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Wellness Wednesday: Monitoring Lifestyle Changes Via the Transtheoretical Model

Mariah J. Bloom Ms.
University of Akron Main Campus, mjb166@zips.uakron.edu

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WELLNESS WEDNESDAY: MONITORING LIFESTYLE CHANGES VIA THE TRAINTHEORETICAL MODEL

Mariah Bloom

School of Sports Science and Wellness Education

Honors Research Project

Submitted to

The Honors College

Approved:

[Signature]
Honors Project Sponsor (signed)

Judith A. Juvenile (illegible)
Honors Project Sponsor (printed)

[Signature] Date 4/28/15
Reader (signed)

Larissa Kopper
Reader (signed)

[Signature] Date 4/28/15
Reader (printed)

Melissa A. Smith
Reader (signed)

[Signature] Reader (printed)

Accepted:

[Signature] Date 4/29/15
Department Head (signed)

Victor Pinheiro
Department Head (printed)

[Signature] Date 4/29/15
Honors Faculty Advisor (signed)

Judith A. Juvenile (illegible)
Honors Faculty Advisor (printed)

[Signature] Date
Dean, Honors College
ABSTRACT

Physical activity has been shown to improve cognition, functional and overall health indicators across the lifespan. Older adults are less likely to participate in physical due to barriers and risk related factors. Additionally, lower income, underserved populations experience added barriers as well. Interventions addressing negative health behaviors in these populations have rarely been implemented. PURPOSE: Using the Transtheoretical Model (TTM) behavior change theory, the purpose of this study was to determine if five, monthly educational and exercise classes targeting these populations will improve motivation levels and result in facilitating increases in physical activity levels. METHODS: One validated TTM survey was completed upon the first month’s visit. Through the following months, group exercises and educational materials were prepared according to a monthly theme. Three different locations received the two hour interventions each month for four months. During the last month’s meeting, the same surveys will be completed and used to compare the pre and post measurements of the participants. RESULTS: The results of this study showed that there were no significant differences in between pre and post survey data, ($p = 0.09$) However, none of the participants regressed to previous stages of change. CONCLUSION: The positive results of this study will be used to re-evaluate the Wellness Wednesday program and adjust strategies to enable continued participant engagement and adherence to recommended physical activity guidelines. Results suggest that programming appears to be successful with the small sample size evaluated in this study.
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Chapter I: INTRODUCTION

Obesity increases and physical activity decreases have been seen in the last 30 years in the nation (Boughter, 2006). The American Medical Association recognized this condition as an actual life altering disease that affects one of three Americans (Morris & Sholinsky, 2013). Research suggests that there is a high incidence of obesity and sedentary behavior in older adults including individuals of lower socio-economic status (SES). Many elderly face degenerative conditions that negatively impact their physical fitness acting as a barrier to staying active. The degeneration of skeletal muscle mass during the aging process is a normal process and is only intensified when inactivity takes place (Ikezoe, Mori, Nakamura & Ichihashi, 2012). When dealing with low socioeconomic populations, many environmental barriers exist that discourage regular physical activity. An example of a barrier in this population is the fear of exercising outdoors due various environmental safety issues (Meyer, Castro-Schilo, & Aguilar-Gaxiola, 2014). Obesity is a disease that can be combated through a behavior change of the implementation of regular physical activity.

Multiple different behavior change theories can be used change to develop interventions to facilitate healthy behavior changes. Studies utilizing the Transtheoretical Model have been done to observe the process in which individuals progress while changing behavior. Utilization of the TTM in adults has demonstrated successful healthy behavior changes. A study done by Marshall & Biddle (2001) focused on the physical activity changes of a random sample of the population who volunteered to take a part in the program. The TTM was utilized by self-report and the participants were given an unsupervised exercise regimen to take part in on their own (Marshall & Biddle, 2001). Study results showed advancement in the five stages of the TTM, mainly between the Preparation and Action phases. A study done by Prochaska & DiClemente(1982), using the
TTM, demonstrated success when used with a smoking cessation program. Use of the TTM and Stages of Change, a construct of TTM, along with a community based program such as Wellness Wednesday may prove successful in increasing adherence to regular physical activity in the elderly and lower socioeconomic populations.
Chapter II: REVIEW OF LITERATURE

