or mental health professional?
- How can we assist you in best meeting your goals?

Physiological Symptoms...

- Physiological symptoms which are caused by psychosocial stressors can be some of the following:
 - Angina: caused by fear, anxiety, stress
 - Depression: can delay or halt recovery
 - Increased Heart rate, blood pressure, and vasoconstriction: caused by stress, anger, hostility
 - Experiences with these symptoms can contribute to the creation of a “toxic climate”

Hoff, 2007

Physiological Symptoms (cont.)

- Must recognize psychological symptoms and their connection with physiological symptoms



Hoff, 2007

Signs & Symptoms of Depression

- Low energy or restlessness, poor concentration and memory
- Recurrent worry, regrets, somatic complaints and thoughts of death
- Anhedonia- a diminished interest or loss of ability to experience pleasure

Hoff, 2007

Signs & Symptoms of Depression (cont.)

- Significant change in sleep, eating and sexual drive habits
- A recurring sense of being overwhelmed by current stressors
- Self blame and self criticism
- Suicidal thoughts

Resources

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Special Populations

Unit X

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Older Patients

- Congestive heart failure is the most common cause of death in the elderly
- The geriatric population experiences a decrease in:
 - maximal heart rate
 - Aerobic capacity
 - Cardiac output

-(Hoff, 2007)

This is one of the most common populations that will be seen in cardiac rehabilitation.

Educational considerations

- Materials should be provided in a clear and easy to understand way and include recommendations for:
 - Low level of exercise
 - Energy conservation
 - Work simplification
 - Introduction to adaptive equipment to ease ADL's

-(Hoff, 2007)

Recommendation of Adaptive Equipment

- Introduction and recommendation of adaptive equipment is essential when the patient:
 - Experiences undue fatigue
 - Can benefit from energy saving techniques and work simplification

-(Hoff, 2007)

This will promote independence and increase the safety of the patient

Women

- Cardiovascular disease is the leading cause of death in women
- Smoking is the leading cause of CHD
- Possible reasons for poor prognosis in women:
 - Increased age when diagnosed
 - Post menopausal, when symptoms present
 - Dual diagnosis (hypertension and diabetes)

-(Hoff, 2007)

Women Symptoms

- Generally are variable and not clear
 - This leads to delayed diagnosis and increases the death rate
- Atypical Symptoms
 - Upper abdominal pain
 - Nausea
 - Fatigue
 - Chest pain (most common)

-(Hoff, 2007)

Treatment

- Education pertaining to recognition of signs and symptoms
- Risk factor reduction
- Participation in an exercise program
- Safety
 - Women tend to recover slower and are more sensitive to medications

-(Hoff, 2007)

Diabetes

- One of the most common chronic diseases
- Patients present with special concerns and require diligent monitoring
- Will not present with typical responses to angina
- Refer to page 136, CR Plan of Care Guidelines for Patients with Diabetes

-(Hoff, 2007)

Referral to a diabetic specialist is generally required.

Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Grand Forks, ND: University of North Dakota.



Documentation

Unit XI

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Overview

- Considerations for Documentation
- Components of Documentation
- Reimbursement





Considerations for Documentation

Hoff, 2007

- Clarity of Information
- Consistency of Information
- Efficiency of Information
- Forms
- Documents

Components

- Components to be included:
 - Evaluation
 - Intervention
 - Progression
 - Outcome Measure

Reimbursement

- CR outpatient services are reimbursable purchased services
- Each state has differences in guidelines for reimbursement
- Patients are typically seen three times per week





Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Outcomes



UNIT XII

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Why do outcomes measures?

- Provide valuable data pertaining to quality improvement, accreditation and reimbursement
- Assists in the development of an increased understanding of patients in CR
- Helps to prove importance of CR

-(Hoff, 2007)

Four domains of Outcome Measures



- **Health**: tracking coronary events during CR or Quality of Life (QOL)
- **Clinical**: Tracking patient understanding of the management of hypertension, depression, lipids, blood glucose levels, and functional capacity.
- **Behavioral**: Medication compliance, home program compliance, and smoking cessation.
- **Service**: Patient satisfaction surveys and reimbursement for services rendered.

