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Effects of an exercise program on elderly residents of a retirement complex

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Morton, Ann G., M.S.

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EFFECTS OF AN EXERCISE PROGRAM ON
ELDERLY RESIDENTS OF
A RETIREMENT COMPLEX

A Thesis
Presented to
The Faculty of the Department of Nursing
San Jose State University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

By
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August, 1992

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ABSTRACT

EFFECTS OF AN EXERCISE PROGRAM ON ELDERLY RESIDENTS OF A RETIREMENT COMPLEX

by Ann G. Morton

The purpose of this study was to evaluate the effectiveness of an exercise program on the perceived fatigue of persons 65 years of age and older residing in a retirement complex. A modified Solomon four-group design was used in the study utilizing ideas from a study conducted by Guelldner and Spradley (1988). Data were collected by use of the Pearson-Byars Subjective Fatigue Checklist (PBSFC). The volunteers ($N=22$), screened with the Short Portable Mental Status Questionnaire (SPMSQ), were separated into 3 groups by random drawing. The experimental group ($n=5$) who walked 528 feet three times a week for a 3-week-period and the control group ($n=5$) who did not walk were both pre- and post-tested. The secondary control group ($n=5$) was post-tested only. Analysis of data using the independent t -test revealed that exercise significantly lowered the perceived fatigue ($p = .011$). A t -value of 3.28 ($df=8$) reflected $p < .05$.

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Chapter 1

INTRODUCTION

The health of the elderly over the next 25 years is of growing concern since the generation of "baby boomers" will be approaching 65 years of age by the year 2010. The maturation of this large age group will increase the elderly population to 21% to 25% of the total population in the U.S. (Webster, 1988; Schafer, 1989). Bortz (1991) predicts that there will be 50 million people over 85 years of age in the year 2050. This figure would be 16% of the total American population compared to the current 1% (p. 6). Many of the illnesses or problems of the elderly have the potential to be prevented, postponed, or reversed through health promotion, education, early diagnosis, and prompt treatment (Hawranik, 1991).

Technological improvements over the centuries have affected human activity levels. Each advance in technology has brought about a decrease in individual energy expenditure. The early hunter was active in order to survive. The Agricultural Revolution brought the hunting range into the next field, so to speak. The farmer could stay at home to "hunt" food, but farming was still an active life. The Industrial Revolution brought about automation which replaced muscle. This led to a more sedentary lifestyle for many people (Bortz, 1991, p. 187).

The car replaced walking and computers replaced other forms of exercise. What will the Space Age bring?

Primary nursing efforts over the next 25 years should begin with the prevention of the illnesses or problems experienced by the elderly. This can be accomplished by promoting good health habits before disease or dysfunction sets in. Prevention begins with early diagnosis and prompt treatment to slow or curtail a problem. These preventative methods should involve observation and teaching by nurses (Hawranik, 1991). The proper amount of exercise, diet, and sleep is proving to help people live longer in a stronger, more satisfying state of health. This way of life can be taught to people of all ages with satisfying results (Bortz, 1991, pp. 184-217).

Teaching the elderly about themselves, about what is going on in their bodies, motivating them to be the responsible one for working on their needed changes in lifestyle will indeed decrease their need for increased medical care in their later years (Bortz, 1991, p. 87). Current health coverage costs drain the individual, the family, and the country. Health insurers raise insurance rates and restrict coverage because of rising medical costs and increasing government costs. The elderly are one of the populations suffering from the national health care crisis as the federal and state governments, insurers, and

businesses shift the burden of health costs to individuals (Matthiessen, 1990).

Most people do not go to the doctor for a regular check up when they feel good and have no apparent problems because it costs too much. This is a problem that is both the responsibility of the health system which reimburses illness rather than prevention and the health care providers who search only for illness. When an active illness is not in process, the patient is dismissed with a statement that all is fine, although there are risk factors present in the patient's lifestyle or background. During a regular check up, physicians and nurses must teach good health habits and try to redirect the apparent poor health habits of which the patient might not be aware (Bortz, 1991 pp. 85-87).