Physical activity has been in the spotlight in recent years for improving many aspects related to health, including but not limited to the cognitive, functional and physical aspects. Taking part in regular physical activity can enhance the quality of life, make an individual more functional in their activities of daily living and decrease the risk of developing life altering or terminating diseases. The American College of Sports Medicine (ACSM) states that each part of physical fitness plays a part in influencing some aspect of health (Garber et al., 2011). No matter what age, sex or race, regular physical activity can be extremely beneficial across the lifespan. To increase or maintain a healthy body, it is recommended by the ACSM that there be at least thirty minutes of moderate intensity physical activity for at least five days a week or vigorous intensity for twenty minutes on three days per week. It is possible to complete the daily physical activity in ten minute bouts if that is easier for the client to accomplish. Resistance weight training should be performed for at least two to three times a week for maintenance (Garber et al., 2011).

In addition to the aforementioned physical activity guidelines, there are additional recommendations for the older adult population. In aging, it is apparent that functional ability and strength decrease greatly. Cardiovascular training or endurance training should be performed for 30 to 60 minutes a day for moderate intensity activity or 20 to 30 minutes per day for vigorous intensity exercise. The minimum amount of time recommended doing cardiovascular work for each week is 150 minutes. Resistance training is encouraged, contrary to what some of the population thinks. To assist in preserving muscle mass, strength training is a vital component. Weight training should be done at least two times a week. Flexibility exercises should be performed at least twice a week, as well. In addition, precautions should be taken against fall risks
by working on balance with older individuals (Chodzko-Zajko, 2014). Exercising regularly following these guidelines as age progresses will be beneficial for this population and their quality of life.

In the last 30 years, there has been a decrease in physical activity and an increase in obesity across the lifespan (Boughter, 2006). Physical activity levels decrease with age. More than half of the elderly population does not meet the required daily amount of physical activity (Troiano et al., 2008). Additionally, males tend to stay more physically active than females (Troiano et al., 2008).

Failing to meet the previously discussed guidelines for physical activity on a daily basis can negatively impact health. A sedentary lifestyle increases the risk for diseases such as coronary heart disease, osteoporosis and different types of cancer (Berstein, Morabia & Sloutskis, 1999). All of these diseases along with others like diabetes are associated with inactivity in the population. Risks of these conditions are lessened with daily physical activity, especially for the elderly population over 65 years old (Patel, Schofield, Kolt & Keogh, 2013). Obesity, a new defined disease as of 2013, can be a negative consequence of physical inactivity. Obesity can be defined as an individual having a BMI, or body mass index, greater than or equal to 30 kg/m². This measurement is taken by dividing an individual’s weight in kilograms by the square of the individual’s height in meters (NIH, 1998). The American Medical Association recognized this condition as an actual life altering disease that affects one of three Americans (Morris & Sholinsky, 2013).

Obesity and the other diseases mentioned do not affect physical health exclusively. The development of comorbidities increases healthcare costs and hospitalizations as well. Patients are paying more for healthcare due to the rise of obesity in the healthcare system. It was said that 5.7% of direct healthcare costs, amounting to $52 billion annually, are related to of obesity (Allison, Zannolli & Narayan, 1999). Around the age of 50 to 60 years, the percentage of obesity costs
compared to total cost in healthcare peaks at around 8 percent (Allison et al., 1999). Inactivity leading to obesity as aging takes place has monetary costs as well as physical costs to the body.

Even if an individual meets the requirements of physical activity, there is still a chance of developing metabolic diseases. When the remainder of the day is spent sitting or being sedentary, the risk increases. Due to the popularity and advancement of technology, being inactive throughout the day is a normal occurrence in the lives of many in today’s population. One study found that nearly all people stand and move around for at least one hour a day and many times more. Even so, if one spends the majority of the day sitting or being inactive, puts them at risk for disease in the future (Hamilton, Hamilton & Zderic, 2007). People who display this type of lifestyle are more at risk for coronary artery disease, elevated glucose, type II diabetes, high triglycerides and low amounts of HDL (Hamilton et al., 2007).

Occupation and age are contributing factors to increased amounts of sitting time throughout the day. Activity restricting jobs such as semi-truck drivers and telephone receptionists are sitting for almost their entire workday. Sedentary employees are seen to have twice the rate of CVD, or cardiovascular disease, than an employee with an active job, like a mail carrier (Hamilton et al., 2007). Aging causes individuals to become more sedentary, many people between the ages of 40 and 75 years of age spend at least four hours sitting per day, leading to a great decrease in energy expenditure (Gómez-Cabello et al., 2012). Inactivity has dangerous negative effects on the immune system of the elderly. Immunosenescence is the term used for the natural aging of the immune system (Simpson & Guy, 2009). The greatest suggestion for combating immunosenescence is regular physical activity. Sporadic physical activity, or doing the bare minimum, has suggested better health but chronic exercise has shown the best results, an increase of 44%, in T cell formation to build immunity in older adults (Simpson & Guy, 2009). In order to reap the most
benefits of exercise, especially dealing with immunity to diseases, it is best to remain active throughout the entirety of the day and not just during the minimum requirements by the ACSM.

