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Role modeling attitudes and physical activity behavior of cardiopulmonary rehabilitation professionals

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Role Modeling Attitudes and Physical Activity Behavior of

Cardiopulmonary Rehabilitation Professionals

(TITLE)

BY

Emily Dufrene

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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**Role Modeling Attitudes and Physical Activity Behavior of
Cardiopulmonary Rehabilitation Professionals
Emily Dufrene
Abstract**

Introduction: Cardiopulmonary rehabilitation professionals with membership in the Illinois Society for Cardiopulmonary Health and Rehabilitation were surveyed regarding their physical activity behavior and role modeling attitudes. The research questions to be answered were:

- 1.) What percentage of cardiopulmonary rehabilitation staff engage in regular physical activity, stretching, exercise and weight training?
- 2.) What percentage of cardiopulmonary rehabilitation staff is underweight, acceptable weight, overweight, and obese?
- 3.) Do cardiopulmonary rehabilitation staff who regularly engage in physical activity have different attitudes toward role modeling, compared to cardiopulmonary rehabilitation staff who do not regularly engage in physical activity?
- 4.) Do underweight and acceptable weight cardiopulmonary rehabilitation staff have different attitudes toward role modeling, compared to overweight and obese cardiac rehabilitation staff?
- 5.) Do different professions within cardiopulmonary rehabilitation have different levels of physical activity; BMIs, and attitudes toward role modeling?

Methodology: Study participants were separated into their respective professional area, physician, nurse, exercise physiologist or respiratory therapist. The data was analyzed by professional group. Body mass index,

role modeling scores and activity level were all analyzed using an independent t test.

Conclusion: There is no significant relationship between BMI or activity level and role modeling attitudes for all cardiopulmonary rehabilitation professionals. Although, exercise physiologists that engage in physical activity on a regular basis have more positive attitudes toward role modeling than those that do not engage in regular physical activity. In general, increased levels of physical activity and low BMI values do not lead to a more positive attitude toward role modeling.

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CHAPTER I

INTRODUCTION

Role models are individuals whose behavior, example or success can be observed and learned from. Health professionals are responsible for the motivation and production of goal directed behavior (Wilson & Petruska, 1984). Modeling behaviors that encourage physical performance, fitness, health, and quality of life should be the foundation for all individuals certified by the American College of Sports Medicine (ACSM Credentialed Professionals, 2005) as exercise specialists, fitness instructors, or program directors. Physicians, exercise physiologists and nurses working in cardiopulmonary rehabilitation programs are expected to model healthy behaviors for their own health benefit and to encourage their patients.

The health benefits related to participating in life-long physical activity are numerous. According to the Physical Activity and Health: A Report of the Surgeon General (1999), physical activity decreases premature death; decreases the risk of dying prematurely due to cardiovascular disease; reduces the risk of developing Type 2 diabetes; decreases hypertension; reduces the risk of some forms of cancer; decreases feelings of depression and anxiety; helps to control weight; builds and maintains healthy bones, muscles and joints; helps older adults to preserve their mobility and decrease falls; and promotes overall psychological well-being. Professionals that work in cardiopulmonary rehabilitation should stress to patients the importance of

physical activity because of the benefits. A powerful way for these professionals to illustrate to patients that exercise is important and crucial to a healthy lifestyle is to practice it themselves.

Bandura (1986) developed the Social Cognitive Theory that explores the influence of environmental, personal and behavioral factors that influence people to carry out certain actions. The theory states that personal, behavioral, and environmental factors all interact reciprocally as determinants of each other. The environment influences behaviors; behaviors also influence the environment. Thoughts, emotions, and physiology also play an important role. The interaction of all these factors is significant but, self-efficacy, an individual's belief that she can successfully perform a behavior, is the most important. Role modeling is the antecedent to self-efficacy, the perception of one's ability to perform a task successfully. Self-efficacy has been shown to be a good predictor of behavior in health situations such as smoking cessation, weight management, and recovery from heart attacks (Weinberg & Gould, 1999).

Cardinal & Cardinal (2001) have studied role modeling and behavior with professionals working in physical education, recreation and dance but research is lacking in the area of attitudes about role modeling and physical activity behavior among physicians, nurses, respiratory therapists and exercise physiologists (cardiopulmonary rehabilitation staff).

Purpose of the Study

The purpose of this study was to determine the relationship between attitudes toward role modeling, physical activity levels and weight classification of cardiopulmonary rehabilitation professionals. Specifically, this study addressed the following five questions:

1. What percentage of cardiopulmonary rehabilitation staff engage in regular physical activity, stretching, exercise and weight training?
2. What percentage of cardiopulmonary rehabilitation staff is underweight, acceptable weight, overweight, and obese?
3. Do cardiopulmonary rehabilitation staff who regularly engage in physical activity have different attitudes toward role modeling, compared to cardiopulmonary rehabilitation staff who do not regularly engage in physical activity?
4. Do underweight and acceptable weight cardiopulmonary rehabilitation staff have different attitudes toward role modeling, compared to overweight and obese cardiopulmonary rehabilitation staff?
5. Do different professions within cardiopulmonary rehabilitation have different levels of physical activity, BMIs, and attitudes toward role modeling?

Hypotheses

The following hypotheses were developed based upon a review of related literature.

1. Cardiopulmonary rehabilitation (CR) staff who have high levels of physical activity and fitness promoting behaviors will have a more positive attitude toward role modeling compared to the other CR professionals.

2. Cardiopulmonary Rehabilitation professionals that are in the underweight and acceptable weight categories will have a more positive attitude toward role modeling than the other CR professionals.

3. Cardiopulmonary Rehabilitation professionals with a more positive attitude toward role modeling will be expected to be in the acceptable weight classification and be physically active.

Limitations of the Study

1. Subjects were members of the Illinois Society of Cardiopulmonary Health and Rehabilitation and staff that work with the members of the society. Therefore, the sample was not randomly selected from all CR staff in Illinois.
2. The size of the sample was small, therefore an even distribution from each of the categories, such as weight and professional areas, were not represented.
3. The role modeling questions, height, weight and questions related to exercise were self-reported by participants which could lead to false data or data that was misreported.

Definition of Terms

Acceptable weight: BMI 20.1 to 24.99 kg/m² (ACSM, 2005)

Cardiopulmonary rehabilitation professionals: exercise physiologist, nurse, physician, or respiratory therapist who works to help people recover from a cardiac event, cardiovascular disease or pulmonary event.

Obese: BMI \geq 30 kg/m² (ACSM 2005)

Overweight: BMI 25.0 to 29.99 kg/m² (ACSM, 2005)

Physical activity: bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure.

Role modeling: the act of exhibiting behaviors to others for them to follow or to better understand something (Bandura, 1986)

Underweight: BMI <20.0 kg/m² (ACSM, 2005)

CHAPTER II

LITERATURE REVIEW

Prior to this research, no studies were identified describing the role modeling attitudes, physical activity and fitness promoting behaviors of CR staff. Interest in this area was generated by the work of Cardinal (2001) who performed research with health, physical education, recreation and dance (HPERD) professionals and preprofessionals regarding role modeling attitudes and physical activity behaviors.

The following topics will be covered in the literature review: role modeling attitudes in Health, Physical, Education, Recreation and Dance (HPERD) professionals; responsibility to model healthy behavior by health professionals; role modeling and health professionals; the influence of role models; and measurement of attitudes towards role modeling.

Role Modeling Attitudes and Behaviors in HPERD

Cardinal (2001) examined the same variables in HPERD professionals and preprofessionals that were examined in the current research. Cardinal's purpose was to describe the physical activity and fitness promoting behaviors of HPERD professionals and preprofessionals as well as to gain a better understanding of their attitudes toward role modeling.