Background

Belloc and Brislow (1972) were the first to link physical health status to positive health practices in their research programs. Schafer conducted a descriptive study in 1989 to determine the best way to promote health for older adults. Webster (1988) researched the effects of aerobic exercises on the physiological and psychosocial changes of aging. The research found that nurses can influence the quality of life of their older adult clients by teaching proper health guidelines.

Recommending an increase in regular exercise is an

increasingly common suggestion for health care providers. The doctors and nurses, as well as researchers, are beginning to see the positive effects of regular exercise programs on the physiological and psychosocial changes that naturally occur in the elderly population. Lifestyle practices and health habits involving physical activity prevent functional losses in the elderly and decrease the chances of premature development of many of the chronic diseases identified in aging persons. Regular physical activity also increases the length of satisfactory independent living (Belloc & Brislow, 1972; deVries, 1979; Schafer, 1989; Webster, 1988).

The literature supports the benefits of walking combined with nurse-managed education and health programs for older adults. Research findings document physiological and psychosocial improvements in the participants. Mitchell (1986) listed some of the elderly population's descriptors of fatigue found in the literature as she published her studies on generalized fatigue in the elderly and the importance of multi-disciplinary assessment and intervention. These descriptors included: "all in, can't carry it, can't make decisions, can't deal with problems, exhausted, listless, tired, weary, and no pep" (p. 20). These descriptors provide a context for clinical investigations of the causes of fatigue and prescription of treatment to alleviate the symptoms.

Problem

The question posed in this study was "What is the effect of an indoor walking program on the perceived fatigue of persons 65 and older residing in a retirement complex"?

Fatigue was selected as a dependent variable for the study, since it is one of the main health concerns of the elderly. Fatigue is a universally recognized human experience, but, because of generalized frailty, it is particularly prevalent in the elderly population. The management of fatigue is central to all efforts related to health promotion and restoration. Thus addressing the problem of fatigue is especially important when designing a plan for health care of the elderly population (Guelchner & Spradley, 1988).

The elderly often exhibit a lack of response caused by fatigue. This lack of response to environmental stimuli leads to gradual weakness and the likelihood of gradual immobility. As this predicament develops, the elderly are unlikely to make any effort to help themselves (Mitchell, 1986; Tyson, 1989).

Immobility and lack of interest in self care can lead to the problem of unnecessary dependency. Lester and Baltes (1978) described dependency as a "multidimensional concept which is not innately destructive or negative" (p. 23). People interact with others and their environment

in a constantly fluctuating manner alternating between independence and dependence (Lester & Baltes, 1978). Behavior can be affected by the loss of function or abilities and can lead to increased dependency as stated in studies performed in long-term care facilities by Lekan-Rutledge (1988, pp. 800-801).

This dependency or "learned helplessness" initiates a vicious downward spiral of decreased mobility leading to eventual passivity in self-care and an increased need for individual custodial care. Passivity is often desired by the care givers, who believe it will make their work easier. They consider the elders' individual preferences too time consuming (Storlie, 1982). In turn, this lack of self-care leads to the necessity for increased care from the care giver when the stability of the elder has been jeopardized and the mobility, nutrition, elimination, or skin integrity is lost (Tyson, 1989).

In order to prevent this downward spiral leading to a total care situation, elderly persons should be encouraged to walk daily, keep physically active, maintain the ability to perform their own activities of daily living (ADLs), and strive to continue living at home or in a retirement complex (Paillard & Nowak, 1985; Webster, 1988). Physical exercise with an expenditure of calories will increase longevity in humans due to the circulatory and respiratory benefits derived from this exercise (Bortz, 1991,

pp. 189-192). Fatigue in the elderly can lead to weakness and a decreased level of performance, but the promotion of mobility by health care professionals will balance rest and relaxation and help prevent fatigue (Lekan-Rutledge, 1988). Health care professionals including mobility and exercise in their education will prevent the downward spiral in the elderly.