-(Hoff, 2007)

Outcomes Measures

- **General Well-being and Quality of Life**
 - Nottingham Health Profile
 - Quality of Well-being index
- **Psychological Status and Well-being**
 - Profile of mood states
 - Beck Depression Inventory

-(Hoff, 2007)

Other examples of outcome measures:

Dartmouth Primary Care Cooperative (COOP)

Medical Outcomes Study SF-36 Health Status Questionnaire

Sickness Impact Profile

Center for Epidemiological Studies Depression Inventory (CES-D)

Spielberger State-Trait Anxiety Inventory

Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Grand Forks, ND: University of North Dakota

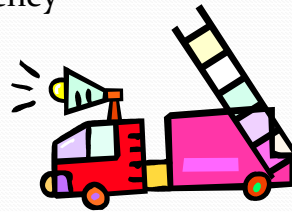
Managing Emergencies

Unit XIII

Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

Overview

- Risk for Emergencies
- Staff Training
- Warning Signs
- Intervention of an Emergency



Potential Risk for Emergencies

- Need to assess status of patient prior to and after service
- Patient stays are becoming shorter and shorter
- Always a possibility of unpredictable occurrences

Staff Training

- Staff should be trained in the following areas:
 - Basic Life Support (BLS)
 - Automatic external defibrillator (AED) training
 - ACLS
 - CPR

Warning Signs

- New or changing pattern of angina
- New or changing patterns of arrhythmias
- Decompensated heart failure
- Hypoglycemia or hypoglycemia
- Syncopal or near syncopal episodes



Warning Signs (cont.)

- Hypotension or hypertension
- Decreased exercise tolerance
- Claudication
- Depression
- Cardiac or respiratory arrest

Intervention of an Emergency may include:

- Not beginning exercise or termination the exercise session
- Assisting the patient in a recovery position
- Comforting the patient and providing reassurance
- Monitoring of vital signs

Intervention of an

Emergency may include:

- Administering supplemental oxygen
- Administering glucose orally or intravenously
- Transporting patient to an emergency center
- Announcing Code Blue and initiating emergency procedures

Intervention of an

Emergency may include:

- Implement Basic Life Support (BLS)
- Implement advance cardiac life support (ACLS)
- Notify program medical director and primary physician
- Notify family
- Document emergency incident per policy and procedure



Reference

- Hoff, B. (2007). Cardiac rehabilitation education module for entry-level occupational therapists. Unpublished master's thesis, University of North Dakota, Grand Forks, North Dakota.

CHAPTER V

SUMMARY

Through the development of the literature review and review of Hoff's (2007) work, we concluded that limited information exists on the occupational therapist in the cardiac rehabilitation setting. The lack of information facilitated Hoff to develop an educational module for occupational therapists intended to expand the knowledge of the entry level practitioner in the area of cardiac rehabilitation. A course structure was developed through extensive research on educational theories and strategies utilizing the content from Hoff's module.

The purpose of this scholarly project was to create an elective course for occupational therapy students enrolled in an accredited occupational therapy program. This course was designed for students who would like to expand their knowledge of cardiac rehabilitation. The course, which was developed, was intended for occupational therapy student who are interested in further developing their knowledge in cardiac rehabilitation. This course has been designed to follow several standards set by the Accreditation Council for Occupational Therapy Education and intended for use within an accredited occupational therapy program. This course consists of four educational modules which contain 13 units regarding information on cardiac rehabilitation. There are a total of two quizzes, one treatment plan, fieldwork experience, and other assignments which are projected to expand and assess the knowledge of the students. It is

intended that the instructor of this course has previous knowledge and experience with cardiac patients in the physical disabilities setting.