Members of the Michigan Association of Health, Physical Education, Recreation and Dance (MAHPERD) professional organization were targeted

to participate in this study. The 126 participants completed a brief demographic questionnaire. Physical activity was assessed using Schectman, Barzilai, Rost, and Fisher's (1991) dichotomous question, "Do you currently participate in any regular physical activity program (either on your own or in a formal class) designed to improve or maintain your physical fitness?" To validate the activity status of the participants, additional data was obtained using the Weekly Leisure-Time Exercise Questionnaire (Godin & Shephard, 1985). Height and weight were also obtained from the participants in order to determine the BMI. Each participant was categorized into one of four mutually exclusive groups based upon BMI: underweight (<20), acceptable (20.0 to 24.99), overweight (25 to 29.99) and obese (>30).

Their attitude toward role modeling was assessed using the Attitude Toward Role Modeling Questionnaire designed by Cardinal (1998). The questionnaire was composed of 16 statements. Each statement was evaluated using a 5-point Likert scale.

The findings indicated that most participants were more physically active than that which is typical for the general population. Also, the proportion of overweight and obese individuals in the field was considerably less than in the general population. Physically active participants with BMI's in the underweight and acceptable weight categories had more positive attitudes toward role modeling than those participants that were not physically active with BMI's in the overweight and obese categories. Cardinal (2001)

concluded that role modeling was more important for HPERD professionals and preprofessionals who were acceptable weight and were physically active.

Responsibility to Model Health Behavior

In order for CR professionals to be most effective and offer the best care, healthy behaviors should be modeled. In order to model healthy behaviors, the staff must believe that it is important to do so and that it will have an impact on the patients they provide care to.

A professional in the healthcare field has the responsibility to understand the importance of setting a positive example for his or her patients. Individuals such as exercise physiologists who are certified by the American College of Sports Medicine are expected to model behaviors that "encourage physical performance, fitness, health, and quality of life" (American College of Sports Medicine, 2005).

In order to model behavior, the healthcare provider needs to facilitate and nurture the patient as well as attain, maintain and promote health (Lombardo, 2005). In order to be a successful role model, the healthcare provider must "build trust, promote the patient's positive orientation, affirm and promote the patient's strengths and to set mutual, health-directed goals" (Lombardo, 2005). By following these principles of being a good role model, the cardiopulmonary staff can be more effective. According to Borchardt (2000), role modeling a healthy lifestyle makes interventions for reducing

hypertension, diabetes, obesity, and coronary artery disease much more effective.

Role Modeling and Health Professionals

Physicians

Physicians, especially cardiologists working with patients undergoing cardiopulmonary rehabilitation, are expected to encourage their patients to adhere to their exercise program. Under the American Medical Association code of ethics, it states that physicians shall be “dedicated to providing competent medical care” and also to “uphold the standards of professionalism” (American Medical Association, 2005). Being a positive role model as a physician involves not only encouraging exercise and healthy lifestyle behaviors, but also practicing them in his or her own life. A physician should not expect a patient to do something that one is not doing in one’s own life.

It has been shown that physicians who exercise are more likely to spend time counseling their patients about the importance of physical activity behavior (Abramson, Stein, Schaufele, Frates & Rogan, 2000). These researchers surveyed 298 primary care physicians in the United States to obtain information about personal exercise habits and counseling practices. Of the physicians surveyed, 73% engaged in aerobic exercise, and 41% engaged in strength training. It was found that physicians who were physically active were more likely to counsel their patients about aerobic exercise than

the physicians who did not exercise. The physicians that performed strength training were more likely to counsel their patients about strength training than the physicians that did not perform strength training. The time spent counseling was also examined. The doctors that reported spending more time counseling reported that a higher percent of their patients followed their recommendations. These findings suggest that being physically active is a major part of role modeling positive health behavior.

Medical Students

Rogers et al. (2005) completed a study to determine the effectiveness of a physician fitness program on 48 resident physicians. The subjects were volunteers from the Fall class of 1999 Medical College of Georgia Internal Medicine Residency Training Program. Subjects with severe lung disease or recent significant sports injuries were excluded.

The study measured cardiovascular fitness, physical activity behavior, and physical activity counseling behavior and attitudes. A prospective intervention study was completed to observe changes in attitudes about physical activity counseling, physical activity behavior and the fitness levels of the resident physicians. Measures were taken at baseline, three months, and six months. The intervention lasted three months.

A personalized exercise prescription was given to each participant and the subjects were encouraged to set personal exercise goals. Cardiovascular fitness was assessed using a maximal test at baseline and at three months. At the six month assessment, all the subjects refused the maximal test and a

submaximal test was used in its place. Physical activity was measured using a 7-day activity recall; stage of change was measured using an algorithm tested for reliability and validity. To assess counseling behavior, a five point scale was used for the question: "For what percentage of your continuity clinic patients do you counsel at some point about their exercise habits?" To assess knowledge related to physical activity and stage of change, participants ranked their confidence in knowledge of ways to use behavioral techniques, and to improve their own physical activity.

A significant change ($p=0.003$) in BMI from baseline 26.8 kg/m^2 to 26.3 kg/m^2 at the three month mark occurred. No significance was found when the data was analyzed across all three time periods, from baseline to the six month mark.

A change in physician knowledge and behavioral attitudes was seen from baseline to six months. The participants felt more successful at engaging in regular exercise at three months with an increase in feelings of success. There was a significant improvement in resident physician confidence in their ability to counsel patients about physical activity and resident physician feelings of success in counseling patients about physical activity ($p=0.01$ and $p=0.03$, respectively).

The findings indicate that the physical activity level of physician residents can have an impact on the way they counsel their patients about exercise. Resident physicians who are physically active are more likely to

counsel their patients to exercise because they feel more confident about counseling them.

Nurses

Nurses also have a code of ethics similar to that of physicians.

According to the American Nurses Association, the "primary commitment of the nurse is to the patient and to promote, advocate and strive to protect the health, safety and rights of the patient" (American Nurses Association, 2001).

In order to provide quality care to patients, nurses in cardiopulmonary rehabilitation must model healthy behaviors.

In a study conducted by Dalton and Swenson (1986) regarding role modeling and counseling behaviors of smoking and nonsmoking nurses, it was found that nonsmoking nurses were more likely than smoking nurses to counsel patients and family members against smoking. A total of 601 nurses were surveyed in North Carolina. The questionnaire assessed the smoking habits of nurses, their families, and peers; nurses' knowledge of smoking effects; nurses' job situations and professional roles; and nurses' attitudes and behavior as role models. Among the nurses that responded, 54% had never smoked, and 46% had been or currently were smokers. Among the past or current smokers, 30% had successfully stopped smoking and 69% had reported smoking in the past year. The average age of the sample was 42 years and the majority of respondents were staff nurses. Just over half (53.7%) of the respondents thought nurses were very important role models demonstrating healthy behaviors for their clients.

It was found that nonsmoking nurses were more likely than current smokers to counsel clients and family members against smoking. Twenty-three percent of nonsmoking nurses reported regularly counseling patients against smoking whereas only 12% of smoking nurses regularly reported counseling patients against smoking. According to this research, large numbers of nurses in North Carolina are not using their influence to alter smoking behaviors among clients and family members. If nurses could better counsel patients to change their health behaviors, patients would see a decrease in hospitalizations and health care costs. Since smoking nurses seem to be less likely to counsel clients about the health effects of smoking, it also would seem that they would be less likely to counsel patients to exercise and would lack positive role modeling behaviors, such as exercise behavior.