The elderly population, people 65 years of age and older, make up 12 percent of the U.S. population and it is steadily growing for years to come (Lees, Clark, Nigg, & Newman, 2005). This group is faced with many barriers to aging and physical activity. Aging is viewed as an extremely negative process in our world today. Aging stereotypes give rise to negative self-perceptions and deter individuals from being confident enough to exercise in old age (Chalabaev et al., 2013). It has been suggested that elderly seem to believe that there is no benefit to exercise through old age and that they are incapable of doing any type of activity (Chalabaev et al., 2013). In one study it was found that 20% of people ages 60-78 years old had the perception that they were too old to exercise (Cohen-Mansfield, Marx & Guralnik, 2003). Fear is another factor that is a barrier to elderly adults when exercise is discussed. Degeneration of muscles and bone make older people more prone to falls and injury. Thirty percent of the elderly population report at least one fall within a year’s time, many cases leading to hospitalization, nursing home placement or even death (Tromp et al., 2001). Psychologically, dealing with confidence and fear, hampers an individual’s perception of their abilities to complete tasks, even activities of daily living.

More than 40% of adults age 65 and older, do not participate in any form of leisure, or enjoyable, exercise on their own (Cohen-Mansfield et al., 2003). The natural process of aging takes a toll on the body. From the ages of 45 and 70 years, there was a 20% decrease in the range of motion in the hip and a 10% decrease in the range of motion in the shoulder (Schultz, 1992). Along with range of motion limits, natural muscle degeneration takes place. The decline of skeletal muscle mass during the aging process is normal and is only intensified when inactivity takes place.
(Ikezoe et al., 2012). These inevitable processes can pose a big challenge for elderly to be physically active.

In addition to the aging population, another population that is frequently seen as inactive is that of the underserved, low socio-economic status (SES) population. These people usually deal with more of the environmental and social barriers to physical activity. The social barriers may be described as lack of support from friends or family, as well as economic status (Beighle & Morrow, 2014). Environmental barriers include weather and availability of resources to the community to promote physical activity. For example low-income neighborhoods have been deemed as “food deserts” because there is no access for the people to buy fresh and healthy produce (Sobal & Stunkard, 1989). Another barrier to this community is the fear of the environment and neighborhood, which prevents them from taking part in physical activity outdoors (Meyer et al., 2014).

Interventions to improve health typically implement some sort of behavior change model to follow throughout the process. Common models that are used in the health field are Health Belief Model, Cognitive/Information Processing, the Theory of Reasoned Action, Social Cognitive (Learning) Theory, Social Support Theories, Behavior Modification, Kanfer’s Parallel Self-Management Model, and the Transtheoretical Model or Stages of Change (Elder, Ayala & Harris, 1999). There are a variety of choices but many of the previously mentioned models overlap in constructs. Positive attitudes, willingness to change, and self-efficacy are just some of the major foci for behavior change.

The Transtheoretical Model (TTM) is a model used to conceptualize individuals as they intentionally engage in behavior change (Prochaska, 2013). This theory was created by Dr. James O. Prochaska in 1984. He created this model to compare different theories of psychotherapy and
behavior change while conducting a study, published in 1982, relating to smoking cessation (Prochaska, 2013). The Transtheoretical Model is a widely used tool in the healthcare field when clients are faced with a lifestyle change comparative to stopping smoking.

In the smoking study, Prochaska states that the most important thing that patients bring into the treatment with this model is positive expectations for him/herself (Prochaska & DiClemente, 1982). Therapists working with Dr. Prochaska also concluded that motivation for a lifestyle change in oneself and a warm trusting relationship between the patient and health professional are key preconditions before entering any behavioral change program (Prochaska & DiClemente, 1982). After conducting their study, the Transtheoretical Model was found to help patients facilitate particular change processes during the different five stages of change, specifically in the beginning stages of the model (Prochaska & DiClemente, 1982).