Purpose

The purpose of this study was to evaluate the effectiveness of walking on the perceived fatigue of elders residing in a retirement complex. Fatigue is reported as a bothersome problem by approximately 70% of all elderly people, and 59% of these experience fatigue as an interference with most daily activities of living (Mitchell, 1986). Older adults are beginning to show an interest in maintaining health, displaying an increased desire to stay well. With an increased percentage of elderly clients presently seen in all health settings, what will the impact be in 2020? One or more chronic illnesses are found in 86% of the elderly population. If chronic illnesses occur later in life, individuals may be generally more frail because of increased years, hence requiring more personal care. It is possible to lower the cost of providing care by encouraging the elderly to continue aerobic exercising, to eat a proper diet, and to get sufficient sleep daily.

If the need for nursing care should arise, it is still possible to increase self-care abilities and decrease the need for nursing care time. Positive nursing goals could be maintenance of abilities and prevention of impairment by maximizing mobility within the elder's abilities (Milde, 1988). The cost of health care for this population escalates yearly, but can be kept at a minimum with the self-care approach by nursing.

Decreasing fatigue would help elderly individuals maintain the ability to participate more fully in daily activities. Keeping the growing population of frail elderly functioning independently for as long as possible could reduce the need for increased health care and help decrease the country's health costs.

Research Study Questions

The question posed in this study was "What is the effect of an indoor walking program on the perceived fatigue of persons 65 and older residing in a retirement complex"? The specific study questions posed:

1. Is there a decrease in perceived fatigue of the elderly residents of the retirement complex after participation in a walking program?
2. Is there an increase in the perceived fatigue of the elderly residents of the retirement complex after participation in a walking program?
3. Is there change in perceived fatigue of the

elderly residents of the retirement complex after participation in a walking program?

Definition of Terms

Terms used in the study:

1. Elderly refers to males and females who are 65 years of age or older.
2. Geriatric refers to the population 65 years of age or older.
3. Walking program refers to walking indoors a distance of 528 feet three times each week for a 3-week-period.
4. Resident refers to the elderly persons residing in a retirement complex.
5. Retirement complex refers to a retirement community where retired elderly own their apartments, usually with their meals prepared and served in a central dining room, planned social activities available, and cleaning services available.
6. Perceived fatigue refers to a subjective experience of level of fatigue as measured by the Pearson-Byars Subjective Fatigue Checklist (PBSFC).
7. Ambulation ability refers to the ability to ambulate the 528 feet in the indoor walking program safely with or without assistive devices as measured by observation of walking the distance and the Assessment For Maintaining Ambulation Skills (AFMAS).

8. Cognitive abilities refer to the ability to understand directions and the questionnaire and the ability to read and sign consent forms as measured by the Short Portable Mental Status Questionnaire (SPMSQ).

Summary

Modern technology has brought humans to a more comfortable (sedate) working and relaxed life with a resultingly smaller expenditure of calories. Literature records the increase of the incidence of chronic diseases in the elderly. Changing the sedate lifestyle to one that includes exercise at a minimum of 30 minutes three times a week could show positive physiological and psychosocial benefits (Bortz, 1991; Belloc & Brislow, 1972).

Fatigue leads to gradual weakness, then to immobility in the elderly. Exercise can alleviate many problems of weakness and loss of muscle use thereby lowering the fatigue level (Warner, 1988). This study focused on fatigue as the dependent variable in the question posed "What are the effects of an exercise program on the perceived fatigue of elderly residents of a retirement complex"?

There is a need for the health care industry to teach healthful lifestyles to decrease the need for medical care required for chronic diseases. Health care can teach prevention and help the elderly population enjoy longer more useful years in independence.

Chapter 2

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

The literature indicates that the predicted increase in the elderly population will lead to an increased need for health care due to the chronic degenerative diseases. The alternative to this possible problem was discussed by Bortz (1991, pp. 47-67). He explained that deaths from heart disease have decreased in the past decade primarily due to a change in lifestyle rather than to the technology in the coronary care unit, increased availability of cardiac surgeons, or better cardiopulmonary resuscitation techniques. The increased expense in health care is in replacing body parts, for example, bypasses and heart transplants, when a change in lifestyle may prevent heart disease with little expense. Prevention is also the key word for many cancers, stroke, and trauma. Once the event has happened, the cost comes with the attempt to cure the diseases (Bortz, 1991, pp. 47-67). There is minimal scientific research on effectiveness of preventative programs and interventions for the elderly (Hawranik, 1991).