Sixty-seven percent of non-smoking nurses believed role modeling had a greater impact on their patients, family and the general public while only 46% of smoking nurses felt this way. The conclusions of this research were that positive changes in role modeling and counseling behavior could provide more positive influences on health behaviors of the public.

Clark (1991) compiled research on nurses as healthy role models and nurses as health educators. Clark explored how nurses are viewed in the media as being helpful people who dedicate themselves to the self-less service of others. Nurses are then expected to live up to this standard. Clark argues that these high expectations lead to increased stress levels. She determined through literature review that the nurse needs to be viewed as a

healthy role model in order to maintain credibility with patients and fellow nurses.

If nurses do not maintain healthy lifestyle behaviors that the patients and society expect them to, they will not be effective role models. Patients will not be able to mimic what they see being modeled by nurses who are presumed to be the healthy role models for patients.

Exercise Physiologists

The behaviors of individuals in a position to model behavior such as the CR staff can have a strong influence on others' attitudes and behaviors, including health practices and the adoption of physical activity patterns (Melville et al, 2002).

Healthy lifestyles of exercise physiology students and nursing students were compared in Sweden by Kamwendo and Jansson (2000). The study compared first-term nursing (n=115) and exercise physiology students (n=92) on health and lifestyle behaviors. A questionnaire covering demographics, physical exercise habits, sleeping habits, smoking, intake of sweets and unhealthy snacks, and daily means of transportation was distributed by the students' instructors. The exercise physiology students showed significantly healthier behaviors than the nursing students. The researchers found that exercise physiology students reported participating in more physical exercise than nursing students. Eighty-five percent of exercise physiology students reported exercising at least twice a week compared to 45% of nursing students. The exercise physiology students were also more likely to have

never smoked than the nursing students. Eighty-two percent of exercise physiology students reported that they had never smoked compared to only 55% of nursing students. The exercise physiologists appeared to have healthier diets based on the number of unhealthy snacks eaten per day. Ninety-one percent of exercise physiology students ate less than one unhealthy snack per day compared to 80.9% of nursing students. More exercise physiology students either biked to work (77%) compared to the nursing students (57%).

This research is very important because nurses and exercise physiologists are likely to spend more time with patients than physicians. They are seen as the patient educators and could potentially have the most impact on the patient's modification of lifestyle and health behaviors.

Health and Physical Educators

Researchers Brennan and Galli (1985) surveyed health educators in the state of New York about their own smoking behavior and their perceived professional responsibility to model healthy behaviors. Significant differences were found among the three smoking behavior groups. The subjects were split into groups on smoking status. The three groups consisted of 1) never smoked (individuals who never smoked); 2) former smokers (individuals who were former smokers but do not currently smoke); 3) and smokers (individuals that currently smoke). Ninety percent of the entire group believed it was their responsibility to convince students not to smoke. Ninety-seven

percent of the 'never smoked' group believed it was their responsibility to convince students not to smoke while 93% of the 'current smokers' and 78% of the 'former smokers' agreed with this position. Eighty-eight percent of all the participants believed that they "should set a good example for others by not smoking." Ninety-four percent of 'never smokers' believed that they should set a good example while 97% of 'former smokers' believed this, and 88% of the 'current smokers' believed they should set a good example. The researchers found that nonsmokers and former smokers saw a greater value in serving as a good role model than did the current smokers.

Melville and Maddalozzo (1988) examined the appearance of a physical educator's body fatness and the effect it had on "his ability to teach and instill good exercise intentions in high school students." (p.350) The subjects were 850 students in six different schools. The students viewed one of two 20-minute videotapes in which exercise concepts were presented. The tapes were identical except for the instructor. In one videotape, the teacher was at a healthy weight and in the other, the instructor wore a fat suit to appear overweight. After the tape was viewed by the students, a test was administered on the content. The students that viewed the tape taught by the healthy instructor had higher scores than the students that viewed the tape taught by the overweight instructor. The students who watched the healthy instructor had a mean correct response of 11.05, and the students who watched the overweight instructor had a mean correct response of 9.27. A maximum score of 26 could have been achieved. The students that viewed

the tape taught by the healthy looking instructor had more positive attitudes toward the healthy instructor than the students who viewed the tape taught by the overweight instructor. The results support the hypothesis that the "appearance of fatness in a physical educator does affect the teaching of exercise concepts to high school students." (Melville and Maddalozzo, 1988)

Dean et al, 2005, also examined the difference between 93 students taught by a healthy, lean physical educator and an overweight physical educator. The students of two different junior high schools were the subjects. The instructor taught the same six week instructional course on health related fitness knowledge to two different physical education classes. The instruction was identical in both classes; the only difference was the appearance of the instructor. For one class, the physical educator weighed 125 pounds, was five feet six and a half inches and was 19.9% body fat. For the other class, the instructor appeared obese and unfit by wearing a fat suit for instruction.

Upon completion of the instruction, the students were given an exam over the material covered in the six-week course. Post-test knowledge was compared between the two groups using the pre-test as a comparison. The physical appearance of obesity significantly affected the test scores on health-related fitness knowledge. The students that were instructed by the lean physical educator had higher scores on the health-related fitness exam given. The test scores were significantly different between the two groups. The research supported the findings of Melville & Maddalozzo (1988) that

physical appearance and apparent fitness level of a physical educator are important to student performance on health-related cognitive tests.

The consensus from these findings is that the appearance and physical activity level of a physical educator has an impact on the students taught. Because the relationship between teacher and student is similar to that of nurse or exercise physiologist and patient, the effect of appearance and physical fitness may have comparable impacts on patients.

Influence of Role Models

Lockwood, Chasteen and Wong (2005) studied the kinds of role models young and old subjects reported using to help change health-related behaviors. Participants were split into two groups; young and old. The young participants consisted of 72 individuals that had a mean age of 20.82 ± 2.03 , ranging from 18 to 25 years old. The old participants were 48 individuals that had a mean age of 65.69 ± 4.14 , ranging from 60 to 75 years old. These participants were asked to describe a person who had influenced them to change or modify a health related behavior. The person could have motivated them by setting a good or bad example. Most behavior changes were related to diet, exercise, psychological outlook, smoking, alcohol, sleep and substance abuse. Based on whether or not individuals did these things they were considered healthy or unhealthy. If an individual exercised regularly, had a positive psychological outlook and did not smoke, the individual would be considered a healthy role model. It was found that young adults were

motivated by the healthy examples and older adults were motivated by both the healthy and the unhealthy examples.

According to Lockwood, Sadler, Fyman, and Tuck (2004), when individuals are trying to stop engaging in detrimental behavior, a negative model can be most effective. The opposite is true of individuals trying to start a new behavior such as exercise. Positive role models are more influential to help the individual to begin exercising. The researchers also studied whether positive role models or negative role models had a difference in motivation to change health behaviors in individuals. This study suggests that preferences for positive and negative health-related role models differ across the life span. Young adults were more likely to mention examples of positive rather than negative role models who had motivated them in the past and also reported that positive role models were more motivating than negative role models. However, older participants were equally likely to mention examples of positive and negative role models who had motivated them in the past and reported that negative role models would be just as motivating as, or more motivating than positive role models. The conclusions of this research are that young people are more likely to be motivated by healthy, fit individuals and older people find healthy and unhealthy examples to be equally motivating.