The Transtheoretical Model uses many constructs that associate with client based approaches to behavior change. The patient or client must have the desire, ability, and motivation to change. The professional is only there for guidance and encouragement. Constructs such as self-efficacy, social support, and knowing the difference between the positive and negative aspects of change are all significant while using the Transtheoretical Model when facilitating a behavior change (Yasunaga, Kawano, Kamahori & Noguchi, 2014). Self-efficacy is the belief in oneself to complete a task at hand (Dishman et al., 2005). Having this while using the TTM is critical in advancement through the stages since this is a self-motivated process.

Guidance is needed to navigate through the five stages of change in the TTM. The five stages progress in the following order: precontemplation, contemplation, preparation, action, and maintenance. Individuals can start anywhere on this ladder of stages when they are making a change. The first stage is Precontemplation. In this stage, the subject is unwilling to change or is not
even thinking about making a lifestyle change at all within the next six months (Prochaska, 2013). The next stage is Contemplation. During this stage, there is intention to change in the next six months (Prochaska, 2013). Costs and benefits are weighed, and in the individual’s mind, the benefits outweigh the costs. After the contemplation stage, preparation for the change is the next step of the model. Planning for the change is in progress during this step, and is measured by one month’s time (Prochaska, 2013). Once the planning is done, action stage is next. The action stage encompasses the act of change in process. The individual is doing what they said they wanted to happen and the change is observable. The adjustment is now considered a valid behavior change (Prochaska, 2013). Maintenance is the last stage of the Transtheoretical Model and is characterized by action taking place over a lengthy period of time. Ordinarily, the time associated with maintenance is six months from the time where action first began and that the individual is actively maintaining the change. When the time elapses to five years after this initial change, the person is less likely to relapse because the change is normality to them (Prochaska, 2013). It is very possible that individuals can go back and forth between stages as well. The Transtheoretical Model (TTM) is a cyclical, not linear, model.

The TTM is widely used in the healthcare field, and very frequently used for lifestyle changes such as regular physical activity, healthier diets or smoking cessation. In studies rating people by their stages of change, it was found that in Japanese, female undergraduate students, higher self-efficacy and positive views on exercising were prevalent in the women who were placed in the more active stages of the model, such as action and maintenance (Yasunaga et al., 2014). In another study done with older adults the same protocol that we have chosen was used. A simple four question survey was completed by older adults and after six months, they completed the survey once more. It was proposed that with implementation of a wellness coach, that from the
baseline survey to the post-treatment survey, 63% of the sample population had successfully progressed through the Transtheoretical Model stages of change (Lilienthal, Evans, Holm & Vogeltanz-Holm, 2014).

The TTM appears to be a successful model for many behaviors to facilitate desired health behavior changes in individuals across the lifespan. The purpose of this study was to determine if educational classes as well as physical activity sessions, performed once a month for five months would improve the activity levels of participants and if it further progresses them in the stages of change in the Transtheoretical Model. It was hypothesized that there would be minor improvements in the individual’s physical exercise levels showing little advancement through the five stages.
Chapter III: METHODS

Subjects:

Participants for the study were residents of income-based housing locations in Akron. These locations include: Towers I, Belcher, and Edgewood. The study population consisted of 10 males and 37 females, ages 40 to 80 years. The average BMI of the population sample was 33.1 kg/m², classifying the average of the population as obese. Participants were excluded if they were unable to attend the Wellness Wednesday sessions and they were excluded from the exercise portion of the program if they had any physical impairment.

Procedures:

This study was approved by The University of Akron’s Institutional Review Board. This study began with the researchers attending the first Wellness Wednesday session during the second week of October. Upon arrival each participant was given a unique identifying number to protect their anonymity. During the October session, at each location, Health Risk Assessments as well as height, weight and blood pressure were collected on each resident. To measure stages of change the following survey instrument was completed by each resident: Physical Activity Stages of Change—Questionnaire. This questionnaire uses the Transtheoretical Model to correctly place people in the stage of change they are taking a part in at the given time. The TTM was developed in 1982 by Dr. James O. Prochaska and has been guiding clients through behavior changes in stages ever since (Prochaska, 2013). The researchers along with a team of interdisciplinary students led each weekly meeting with the supervision of a graduate assistant from the School of Sports Science and Wellness Education. The meetings were held to inform the attendees of the program about healthy lifestyle changes and practices that would improve their quality of life. There were three different sites where the program took place. Researchers instructed the sessions three
Wednesday nights per month, with the same monthly themed program at each of the three locations during the month. Every month, a theme was chosen by assessing the residents’ feedback on their interests. Themes during this study included: The Importance of Sleep, Barriers to Exercise, and Active Aging. Each meeting was broken into three mini informational sessions and an exercise portion. Students from the psychology, nutrition and exercise science programs at UA were the leaders of the separate portions. During the exercise science presentation, instructors first gave information and education about the topic of the month and took questions from the residents. After all material was presented, an exercise session related to the monthly theme was performed. The exercise programs consisted of 10-15 minutes of light to moderate intensity exercise including activities such as stretching, yoga, tai-chi, chair aerobics, resistance band work and dancing. A short warm-up and cool-down was administered each meeting for the safety of the participants. At the end of the study, during the final monthly meeting, identical surveys were completed by the residents at each location. Pre and post surveys were matched by the pre-assigned participant numbers from session 1. Variables that were measured in this study included mean age, weight, and height of residents. Additionally, differences in stages of change and motivation levels were compared over time.

Statistical Analyses:

Paired sample t-tests were conducted in Microsoft Excel to compare the differences between the pre and post variables of the stages of change questionnaire. Significance for the data analysis was set at $p < 0.05$. 
Chapter IV: RESULTS

The purpose of this study was to use the Physical Activity Stages of Change—Questionnaire (Marcus & Forsyth, 2003) to determine if five, monthly, educational and exercise classes targeting these populations will improve motivation levels and result in facilitating increases in physical activity levels. The survey was administered at the beginning and end of the five month period. Out of the 47 participants surveyed, only 14 of the individuals provided us with both pre and post data for this study. The sample size was smaller than anticipated, \( N = 14 \).

A paired sample \( t \)-test suggested that there was no significant change in the stage of change between pre and post data among participants surveyed, \( p = 0.09 \).

![Stages of Change Mean](image)

**Figure 1.**
Graphic representation of difference in Pre and Post intervention reported Stages of Change by participants.

The following figures depict the results of the stages of change means split into the individual locations. At Belcher, there was no significant difference observed between pre and post sampling (\( p = 0.18 \)).
Figure 2.
Graphic representation of difference in Pre and Post intervention reported Stages of Change by participants at Belcher Apartments location.

Figure 3 depicts the mean differences between pre and post sampling at Towers. No significant differences were observed, ($p = 0.34$).

Figure 3.
Graphic representation of difference in Pre and Post intervention reported Stages of Change by participants at Towers Apartments location.
Chapter V: DISCUSSION

The Transtheoretical Model (TTM) is used to guide people through a behavioral change that they wish to make in their lives. The TTM uses five constructs to rate people and give them a visual of where they are in their lifestyle change. The implementation of this model has shown success in behavior changes such as cigarette smoking cessation or creating adherence to a physical activity program (Prochaska, 2013). By using tools such as surveys and questionnaires, the current stage of change in an individual can be assessed throughout the entirety of the process. The Physical Activity Stages of Change—Questionnaire was used to assess the Stage of Change of the participants of Wellness Wednesday both prior to and post program intervention.

The present study suggests that after a five month intervention of the Wellness Wednesday program, there were no significant changes in the pre and post stage of change with the participants of the sessions. This was observed across all participants and at each location individually.

The initial hypothesis of this study was that there would be minor improvements in the physical activity levels of the individuals of Wellness Wednesday. This hypothesis is not supported by the set of data that was collected during the conduction of our surveys. Although there were no significant differences were observed, there was still advancement through the stages of change that is not shown in the calculated values. Looking at the raw data sets, the participants either remained in the same stage or advanced to a further stage. This serves as encouragement for the Wellness Wednesday program that there is some progress in the attendees of the monthly sessions.

Since the participation in this study and the program in general was all voluntary, it posed a problem to our sample size. Forty seven individuals were collectively surveyed initially, but only fourteen of them were able to provide both pre and post data for evaluation. This contributed to the small sample size. The lack of frequency of the program also contributed to the limitations of
this study. Once a month visits are simply not enough time to engage someone in an effective lifestyle behavior change. In the study conducted by Marshall & Biddle (2001) that gauged stages of change in physical activity levels, there was advancement seen through the stages when an exercise program that included once a week activity. Greater frequency of the implied changed behavior suggests that there will be more success using the TTM and Stages of Change theory (Marshall & Biddle, 2001).
Chapter VI: CONCLUSION

Living a sedentary lifestyle can be defined as not participating in the recommended amount of daily physical activity. It is observed that more than half of the elderly population does not meet the required daily amount of physical activity (Troiano et al., 2008). Physical inactivity is a risk factor for an individual to develop obesity. Obesity is a disease that can lead to other comorbidities such as coronary artery disease, elevated glucose levels, type II diabetes, high triglycerides and low amounts of HDL (Hamilton et al., 2007). Throughout the past three decades an increase in obesity with a concurrent decrease in physical activity levels has been observed in the population (Boughter, 2006).