Milde (1988) proposes that the elderly population must keep as physically fit as possible in order to reduce fatigue and promote more activity in later years. The need for frequent health care might decrease with increased

activity. The decreased perception of fatigue may delay the need for health care (Bortz, 1982).

Controlling the chronic degenerative diseases with constructive health guidance and proper medications as needed will help postpone the effects of these diseases until a later age. Keeping physically active will help the elderly population feel better about themselves and what they are able to accomplish on a daily basis (Bortz, 1982). With proper health guidance, there is an increased possibility that the elderly population will be able to remain in their own homes or homes of relatives for a longer period of their lives. Health care costs will be reduced if the elderly population remains healthier longer.

Conceptual Framework

The conceptual framework supporting this research was Roy's Adaptation Model (Andrews & Roy, 1986; Blue, Brubaker, Papazian, & Riester, 1986, pp. 297-312). The factors of nursing, health, and the relationship between human beings and the environment are the major concepts of Roy's model. According to the Roy Adaptation Model, these concepts relate to nursing process through their function of supporting and promoting the patients' adaptation to the continual environmental changes.

Roy's Adaptation Model describes the major concepts:

1. Person can be a person, family, group, or community with which the nurse is involved. A person is a

human being who functions holistically as an adaptive system, and may be a recipient of a nurse's interaction (Andrews & Roy, 1986, pp. 27-36; Blue, Brubaker, Papazian, & Riester, 1986, pp. 297-306). Roy describes the person as a biopsychosocial being, constantly interacting with a changing environment, and having both innate and acquired coping mechanisms (Andrews & Roy, 1986, pp. 17-25). The person has the opportunity to grow and develop, reacting effectively [adaptive response] or ineffectively [difficulty in coping with the environment] (Andrews & Roy, 1986, pp. 37-48).

2. Environment is the world constantly changing within and around the person, affecting and developing the behavior of the persons or group. Person and environment are in constant interaction with each other (Andrews & Roy, 1986, pp. 7-8).

3. Health is a state and process of being, a reflection of the person coping or adapting to the changing environment and becoming an integrated and whole person (Andrews & Roy, 1986, p. 8).

4. Nursing helps the person to adapt by assessing and evaluating behavior and stimuli and by intervening with nursing diagnosis and goal setting. It is related to the promotion of patient adaptation through intervention and management of influential stimuli (Andrews & Roy, 1986, pp. 55-107).

Adaptive refers to the ability of the human system to adjust to changes in the environment while affecting the environment. (Andrews & Roy, 1986, pp. 38-45, pp. 109-149; Blue, Brubaker, Papazian, & Riester, 1986, p. 299).

There are four modes of adaptation identified for the person (Andrews & Roy, 1986, pp. 111-161):

1. The physiological mode is the physical manner in which the person responds to stimuli from the environment.

2. The self-concept mode is made up of the physical self and the personal self.

3. The role function mode is one of two social modes focusing on the roles the person occupies in society.

4. The interdependence mode is the interaction related to the giving and receiving of love, respect, and value. The feeling of security the person receives during nurturing relationships is included in the interdependence mode.

These modes of adaptation are important for elderly persons to develop so they continue the ability to cope or adjust to environmental stimuli, maintain good feelings about themselves, and continue the ability to handle the relationships and behaviors with others. The nurse can encourage and reinforce these modes of adaptation assisting the elderly to maintain in their years of aging. These modes are used as supports for this study, encouraging the elderly to participate in an active healthy lifestyle.

Roy's Adaptation Model serves as the conceptual framework for this study. Walking as a form of exercise for the retirement complex resident, promotes an effect on the physiological and psychosocial systems. The act of walking in a group gives the individual increased time for interaction with the other residents (part of the social environment) and the indoor physical environment. In addition, the increased stimuli affects the resident's role function, interdependence, and self concept. Improving the health of the residents of the retirement complex through added exercise helps the person feel physically and psychologically better.