Limitations

The limitations in this project may include:

1. The information provided within this course is not all inclusive of the knowledge needed for practice within cardiac rehabilitation.
2. According to Hoff (2007), this project does not fully prepare the occupational therapist for certification in cardiac rehabilitation.
3. The quality of the information provided will be dependent on the experience of the faculty member presenting the information.
4. Despite the expansive amount of learning strategies, some students may learn in ways which differ from the strategies proposed in the literature review.
5. Occupation based interventions are not specifically addressed within the scope of this course.

Proposed Implementation

The course is intended to be an elective study which spans over the period of one semester. This course has been developed to be offered to third year occupational therapy students in pursuit of their master's degree. It is preferred that this course is instructed by a faculty member with to clinical experience practicing in cardiac rehabilitation in addition to knowledge of physical disability rehabilitation. Course content has been prepared in a manner which allows any educator with cardiac rehabilitation experience to deliver the course content and activities. The educators will find that basic activities,

assignments, quizzes and student expectations have been created, therefore combined with the knowledge from their experience will ensure a well rounded course for students.

Conclusions

In conclusion, the occupational therapist has the ability to provide high quality services to various areas of practice. An area of practice which receives little attention in research in relation to occupational therapy is cardiac rehabilitation. Through the implementation of courses such as the one developed, occupational therapy is able to expand its scope of practice to areas which can be complemented by an occupational therapists skill. The course which was specifically developed on cardiac rehabilitation is intended to provide occupational therapy students with additional information about this specialty, allowing for entrance into the cardiac rehabilitation clinic as an entry level therapist.

Recommendations

Recommendations for future action and development are as follows:

1. Research for the development of occupation based intervention for implementation into the content of this course.
2. Research to develop the occupational therapists role in cardiac rehabilitation.
3. Promotion of continuing education opportunities in cardiac rehabilitation available to the occupational therapist.

REFERENCES

- Accreditation Council for Occupational Therapy Education. (2007). Standards for Interpretive Guidelines. Retrieved August 23, 2007 from website via: <http://www.aota.org/Educate/Accredit/StandardsReview/40601.aspx>
- American Heart Association. (2006). Cardiovascular disease statistics. Retrieved September 1, 2007, from <http://www.americanheart.org/presenter.jhtml?identifier=4478>.
- Anderson, L. W. & Sosniak, L. A. (Eds.). (1994). Bloom's Taxonomy: A forty-year retrospective. Ninety-third yearbook of the National Society for the Study of Education, Part II. Chicago, IL: The National Society for the Study of Education.
- Babola, K.A. & Peloquin, S.M., (1998). Making a clinical climate in the classroom: An assessment. *American Journal of Occupational Therapy*, 53, 373-380.
- Bastable, S.B. (2006). *Essentials of patient education*. Sudbury, MA: Jones and Bartlett Publishers, Inc.
- Bloom, B. S. (Ed.). (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. Ann Arbor, MI: Edwards Brothers.
- Bye, D., Pushkar, D., Conway, M. (2007). Motivation, interest, and positive affect in traditional and nontraditional undergraduate students. *Adult Education Quarterly*, 57, 141-158.
- Crabtree, J. L., Royeen, C.B. & Mu, K. (2001). The effects of learning through discussion in a course in Occupational Therapy: A search for deep learning. *Journal of Allied Health*, 30, 243-247.