Researchers Boise, Sarrazin, Brustad, Trouilloud and Cury (2005) examined whether mothers' and fathers' physical activity involvement and beliefs about their child's physical ability could predict the child's own self-perceptions of ability and the time their children spent participating in physical

activity (PA). The subjects consisted of 152 families that had a mother, a father and at least one child. The mean age for the children that participated in the research was 9.5 ± 0.8 years of age. No siblings were used in this research. The children's competence in physical activity was assessed using the Perceived Physical Competence Scale for Children. The PA of the children was assessed by parents' reports of their child's PA and a recall of PA by children. Parental perceptions of the child's ability in PA were measured using the mothers' perceptions of their child's physical competence scale. The parents' PA was measured with a one week recall similar to the one that the parents used to evaluate their child's PA.

It was found that mothers' but not fathers' involvement in physical activity was related to their child's involvement in PA. Similarly, mothers' and not fathers' perceptions of their child's competence predicted their child's perceived physical competence 12 months later. The researchers attributed this to the fact that mothers' socialization influence is greater with younger children due to their extensive involvement in their child's daily activities.

Conclusion

In conclusion, there has been limited research completed concerning role modeling and health professionals, with most of the focus being on physical educators, nurses, and children. Cardinal (2001) found that physically active individuals with lower BMIs had more positive attitudes toward role modeling than those who were physically inactive with higher

BMI. Research conducted with nurses found that nonsmoking nurses had a more positive attitude toward role modeling than the smoking nurses. Medical students were found to be more confident and more likely to counsel patients when they were physically active. Exercise physiology students were compared to nurses and found to exhibit healthier behaviors than the nursing students. When researchers examined the effect of appearance on the ability of students to learn, it was found that the teachers that appeared healthier were more effective teachers than the teachers that appeared unhealthy. The influence of role models is different based on the age of the individual being influenced. Young people are more motivated by healthy or positive models and older adults are equally motivated by positive and negative role models. Children's physical activity can be predicted by the amount of physical activity the mother engages in. It was found that the fathers' level of physical activity was not as significant.

More research needs to be completed to better understand health professionals' attitudes toward role modeling. If individuals working with patients do not believe it is important to role model positive health behaviors, role modeling will not take place or will be less likely to be practiced as seen in several of the studies reviewed. It is important to understand attitudes about role modeling in a health care setting in order to ensure that patients are getting the best care. The present research will improve the understanding of individuals' attitudes toward role modeling in the

cardiopulmonary rehabilitation setting. To the author's knowledge, no known research has been conducted in this area.

CHAPTER III

METHODOLOGY

The purpose of this study was to determine the relationship between attitudes toward role modeling, physical activity levels and weight classification of cardiopulmonary rehabilitation professionals. Specifically, this study attempted to answer the following five questions:

1. What percentage of cardiopulmonary rehabilitation staff engage in regular physical activity, stretching, exercise and weight training?
2. What percentage of cardiopulmonary rehabilitation staff are underweight, acceptable weight, overweight, and obese?
3. Do cardiopulmonary rehabilitation staff who regularly engage in physical activity have different attitudes toward role modeling, compared to cardiopulmonary rehabilitation staff who do not regularly engage in physical activity?
4. Do underweight and acceptable weight cardiopulmonary rehabilitation staff have different attitudes toward role modeling, compared to overweight and obese cardiopulmonary rehabilitation staff?
5. Do different professions within cardiopulmonary rehabilitation have different levels of physical activity, BMIs, and attitudes toward role modeling?

Study Population

Members and staff that work with members of the Illinois Society for Cardiopulmonary Health and Rehabilitation (ISCHR) were surveyed. For inclusion, individuals were required to currently be practicing in the field as an exercise physiologist or specialist, nurse, respiratory therapist, or physician. The sample consisted of 126 individuals.

Survey Instrument

The survey instrument (Appendix A) was a modified version of the Attitude Toward Role Modeling Scale developed by Cardinal (2001). The instrument was a 16-item scale designed to measure attitudes regarding the importance of role modeling physical activity and fitness behaviors among CR professionals. Permission was given by Cardinal (personal communication, 2005) to use and modify the Attitude Toward Role Modeling Scale for cardiopulmonary rehabilitation staff. Modification of the instrument for the present study included only minor changes to adapt the scale to the population being surveyed. Cronbach statistics were performed on the questions that had been modified to determine if the questions were still valid and measured attitude toward role modeling. The Cronbach coefficient alpha for the 17 items on the modified scale was 0.96, the same that was calculated for the initial questionnaire by Cardinal (1998). The role modeling score was calculated by totaling the scores for each question. A Likert scale of one to

five was used to assess attitude toward role modeling. One represented "strongly disagree" and five represented "strongly agree, with three being "neutral."

Four questions were asked about flexibility, physical activity, exercise, and muscular conditioning. The questions were based on the ACSM recommendations for the number of days per week each activity should be completed. These questions asked if the subjects performed flexibility training two or more days per week, regular physical activity on most days of the week, aerobic exercise three or more days per week, and resistance training two or more days per week. See Appendix A questions 28-31 to view the exercise activity questions.

A brief section to collect demographic information was included. Age, race, gender, height, weight, years in their current profession, highest level of education, degree and professional title were all included in the demographics section (Appendix A 18-26). Height and weight were used to determine the subject's BMI.

Measurement

In order to measure role modeling attitudes, Cardinal et al (1998) created a tool to assess this variable. The Attitude Toward Role Modeling Scale was developed to assess attitudes regarding the importance of role modeling in physical activity and wellness among physical educators. The scale consists of 16 items and was reviewed for content validity by a panel of

experts. To develop the scale, the researchers went through five stages including: a generation of items; testing of initial items; first expert review; testing of revised questionnaire; and second expert review. No participant was included in more than one stage. Items for the questionnaire were generated in three different ways. Two professionals who had published in the area were consulted and the literature was reviewed. Seven students in HPERD also helped to generate items. From these individuals, 30 potential statements about role modeling were created.

The initial 30 statements were given to a sample of 23 students in HPERD and the statements were evaluated. The items that had high item-total correlations were retained and the other statements, which everyone clearly agreed or disagreed, were disregarded. A total of 15 items were kept. These 15 items were reviewed by six professionals, and four items were retained, nine items modified, two items eliminated and seven items were added.

The 20 statements that came out of the review by professionals were administered to 22 graduate students in HPERD. Statements were evaluated and those with high item-total correlations were retained while four items were removed after this step. For the 16 items that remained, the Cronbach coefficient alpha was .95 and the split-half reliability was .97. The 16 items were distributed to two professionals and based upon feedback; all items were retained for the final questionnaire. Expert review by professionals in the field determined the scale had face validity. A preliminary analysis supported

the internal validity of the scale. The instrument utilizes a Likert Scale. The role model attitude score is calculated as the sum of each number that corresponds to the answer given by the participant.

Procedures

Surveys were distributed via email (Appendix B) with a link to the web-based survey in the email to all members of the Illinois Society of Cardiopulmonary Health and Rehabilitation. A total of 126 individuals were contacted. The president of the Illinois Society of Cardiopulmonary Health and Rehabilitation approved the use of members' email addresses. The members of the society were instructed to distribute the online questionnaire to their fellow staff members in cardiopulmonary rehabilitation. By completing the questionnaire, informed consent was given by the participant to participate in the research. The participants were given two weeks to complete the questionnaire. A reminder email (Appendix C) was sent to encourage responses from people who had not yet completed the survey.

Height in inches was self-reported and then converted into meters. Weight in pounds was also self-reported and then converted into kilograms. Body mass index (BMI) was calculated by dividing the weight in kilograms by height in meters squared. Body mass index and role modeling (RM) score of physical activity were evaluated using SPSS.

Problems with Data Collection

There were complications with the online data collection. Due to problems with the web-based survey being posted online, data was lost. Lack of data collection occurred for one week. The sent surveys were not able to be retrieved after the initial email was sent. The program written by the Center for Academic Technology Support at Eastern Illinois University had problems initially with establishing a database where the data could be collected. After finding out that the data collection program did not work, the program was fixed. Another email was sent explaining the situation and requesting that the participants fill out the survey again.