Adhering to a regular physical activity program is a common way to combat obesity. The Transtheoretical Model and Stages of Change are frequently used to facilitate a behavior change in individuals willing to make positive lifestyle changes. Guidance from this model has shown to elicit the changes and advance patients through the five stages (Prochaska, 2013). This model is easy to use and understand while giving clients the power and control of climbing up the stages.

It was hypothesized that the implementation of a community based program such as Wellness Wednesday along with the Transtheoretical Model could be beneficial in making minor changes to the participant’s lifestyle behaviors. The results of the present study indicate that within the five month time period there was no significant change in the pre and post stage of physical activity in participants. Although there was no significant change in the analyzed data, the raw data showed only complacency or advancement through the stages of change in the TTM and no regression by any participant. This is reassuring to the Wellness Wednesday program because no attendee decreased their physical activity while joining the intervention.
Chapter VII. FUTURE DIRECTIONS

- Increase the frequency of the Wellness Wednesday program at each location. To see greater change and adherence to the desired changes, more sessions should be implemented.

- Rewarding the participants with a point system and small prizes in return for regular attendance. This will be more of an incentive for them to come to Wellness Wednesday so that they can obtain more knowledge and potentially create a bigger behavior change.

- Increasing community promotion of the Wellness Wednesday program. This program is not limited to the residents of the apartment complexes. The participants were always invited to bring family members and friends along with them. The more people that we can educate as exercise science professionals, the more change we can make in the community for the better.

- Implement different levels of exercise and give participants a choice in what level they rate themselves. During the study, it was found that there was a broad range of physical activity levels in the crowd. There were some completely sedentary individuals while others were regularly active throughout the week. With such a broad spectrum it was difficult to make up a monthly program that would interest all participants and keep everyone engaged without the activity level being too difficult. If different sessions could be offered there may be more change seen.
Chapter VIII: PRACTICAL APPLICATIONS

Upon the completion of this study, it was reflected on how use of this program could come into play in my career choice. As an aspiring physical therapist, all aspects of this program were critical to my personal growth as a professional. First and foremost was the increasing effectiveness of my communication skills. Coming into this study, I became very anxious in instructing others. After five months of program implementation I am able to speak to larger groups of people with no hesitation. Not only am I able to speak in front of others, but the effectiveness of my communication with others has improved. This skill will definitely help me in my professional career while effectively speaking with patients. Conveying important information to them about a treatment or the information that I have obtained throughout my degree will come as second nature.

Along with communication, I have learned to work with all different types of people. Whether the individuals were motivated, or unmotivated (sometimes sleeping) I was able to include everyone and relate to the participants building good rapport. As a professional, especially one in the healthcare field, rapport is very important. The relationship between therapist and client must be strong. The patient must trust their therapist and believe that they are steering them in the right way in order progress through rehabilitation. Working with a population such as the Wellness Wednesday participants has definitely given me practice in working with future patients.
REFERENCES


APPENDICES

M 1–FM: Physical Activity Stages of Change—Questionnaire*

For each of the following questions, please circle Yes or No. Be sure to follow the instructions carefully.

Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these activities.

No 0 Yes 1
1. I am currently physically active. 0 1
2. I intend to become more physically active in the next six months. 0 1

For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least five days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a total of 30 minutes.

No 0 Yes 1
3. I currently engage in regular physical activity. 0 1
4. I have been regularly physically active for the past six months. 0 1

SCORING

If question 1 = 0 and question 2 = 0, then you are at stage 1 (Pre-contemplation).
If question 1 = 0 and question 2 = 1, then you are at stage 2 (Contemplation).
If question 1 = 1 and question 3 = 0, then you are at stage 3 (Preparation).
If question 1 = 1, question 3 = 1, and question 4 = 0, then you are at stage 4 (Decision/action).

If question 1 = 1, question 3 = 1, and question 4 = 1, then you are at stage 5 (Maintenance).