The physical self is composed of two components: the body sensation and the body image. The body sensation is expressed through the ability to feel and express oneself as a physical being, such as feeling tired or feeling great. The body image might be expressed as a perception of the physical entity, such as not feeling physically fit or possibly feeling very attractive. The way a person feels is enhanced by the amount of regular physical exercise the person performs. The person as an adaptive system is constantly growing and developing in the changing environment (Andrews & Roy, 1986, pp. 41-44).

Related Literature

Current research supports the assumption that the aging process will be more comfortable if one exercises

regularly, eats a nutritious diet, and gets sufficient sleep (Bortz, 1991, pp. 184-217). Research results indicate that exercise cannot reverse aging changes, but it certainly can slow down the incapacitation of early aging due to disuse of muscles. Exercise is proving to lengthen life by retarding the rate of functional decline and making life more gratifying on a daily basis. Our activity patterns can be changed even though we cannot stop the aging process (Johnson-Pawlson & Koshes, 1985). "Changes resulting primarily from the aging process cannot be explained, slowed, or halted: changes from disuse can be" (Sullivan, 1987, p. 27). Poor nutrition, chronic disease, and disuse cause atrophy in the aging muscles. Debilitating effects of disuse and impaired mobility can be minimized by maintenance of the muscular system which, in turn, provides continued independence and positive self esteem (Sullivan, 1987).

Many of the physiological changes associated with aging simulate the changes caused by inactivity. Webster (1988) discovered that the work capacity of the average sedentary person declines 30% between the ages of 30 and 70. These changes attributed to a sedentary life style can be reversed to a certain degree with a program of regular physical activity. Studies researched and performed by Bortz (1982) identified fatigue as a contributor to inactivity.

Walking clubs in nursing homes are being established to improve quality of life of the residents. Moore (1989) was the coordinator in a center for adult life located in a 400-bed community hospital in Virginia. In 1985, hospital officials recognized the need for assisting the local senior residents to improve their health practices and level of wellness. Working with the marketing director of a new mall in town, a walking club was formed following the example of other mall walking groups throughout the country.

Johnson-Pawlson and Koshes (1985) point out that some changes that occur in aging are decreases in muscle strength, endurance, coordination, and renal and pulmonary function. Muscle strength decreases faster than endurance level; however, exercise will maintain muscle strength. Aerobic exercises are the best types of exercising for older adults since they involve the large muscle groups and they are rhythmic and repetitive, thereby providing the most cardiovascular and general health benefits. Included in the aerobic types of exercises are walking, dancing, cycling, rowing, and swimming. Walking is most frequently chosen by older adults since there is no equipment involved and they can set their own schedule (Johnson-Pawlson & Koshes, 1985). Aerobic activity improves the oxidative capacity of skeletal muscles, stimulates the general adaptation of the biochemical system, and results in

measurable increments of oxygen uptake. The oxygen uptake improves the functional capacity of all systems (MacVicar, Winningham, & Nickel, 1989; Moore, 1989).

Guelldner and Spradley (1988) address the importance of movement in the care and well being of the aged. They assert that the most common indicator of good health among the ambulatory elderly is their activity level. Lawton (1985) suggests that the decrease in activity observed in the older adult may be a response to external attitudes of concern. External attitudes include such warnings as "don't exert yourself," "don't get chilled," "let me do that for you." As a result of these suspected limitations, a richly varied environment is not provided. Webster (1988) indicates that it is culturally expected that elderly should slow down and take a well-deserved rest after retirement. Other common beliefs held by older people regarding exercise include: (a) the need to decrease physical exercise with age, (b) exercise is dangerous, (c) light sporadic exercise such as cleaning house is beneficial, and (d) their own physical abilities are limited.

A decrease in muscle strength actually initiates at the age of 30 years and increases up to age 80, then begins to progress more rapidly past 80 years. The lower extremities show greater loss of strength than the upper extremities. The main reason for this appears to be

increased use of the upper extremities over the lower extremities in most elders (Webster, 1988; Sullivan, 1987).

It has been well documented that exercise increases the number of positive years in retirement and decreases incapacity and deterioration (Gueidner & Spradley, 1988). Elders who participate in aerobic exercise show a decrease in depression and anxiety, develop higher self esteem, show less agitation, have more positive attitudes, and experience less loneliness (Sullivan, 1987; Webster, 1988).