Analysis

The analysis was approached by research question. Means, standard deviations and percentages for the following criteria were calculated; gender, BMI, age, years in current profession, degree, highest level of education, race, and professional title.

To answer the first and second research questions, the cardiopulmonary rehabilitation professionals' demographics were analyzed by dividing the professionals into groups according to the following criteria; those that engage in regular physical activity, stretching, exercise, and weight training. Next, the cardiopulmonary rehabilitation professionals were divided into the following groups based on BMI; underweight, acceptable weight, overweight, and obese. The third research question analyzed the RM scores

of the different categories of exercise (stretching, physical activity, exercise and weight lifting) using an independent t test. The level of significance was set at $p \leq .05$. Each exercise group of participants was compared to the RM scores. RM scores of the subjects that answered 'yes' to the stretching, physical activity, exercise and weight lifting questions were compared individually to the subjects that answered 'no' to the physical activity questions using an independent t test. The fourth research question analyzed the RM scores of underweight and acceptable weight professionals to those that were overweight or obese using an independent t test. The final research question addressed the different professions within cardiopulmonary rehabilitation. Exercise physiologists' and nurses' RM scores were compared using an independent t test on SPSS (Version 13) to determine if different professions had different attitudes toward role modeling. Also, each professional area was assessed for physical activity level, the physical activity subgroups of each profession were individually compared to the RM scores with an independent t test.

CHAPTER IV

RESULTS

The purpose of this study was to determine the relationship between attitudes toward role modeling, physical activity levels, and weight classification of cardiopulmonary rehabilitation professionals. Specifically, this study attempted to answer the following five questions:

1. What percentage of cardiopulmonary rehabilitation staff engage in regular physical activity, stretching, exercise and weight training?
2. What percentage of cardiopulmonary rehabilitation staff is underweight, acceptable weight, overweight, and obese?
3. Do cardiopulmonary rehabilitation staff who regularly engage in physical activity have different attitudes toward role modeling, compared to cardiopulmonary rehabilitation staff who do not regularly engage in physical activity?
4. Do underweight and acceptable weight cardiopulmonary rehabilitation staff have different attitudes toward role modeling, compared to overweight and obese cardiopulmonary rehabilitation staff?
5. Do different professions within cardiopulmonary rehabilitation have different levels of physical activity; mean BMIs, and attitudes toward role modeling?

Subject Descriptives

Of the 126 subjects contacted, 55 participated in the study. The response rate was 44%. Table 1 shows the demographic data for the subjects. The numbers in the table represent those participants that responded to each question. The total number varies due to missing data for each specific question. The average age of the subjects was 45.3 ± 9.07 years. The average years that the subjects served in their profession was 16.84 ± 8.67 years. Fifty-four subjects were Caucasian, and one subject did not specify race on the questionnaire. Of the 52 participants that answered the question regarding the position they held, the sample consisted of 27 nurses, 17 exercise physiologists, 3 respiratory therapists, no physicians and 5 subjects held job titles not listed on the questionnaire. Because there were no physicians and only 3 respiratory therapists they were not included.

Table 1:

Sample Size Shown by Gender, Profession and Degree

Gender

n=54	<i>Male</i>	<i>Female</i>
number	10	44
percent	19%	81%

Profession

n=53	<i>RN</i>	<i>EP</i>	<i>RT</i>	<i>MD</i>	<i>Other</i>
number	27	17	3	0	6
percent	51%	32%	6%	0%	11%

Degree

n=50	<i>AS</i>	<i>BS</i>	<i>MS</i>	<i>PhD</i>	<i>MD</i>	<i>Other</i>
number	5	22	21	1	0	1
percent	10%	44%	42%	2%	0%	2%

Note. RN=Registered Nurse, EP=Exercise Physiologist, RT=Respiratory Therapist, MD=Medical Doctor, AS=Associate's Degree, BS=Bachelor of Science, MS=Master of Science, PhD=Doctor of Philosophy, MD=Medical Degree

Exercise Activity of Subjects

An overwhelming number of cardiopulmonary rehabilitation professionals engaged in regular exercise. Eighty-nine percent (n=48) of the subjects stretch the major muscle groups two or more days per week, 80% (n=43) accumulated 30 minutes or more of moderate-intensity physical activity on most or all days of the week, 89% (n=48) engaged in aerobic activities at a moderate-to-high intensity level, for at least 20 minutes three or more days per week, and 82% (n=44) completed strength training on the major muscle groups two or more days per week.

When analyzing data by areas of profession, exercise physiologists (n=17) had very high levels of activity. One hundred percent (n=17) stretch two or more days per week, 65% (n=11) accumulate at least 30 minutes of physical activity on most or all days of the week, 94% (n=16) engage in aerobic activities at a moderate-to-high intensity level for at least 20 minutes three or more days per week, and 82% (n=14) complete strength training for the major muscle groups two or more days per week. Eighty-two percent (n=22) of the nurses stretch two or more days per week, 82% (n=22) accumulate at least 30 minutes of physical activity on most or all days of the week, 82% (n=22) engage in aerobic activities at a moderate-to-high intensity level for at least 20 minutes three or more days per week, and 85% (n=23) complete strength training for the major muscle groups two or more days per week (Table 2).

Table 2:

Exercise Activities

	Total group		Exercise Physiologists		Nurses	
	n=54		n=17		n=27	
	Number	Percent	Number	Percent	Number	Percent
ST	48	89%	17	100%	22	82%
PA	43	80%	11	65%	22	82%
EX	48	89%	16	94%	22	82%
WL	44	82%	14	82%	23	85%

Note. ST=stretch two or more days per week, PA=accumulate at least 30 minutes of physical activity on most or all days of the week, EX=engage in aerobic activities at a moderate-to-high intensity level for at least 20 minutes three or more days per week, WL=perform weight lifting or strength training for the major muscle groups two or more days per week.

BMI Classification

According to the ACSM (2005) BMI classification, less than 20 kg/m² is considered underweight, 20.1 to 24.99 kg/m² is considered acceptable weight, 25.0 to 29.99 kg/m² is considered overweight, and above 30.0 kg/m² is considered obese. Thirty-one subjects in this study were acceptable weight (58%), five were underweight (9%), 13 were overweight (25%), and four

subjects were obese (8%). Seventy percent (n=12) of the exercise physiologists were acceptable weight. Twelve percent (n=2) were overweight, 12% (n=2) were underweight, and 6% (n=1) were obese. Seven percent (n=2) of nurses were underweight, 56% (n=15) were acceptable weight, 26% (n=7) were overweight, and 11% (n=3) were obese (Table 3).

Table 3:

Body Mass Index Classification

Total group n=53		Exercise Physiologists n=17		Nurses n=27		
mean=24.3 SD=0.44		mean=24.8 SD=0.62		mean=23.3 SD=0.74		
	Number	Percent	Number	Percent	Number	Percent
UW	5	9%	2	12%	2	7%
AW	31	58%	12	70%	15	56%
OW	13	25%	2	12%	7	26%
OB	4	8%	1	6%	3	11%

Note. SD=Standard deviation, UW=underweight, AW=acceptable weight,

OW= overweight, OB=obese.