- Department of Health and Human Services, Center for Disease Control and Prevention. (2007). Heart disease. Retrieved November 3, 2007 from <http://www.cdc.gov/heartdisease/>.
- De Wit, L. (2007). Editorial-Are physiotherapy and occupational therapy in stroke rehabilitation one and the same? *Physiotherapy Research International*, 12, 3-4.
- De Wit, L., Kamsteegt, H., Yadav, B., Verheyden, G., Feys, H. & Weerdt, W.D. (2006). Defining the content of individual physiotherapy and occupational therapy sessions for stroke patients in an inpatient rehabilitation setting. Development, validation and inter-rater reliability of a scoring list. *Clinical Rehabilitation*, 21, 450 –459.
- Hammel, J., Royeen, C. B., Bagatell, N., Chandler, B., Jensen, G., Loveland, J. & Stone, G. (1999). Student perspectives on problem-based learning in an occupational therapy curriculum: A multiyear qualitative evaluation. *The American Journal of Occupational Therapy*, 53, 199-206.
- Hodgetts, S., Hollis, V., Triska, O., Dennis, S., Madill, H. & Taylor, E. (2007). Occupational therapy students' and graduates' satisfaction with professional education and preparedness for practice. *Canadian Journal of Occupational Therapy*, 74, 148-160.
- Hoff, B. (2007). Cardiac rehabilitation education module for entry level occupational therapists. Grand Forks, ND: University of North Dakota.
- Kelly, M. H. (2006). Teach an old dog new tricks: Training techniques for the adult learner. *Professional Safety*, 44-48.

- Knowles, M. S., Holten III, E. F. & Swanson, R. A. (2005). *The adult learner: The definitive classic in adult education and human resource development*. Burlington, MA: Elsevier, Incorporated.
- Krathwohl, D. R., Bloom, B. S. & Masia, B. B. (1964). *Taxonomy of educational objectives: The classification of educational goals. Handbook II: Affective domain*. New York, NY: David McKay Company, Incorporated.
- Lewis, L. M. (2005). Fieldwork requirements of the past, present and future. *Education Special Interest Quarterly*, 15, 3, 1-4.
- Myers, J., Hadley, D., Oswald, U., Bruner, K., Kottman, W., Hsu, L. & Dubach, P. (2007). Effects of exercise training on heart rate recovery in patients with chronic heart failure. *American Heart Journal*, 153, 1053-63.
- Pereira, J. A., Pleguezuelos, E., Meri, A., Molina-Ros, A., Molina-Tomas, M. C. & Masdeu, C. (2007). Effectiveness of using blended learning strategies for teaching and learning human anatomy. *Medical Education*, 41, 189-195
- Rickerson, N. & Deitz, J. (2003). Integration of universal design of instruction in occupational therapy professional education: Responding to student diversity. *The American Journal of Occupational Therapy*, 57, 594-597
- Ross-Gordon, J. M. (2003). Adult learners in the classroom. *New Directions for Student Services*, 102, 43-52.
- Sandercock, G. R. H., Grocott-Mason, R. & Brodie, D. A., (2007). Changed in short-term measures of heart rate variability after eight week of cardiac rehabilitation. *Cin Auton Res*, 17, 39-45.

- Sansone, C. & Smith, J. L. (2000). Interest and self regulation: The relation between having to and wanting to. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 341-372). San Diego, CA: Academic Press.
- Stube, J. E., & Jedlicka, J. S. (2007). The acquisition and integration of evidence-based practice concepts by occupational therapy students. *The American Journal of Occupational Therapy, 61*, 53-61.
- The American Occupational Therapy Association (AOTA). (2007). Accreditation standards for a master's-degree-level educational program for the occupational therapist. *Accreditation Council for Occupational Therapy Education (ACOTE®) of The American Occupational Therapy Association, INC*. Retrieved November 23, 2007 from <http://www.aota.org/Educate/Accredit/StandardsReview/guide/Masters.aspx>
- Oliveira-Filho, G. R. & Vieira, J. E. (2007). The relationship of learning environment, quality of life, and study strategies measures to anesthesiology resident academic performance. *Anesthesia and Analgesia, 104*, 1467-72.
- U. S. Census Bureau. (2006). Facts for features. Retrieved September 10, 2007 from http://www.census.gov/Press-Release/www/releases/archives/facts_for_features_special_editions/006105.html.