The positive effects of exercise in the elderly were found, through research and study, to be characterized by strength and endurance, fat loss from the muscle, and maintenance of an active independent lifestyle (Sullivan, 1987). Aerobic activity decreases cholesterol levels by burning the fat for energy purposes. Regular exercise appears to decrease the chances of developing cancer and heart disease (Bortz, 1991, p. 192).

Group participation also influences the non-physical aspects of the individual. Participating in physical activities within a group setting promotes mental stimulation, reality orientation, and maintenance of interaction skills. General mental health as well as the participants' sense of belonging, morale, purpose, and social gratification are also fostered through group activities (Riffle, 1982).

The study partially replicated by this investigator

was originally conducted by Guelldner and Spradley (1988). Their study included outdoor walking as exercise. There were two sites for the study, one in the nursing home and the other in a retirement home setting. Thirty-two ambulatory and mentally alert individuals 60 to 93 years of age participated in their study. There were 16 participants in the nursing home setting (Group A) divided into three subgroups. The participants ($n=6$) in subgroup A-1 (experimental group) participated in the walking protocol and were pre- and post-tested. The participants ($n=5$) in subgroup A-2 (control group) continued in their usual routines undisturbed except for pre- and post-testing. The participants ($n=5$) in subgroup A-3 (secondary control group), with no participation in the study, were post-tested only. The secondary control group served as the control of possible extraneous circumstantial variables present in one or both of the study environments.

Sixteen participants in the retirement village setting (Group B) were divided into three subgroups. The participants ($n=6$) in subgroup B-1 (experimental group) participated in the walking protocol and were pre- and post-tested. The participants ($n=5$) in subgroup B-2 (control group) continued in their usual routines undisturbed except for pre- and post-testing. The participants ($n=5$) in subgroup B-3 (secondary control

group), with no participation in the study, were post-tested only.

The experimental groups walked outdoors 0.1 of a mile three times a week for a 3-week-period. The mean scores on the PBSFC used in pre- and post-testing were compared to evaluate the fatigue level of the participants in their study. Their findings documented significantly less fatigue perceived by nursing home residents who participated in the 3-week walking regimen than was perceived by either of the control groups that did not walk in the nursing home setting or the groups who participated in the study in the retirement village setting. The pre- and post-test mean group scores in the retirement village setting did not change significantly. This was expected by the authors since outdoor walking was already part of their usual routine and this mildly exerting walking regimen did not even approach the rigor of their usual daily activity.

Summary

The literature supports the assumption that exercise can improve the quality of life of most individuals by retarding the rate of functional decline through preventing the atrophy in the aging muscles that is caused by disuse. Aerobic exercise such as walking involves the large muscle groups and improves the functional capacity of the systems, but does not involve a lot of equipment or expense.

Walking as a form of aerobic exercise is easy for the elder population to do alone, in a group, at home, or in an institution.

Some societal or cultural attitudes can affect the desire of the elderly to exercise. These attitudes may influence the elderly to take it easy or slow down, thinking exercise is dangerous or should be decreased with age. They may feel puttering around with the decreased household chores or occasional gardening is sufficient exercise after years of hard work. Types of activity such as gardening and household chores do not enhance the person's strength and endurance.

It has become evident that the depression, anxiety, negative attitudes, loneliness, and the fatigue of inactivity can be reversed with aerobic exercise such as walking. This reversal may give the elderly longer, more satisfying retirement lives with their families and friends. Their health will benefit, they will require less medical care, and they will experience more life satisfaction and mental stimulation.

This positive life style may allow elders to avoid onset of chronic disease for a longer time since they may have the ability to maintain their independent lifestyle in their own home, in a relative's home, or in their retirement complex. Developing a more active elderly population that is less impaired by chronic illnesses may

have far-reaching implications on the costs of health care.

Teaching beneficial health practices is the challenge for nursing now and in the future. Nursing can help the elderly population take on the responsibility for their own health condition and work on the preventative measures instead of letting the diseases and ill conditions "happen."