Role Modeling and Physical Activity

A t test showed no significant differences found between RM scores of all subjects that stretched and did not stretch (p=0.153); RM scores of subjects that were physically active and not physically active (p=0.158); RM

scores of subjects that exercised and did not exercise ($p=0.318$); and RM scores of subjects that performed strength training and those that did not perform strength training ($p=0.598$). There was a significant difference found ($p=0.027$) between exercise physiologists' RM scores that were physically active compared to those that were not physically active. There was no significant difference between exercise physiologists RM scores that exercised and those that did not exercise ($p=0.740$) and no significant difference between RM scores of exercise physiologists that performed weight training and those that did not ($p=0.228$). RM scores for nurses that stretched compared to non stretchers ($p=0.204$), physically active nurses versus non-physically active nurses ($p=0.784$), nurses that exercised versus non exercisers ($p=0.317$) and those that performed weight training versus not ($p=0.682$) were not significantly different (Table 4).

Table 4:

Significance of Role Modeling with Exercise

	Total group		EP		RN	
	n=53		n=16		n=27	
	mean=70.09		mean=73		mean=68.4	
	SD=1.46		SD=1.94		SD=2.57	
	p value	t value	p value	t value	p value	t value
ST vs non ST	0.153	1.67	NA	NA	0.204	1.484
PA vs non PA	0.158	1.31	0.027	0.86	0.784	-0.278
EX vs non EX	0.318	1.14	0.740	-0.37	0.317	1.183
WT vs non WT	0.598	0.46	0.228	1.55	0.682	0.417

Note. EP=exercise physiologists, RN=nurses, SD=standard deviation, ST=stretch two or more days per week, PA=accumulate at least 30 minutes of physical activity on most or all days of the week, EX=engage in aerobic activities at a moderate-to-high intensity level for at least 20 minutes three or more days per week, WL=perform weight lifting or strength training for the major muscle groups two or more days per week.

Role Modeling and Body Mass Index

The subjects were divided into two groups: the underweight/acceptable weight participants and the overweight/obese participants. An independent t-test was run to determine if the role modeling scores of the underweight/acceptable weight group differed from those of the overweight/obese group. Results indicated that the groups were not statistically different ($p=.682$). There were no significant differences between RM scores of underweight/acceptable weight and overweight/obese nurses and exercise physiologists ($p=0.158$). The mean RM score for the underweight/acceptable weight group was 72.53 ± 6.78 and the mean RM score for the overweight/obese group was 64.75 ± 15.61 .

The specific positions held by CR professionals had different levels of physical activity, and different mean BMIs. The nurses had fewer individuals in the underweight/acceptable weight (63%, $n=17$) compared to the exercise physiologists (82%, $n=14$). The mean RM score for the exercise physiologists was 73.00 ± 7.75 and the mean RM score for the nurses was 68.37 ± 13.35 .

Summary

In the present study, the majority of the subjects participated in physical activity on most or all day of the weeks for at least 30 minutes and exercised at a moderate-to-high intensity level three or more days per week for at least 20 minutes. The majority of subjects performed strength training exercises on 8-10 different muscle groups two or more days per week and

stretched the major muscle groups at least two times per week. The subjects were mostly underweight and acceptable weight (66.7%).

It was found that the relationships between role modeling and stretching ($p=0.153$), role modeling and physical activity ($p=0.158$), role modeling and exercise ($p=0.318$), and role modeling and weight lifting ($p=0.598$) were not significant for the subjects surveyed. The exercise physiologists that accumulated 30 minutes or more of moderate-intensity physical activity on most or all days of the week did have a more positive attitude toward role modeling ($p=.027$) than the exercise physiologists that did not accumulate 30 minutes or more of moderate-intensity physical activity on most or all days of the week. This was the only significant difference found.

CHAPTER V

DISCUSSION & RECOMMENDATIONS

The purpose of this study was to determine the relationship between attitude toward role modeling, physical activity levels and weight classification of cardiopulmonary rehabilitation professionals.

The 55 subjects were members of the Illinois Society of Cardiopulmonary Health and Rehabilitation and staff that work with the members of the society. Data collection was completed through an online survey during February 11, 2006 through March 21, 2006.

Summary of Major Findings

In the present study, the majority of the subjects participated in physical activity and exercise. A great majority of the subjects stretch the major muscle groups two or more days per week, accumulate 30 minutes or more of moderate-intensity physical activity on most or all days of the week, engage in aerobic activities at a moderate-to-high intensity level, for at least 20 minutes 3 or more days per week, and perform at least one set of 8-12 repetitions of muscular development activities, e.g., calisthenics, weight lifting, on 8-10 different major muscle groups of the body, 2 or more days per week. Cardiopulmonary rehabilitation professionals participate in exercise and physical activity at a much higher rate than the general population. This

supports Cardinal's (2001) findings on HPERD professionals. According to the Center for Disease Control (2005), more than 50% of the general population does not get the recommended levels of physical activity.

The rates of obesity and being overweight are much less in cardiopulmonary rehabilitation professionals compared to the general population. The subjects were mostly underweight and acceptable weight. Very few of the participants were overweight or obese. Cardinal (2001) also found that HPERD professionals and preprofessionals were less obese and overweight than the general population. According to the Center for Disease Control (2005), more than 50% of the general population is overweight and 20% of the population is obese compared to 24.1% (overweight) and 7.4% (obese) in the study population.

It was predicted that a higher RM score would be obtained with subjects that participate in physical activity. The exercise physiologists that accumulated 30 minutes or more of moderate-intensity physical activity on most or all days of the week did have a significantly more positive attitude toward role modeling ($p=.027$) than the exercise physiologists that did not accumulate 30 minutes or more of moderate-intensity physical activity on most or all days of the week. However, findings of this study did not support the hypothesis that a higher RM score would be associated with higher levels of physical activity and healthy BMIs for the entire group of participants. The exercise physiologists that were physically active did have more positive attitudes toward role modeling.

No link was found with physical activity and role modeling due to several limiting factors associated with cross-sectional studies. The data was self-reported, confusion over item interpretation, non-response bias and a low response rate of only 44%. Due to the low rates of inactivity and low rates of obesity and overweight, those that chose to participate may have had lower BMIs and participate in more physical activity than the individuals that chose not to participate. Though according to Cardinal's (2001) research findings, higher role modeling scores were associated with lower BMIs and higher levels of physical activity.

Discussion

The present data suggests that there was no relationship between role modeling attitudes and the two variables, physical activity behavior and BMI when professional groups were combined.

These findings differ from previous research comparing the present data to the past research. Cardinal et al (2001) found that HPERD professionals who were physically active had higher role modeling scores than those that were not physically active. According to the findings of the present research, physically active cardiopulmonary rehabilitation professionals did not have more positive attitudes toward role modeling than professionals that were not physically active. In Cardinal's research it was also found that lower BMIs were associated with more positive attitudes toward role modeling. The present research does not support Cardinal's

findings. There was no significant relationship between BMI and attitude toward role modeling. The only significant finding of this research was that exercise physiologists who are physically active most days of the week have more positive attitudes toward role modeling than the exercise physiologists that do participate in regular physical activity.

Because these findings do not support the current research, it is most likely due to the lack of diversity in the small sample size. The majority of the subjects were physically active and had BMIs in the healthy range. This could be due to several contributing factors. The cardiopulmonary professionals see and serve patients that have heart and lung disease. They know that by participating in physical activity that the risk of developing heart disease can be greatly reduced by making healthy choices in their own lives. Also, because the average role modeling scores were so high for the group of professionals surveyed it could be due to the fact that they want to convey to their patients that they are physically active, even if they do not follow the exact ACSM guidelines for exercise. If research was completed with a larger population, the findings of Cardinal (2001) could possibly be confirmed.

Comparing the results of the current study to the research in the literature review, similar results were found. Dalton & Swenson (1986) found that nonsmoker and former smoker nurses were more likely to counsel patients about healthy lifestyle choices than nurses that smoke. Although no questions were asked about smoking behaviors in the current research, physical activity, a health behavior was addressed. Because the sample of

individuals was very active, it can be assumed that they are more likely to counsel their patients about the benefits of choosing healthy lifestyle behaviors. The research done by Abramson et al (2000) and Rogers et al (2005) demonstrated that health professionals were more confident and were more likely to counsel their patients if they were physically active and understood the subject matter. This could explain why the exercise physiologists had more positive attitudes toward role modeling because exercise physiology is the focus of their education where nurses do not focus on exercise as part of their curriculum. The results also matched those of Kamwendo and Jansson (2000) that exercise physiologists had healthier behaviors than nurses. Again, this is most likely due to the background of their education and personal experiences with physical activity.

Mellville and Maddalozzo (1988) and Dean et al (2005) found that students taught by physical educators that appeared healthy learned better than those that were taught by instructors that appeared unfit. The health professionals in the current study are more likely to be healthy models and good teachers because of their healthy lifestyle choices and how important they believe being physically active is to staying healthy.

Recommendations

Further research should strive for a greater number of participants and a more diverse population of subjects. There were only 55 subjects in the present study, which limited the analysis of data. Additional research should

include an overall physical activity score that could improve the ability to compare the role modeling score to physical activity levels.

Conclusions

Given the importance of physical activity for the long-term health benefits, this study investigated the attitude toward role modeling by cardiopulmonary rehabilitation professionals. Because no significant relationship was found between physical activity participation and role modeling, the previous studies' results cannot be confirmed. According to the results of this study, increased levels of physical activity and BMI values in the healthy range do not predict more positive attitudes toward role modeling.

An overwhelming number of cardiopulmonary rehabilitation professionals participate in exercise activities. Although the hypotheses were not confirmed in this research, it was found that the health professionals surveyed that work in cardiopulmonary rehabilitation place a large emphasis on incorporating physical activity in their own lives. They also believe it is very important to model their health behaviors to their patients.

The patients are most likely responsive to the behaviors of the health professionals like the students are to healthy teachers. They learn better from those that appear healthy. According to Lockwood, Chasteen and Wong (2005) older adults respond to healthy role models to change a health behavior in a more positive way.

In conclusion, the health professionals in cardiopulmonary rehabilitation model healthy behaviors to their patients and are much more physically fit on average when compared to the general population.

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Appendix A

Survey

Please circle the response to each statement below that most closely corresponds to your beliefs.

1. It is not enough to simply stay current in the field, cardiopulmonary rehabilitation (CR) staff must also "practice what they preach."

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2. Involvement in regular physical activity at a level sufficient to promote health-related physical fitness is a desirable and recommended behavior for *doctors*.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

3. It is important for individuals working in CR to perform at least one set of 8-12 repetitions of muscular development activities, e.g. calisthenics, weight lifting, on 8-10 different major muscle groups of the body, 2 or more days per week.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

4. Involvement in regular physical activity at a level sufficient to promote health-related physical fitness is a desirable and recommended behavior for *nurses*.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

5. Role modeling is a powerful teaching tool for the CR staff.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

6. To graduate with a *medical* degree, students should pass a health-related physical fitness test.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

7. To graduate with a *nursing* degree, students should pass a health-related physical fitness test.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

8. To graduate with an *exercise science* degree, students should pass a health-related physical fitness test.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

9. It is important for the CR staff to engage in aerobic activities, e.g. bicycling, jogging, at a moderate-to-high intensity level, for at least 20 continuous minutes, 3 or more days per week.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

10. Involvement in regular physical activity at a level sufficient to promote health-related physical fitness is a desirable and recommended behavior for *exercise physiologists/specialists*.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

11. It is important for CR staff to maintain a healthy body fat percentage.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

12. It is important for CR staff to role model physical activity and fitness promoting behaviors.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

13. It is important for CR staff to accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week.

Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

14. CR staff that regularly participate in physical activity and fitness promoting behaviors increase their career opportunities.

Strongly Agree Disagree Neutral Agree Strongly Agree
 1 2 3 4 5

15. As a part of their job, CR staff must model physical activity and fitness promoting behaviors.

Strongly Agree Disagree Neutral Agree Strongly Agree
 1 2 3 4 5

16. To be effective, CR staff must model physical activity and fitness promoting behaviors.

Strongly Agree Disagree Neutral Agree Strongly Agree
 1 2 3 4 5

17. It is important for CR staff to stretch the major muscle groups of the body, 2 or more days per week.

Strongly Agree Disagree Neutral Agree Strongly Agree
 1 2 3 4 5

18. Height: _____ 19. Weight: _____ 20. Age: _____

21. Gender: _____ 22. Years in current profession: _____

23. Education

24. Race/Ethnicity

B.S.	1
M.S.	2
Ph.D.	3
MD/OD	4
Other: _____	5

White	1
Black/African American	2
Native American	3
Pacific Islander	4
Hispanic	5
Asian	

25. Degree

Physical Education
1
Exercise Physiology
2
Exercise Science
3
Kinesiology
4
Nursing
5
Respiratory Therapy
6
Medicine
7
Other: _____

26. Title

Exercise Physiologist
1
Nurse
2
Physician
3
Respiratory Therapist
4
Other: _____

Please circle the appropriate answer regarding your own physical activity.

28. I stretch the major muscle groups of the body, 2 or more days per week.

Yes No

29. I accumulate 30 minutes or more of moderate-intensity physical activity on most or all days of the week.

Yes No

30. I engage in aerobic activities at a moderate-to-high intensity level, for at least 20 minutes 3 or more days per week.

Yes No

31. I perform at least one set of 8-12 repetitions of muscular development activities, e.g., calisthenics, weight lifting, on 8-10 different major muscle groups of the body, 2 or more days per week.

Yes No

32. If you responded to any question "No," please list reasons why you do not participate in regular physical activity.

Appendix B

Email to Participants

Hello,

This email is to inform you about a research opportunity for you and your staff. Please open the attachment and follow the instructions to complete the online survey about how cardiopulmonary rehabilitation staff view role modeling and physical activity. The survey is brief and will only take about 10 minutes to complete. This research is supported by the Illinois Society of Cardiopulmonary Health and Rehabilitation and is for a graduate thesis project at Eastern Illinois University. Your participation is greatly appreciated.

Sincerely,

Emily Dufrene

Graduate Student

Eastern Illinois University

Appendix C

Email Reminder to Participants

Dear participants,

I would like to thank those of you that have filled out the online survey for my graduate research regarding attitudes toward role modeling and physical activity behavior. I greatly appreciate it.

For those of you that haven't, I understand schedules are extremely busy but I really need the responses in order to proceed with my research. Please take 10 minutes to fill out the survey. Please follow the link below to the survey.

<http://cats.eiu.edu/dufrene/survey.html>

Sincerely,

Emily Dufrene

Graduate Student

Eastern Illinois University

41	1	2	2	2	2	2	2	1	2	2	2	2	3	3	2	2	2	34
42	5	5	5	5	5	3	3	3	4	4	4	4	4	3	4	3	4	68
43	4	4	3	4	4	3	3	4	4	4	4	4	4	4	4	4	65	
44	5	5	5	5	5	3	3	4	5	5	5	5	5	4	5	5	78	
45	5	5	5	5	5	3	3	3	2	4	4	4	3	4	4	4	67	
46	5	5	5	5	5	3	3	3	4	4	4	5	2	3	4	4	68	
47	5	5	5	5	5		3	3	4	4	4	4	4	4	4	4	67	
48	4	4	3	4	4	4	4	5	4	4	4	4	4	4	4	4	68	
49	5	5	4	5	5	2	2	3	5	5	5	4	5	4	4	4	71	
50	5	5	4	5	5	4	4	4	5	5	4	5	5	4	3	4	75	
51	5	4	5	5	5	4	4	5	5	5	4	5	4	5	5	5	80	
52	4	4	4	4	4	3	3	4	4	4	4	4	4	4	3	4	65	
53	5	5	4	5	5	2	2	2	5	5	4	5	4	4	3	3	68	
54	5	4	4	4	5	4	4	4	4	5	4	5	4	4	4	4	72	
55	5	5	5	5	5	3	3	5	5	5	5	5		5	5			

subj	ht	wg	BMI	age	gend	yrs	edu	other	race	degree	other	title	other
1	64	115	19.78	48		19	4		1	1		1	
2	68	130	19.81	29	1	5	3		1	3		1	
3	67	128	20.09	40	1	18	3		1	2		1	
4	66	126	20.38	50	1	26	3		1	2		1	
5	66	130	21.03	28	1	6	3		1	3		1	
6	62	123	22.54	31	1	5	3		1	2		1	
7	69	153	22.64	31	2	7	2		1	3		1	
8	63	128	22.72	40	1	3	2		1	2		1	
9	75	184	23.05	54	2	33	3		1	2		1	
10	65	140	23.35	46	1	18	2		1	3		1	Exercise Specialist
11	63	132	23.43	26	2	1	3		7	3		1	
12	66	145	23.45	39	1	12	3		1	3		1	
13	70	168	24.16	39	2	15	3		1	2		1	
14	72	180	24.46	31	2	9	3		1	2		1	
15	70	175	25.16	33	2	9	3		1	2		1	EP & Supervisor
16	74	229	29.46	45	2	23	3		1	2		1	
17	66	190	30.73	50	1	16	3		1	3		1	
18	66	120	19.41	46	1	13	2		1	5		2	
19	64	114	19.92	45	1	23	2		1	5		2	
20	69	143	21.16	52	1	10	1		1	5		2	
21	62	118	21.63	60	1	15	3		1	5		2	
22	66	137	22.16	51	1	7	1		1	5		2	
23	66	140	22.64	42	1	23	2		1	5		2	
24	74	178	22.90	55	2	20	2	BSN and BS	1		nursing and biology	2	
25	64	134	23.05	52	1	23	2		1	5		2	
26	63	130	23.08	58	1	5	2	RN	1	5		2	
27	67	150	23.54	40	1	15	2		1	5		2	
28	67	150	23.54	48	1	24	2		1	5		2	

29	67	148	23.58	48	1	14	6	Diploma RN	1	5		2
30	64	138	23.74	49	1		6	diploma w/ A.A, RN	1	5		2
31	64	140	24.08	50	1	9	6	diploma rn	1	5		2
32	66	150	24.26	34	1	4	2		1	5		2
33	66	150	24.26	53	1	23	2		1	5		2
34	64	145	24.94	53	1	33	6	Diploma RN Program	1	5		2
35	62	140	25.66	52	1	30	2		1	5		Charge Nurse
36	64	150	25.80	46	1	24	2		1	5		2
37	66	160	25.88	35	1	14	2		1	5		2
38	65	160	26.68	43	1	21	3		1	5		2
39	62	150	27.49	50	1	25	2		1	5		2
40	59	140	28.34	48	1	23	2		1	5		2
41	64	165	28.38	51	1	30	2		1	5		2
42	64	177	30.45	62	1	18	3		1	5		2
43	64	180	30.96	62	1	20	1		1	5		2
44	56	145	32.58	47	1	27	2		1	5		2
45	64	104	17.89	53	1	27	1		1	6	RPFT, RCP	4
46	66	142	22.97	52	1	16	2	BA	1	6		4
47	67	170	26.68	41	1	8	1		1	6		4
48	67	141	22.13	38	1	16	3		1	3		5 Manager
49	68	150	23.19	53	1	25	3		1	2		5 manager
50	62	135	24.74	30	1	1	6	Certificate	1			Rehab Assistant
51	56	124	27.86	46	1	15	2	B.S.N./M.S.	1	8	Nursing/Ex.Physiology	Staff RN/EP
52	66	180	29.11	46	1	21	3		1	2		Program Manager
53		150	9999	54	1	20	3		1	2		Clinical Coordinator
54	75	184	23.05	54	2	33						
55	73	220	29.09	33	2	10	3		1	2		

S.Deg.	Surv	PA	Aerob	Wthr	Rstis	
1	1	1	1		1	
2	1	1	1		1	
3	1	1	1		1	
4	1	2	1		1	I don't exercise every day anymore so I don't get hurt, but certainly 3 days per week.
5	1	2	1		2	Once out of college time is hard to find with work, husband and kids. I exercise 3 days

					per week for 30 min. on a treadmill. The treadmill is at my house and I do not have hand weights at home.
6	1	1	1	1	
7	1	1	1	1	
8	1	1	1	1	
9	1	1	1	1	
10	1	1	1	1	
					29. Regular physical activity is different from regular aerobic exercise, which I do participate in. 31. I do wtlifting on 6-7 different major muscle groups at least 2x/wk.
11	1	2	1	2	
12	1	1	1	1	
					I currently feel better working out at moderate-intensity levels then high intesity.
13	1	1	2	1	
14	1	1	1	1	
					I reserve higher intensity levels for training purposes. Not always training.
15	1	1	2	1	
16	1	1	1	1	
					I have had recent foot surgery on both feet (within last 4 months) that is really limiting my exercise right now.
17	1	2	2	2	
18	1	1	1	1	
19	1	1	1	1	
20	1	1	1	1	
21	1	1	1	1	
22	2	2	1	2	time constraints
					#28, I do pilates 2 days per week, but not necessairily stretch 2 or more days per week.
23	2	1	1	1	
24	1	1	1	2	I do weights on 6-8 muscle groups 3d/wk
					Availability of gym is miminum three days a week. In good weather I normally can raise the frequency to at least 4-5X per week.
25	1	2	1	1	
26	1	1	1	1	

27	1	1	1	1	
28	1	1	1	1	
29	1	2	1	1	I engage in 20 minutes aerobic, 40 minutes of strength training (20 minutes) and stretching/core strengthening 20 min. 3 x week. I jog or walk 20-30 minutes 1-2 days a week, down from 3 due to return to school and job. Also, back problems prevent me from
30	1	1	1	2	Weight lifting cause discomfort in my shoulder.
31	1	2	1	1	no time
32	1	1	1	1	
33	2	1	1	2	Not quite in the habit of strength training although I have in the Past
34	2	1	1	2	I concentrate on calorie burning with aerobic exercise to help with weight control.
35	1	1	1	1	
36	1	1	1	1	
37	1	1	1	1	
38	1	1	2	1	Arthritis problems.
39	2	1	2	1	
40	1	1	1	1	
41	1	1	1	1	
42	1	1	1	1	
43	1	2	2	2	Have gotten out of routine. Need to resume. Used to and stopped
44	1	1	1	1	
45	1	1	1	1	
46	1	2	1	1	I work 10 hour shifts 4 days a week and sometimes I am just to tired
47	1	1	1	1	
48	2	1	1	2	To sound like someone we work with daily... it is a time factor. I do 45 - 60 minutes of cardio daily and lack the

						motivation to do weight training. I have had a personal trainer before and that works best for me.
49	1	1	1		1	Occ miss due to work schedule or time.
50	1	1	1		1	
51	1	1	1		1	
52	1	1	1		1	
53	1	2	1		1	Can't get it in ALL days of the week
54						
55	1	1	1		1	