In summary, the major concepts of Roy's Adaptation Model are (a) person, (b) environment, (c) health, and (d) nursing (Andrews & Roy, 1986, pp. 15-53). The resident involved in the walking or exercise program is functioning as an adaptive system, interacting with the other residents and staff, family and friends. The changing environment affects the person developing or coping with the changes and challenges. Health must be considered as it reflects the way the resident is coping or adapting to the changing environment. The nurse is able to assess and evaluate the behavior and intervene with influential stimuli.

The four modes of adaptation identified by Roy are: (a) physiological, (b) self concept, (c) role function, and (d) interdependence. These modes are ways the residents act and react, and a nurse needs to have the expertise in utilizing Roy's Adaptation Model to assess and evaluate the behavior of the residents and the stimuli present in the environment.

Chapter 3

METHODOLOGY

Research Design

A modified Solomon four-group design approach was used in this study which partially replicated the study conducted by Gueldner and Spradley (1988). This study utilized (a) manipulation (walking program given to the experimental treatment group plus pre- and post-testing), (b) two control groups (walking program withheld, participants continued their usual routines except for pre- and post-testing for the primary group and post-testing only for the secondary control group), (c) randomization (assignment of volunteers to either treatment or control group by the drawing of names (Polit & Hungler, 1987, pp. 125-128). The research was conducted in a retirement complex.

Gueldner and Spradley (1988) conducted their study in a retirement village and a nursing home using the modified Solomon four-group design approach and measuring the perceived fatigue by the PBSFC. There were 32 participants in their study held in an outdoor setting. The study published in 1988 served as a guide for the current study.

An 85-resident capacity retirement complex in northern California was selected as the site for the current study. The residents predominantly matched the study criteria of

being 65 years of age or older. The author was able to exhibit some control over the walking as a form of exercise for the elderly in the retirement complex by establishing the distance and duration of the walk program. There was a study sample of 22 ambulatory elderly residents randomly selected from volunteers in the retirement complex.

Description of the Sample

The retirement complex selected for this study is located in northern California where the residents predominantly meet the study criteria of being 65 years of age and older. The 85-resident capacity retirement complex is situated in a quiet residential area close to a large shopping mall. A study sample of 22 ambulatory elderly residents was randomly selected from volunteers in the retirement complex.

Participation in the study was voluntary, and anonymity was preserved through use of identification coding (using numbers instead of names in a private key). Clearance was obtained from San Jose State University Committee on Human Subjects. Written permission to contact retirement complex residents was obtained from the Director of the retirement complex. Each participant gave written permission prior to the pre-test (see Appendix A).

The participants were screened for cognitive abilities as measured by the SPMSQ (see Appendix B). Permission to reprint this instrument was obtained from the American

Geriatrics Society and Duke University Medical Center (see Appendix C).

The residents volunteering to participate in the study did not know whether they would be in the experimental or control group. They did specify that they would rather walk indoors as they felt safer on familiar carpeted hallway floors.

The information given to the residents when acquiring volunteers included the following: (a) they must have the ability to ambulate independently, with arm support, or with a cane or walker and (b) must be able to walk the distance of 528 feet three times a week for a 3-week-period. This ability was assessed by the investigator, who observed each volunteer's ability to ambulate the 528 feet independently, with arm support, or with a cane or walker. The Assessment Form for Maintaining Ambulation Skills [AFMAS] (Glickstein & Spector, 1991) was used to record those individuals who required assistive devices, the gait mastery levels of each, and any problems the volunteer might have (see Appendix B). Permission to reprint the AFMAS was obtained from Aspen Publishers (see Appendix C).

There were 22 volunteers with steady gait. One volunteer used a walker, one used a quad cane, and 10 used a straight cane. All other volunteers ambulated independently with a steady gait. Perceived fatigue was

measured by the Pearson-Byars Subjective Fatigue Checklist [PBSFC] (1956). Permission to reprint this material has been received from SLACK Incorporated (see Appendix C).

The qualified volunteers were placed into three groups by random drawing. The first group (the experimental group) were to participate in the walking protocol and be pre- and post-tested using the Pearson-Byars Subjective Fatigue Checklist [PBSFC] (see Appendix B). The second group (the control group) were to continue in their usual routines undisturbed except for pre- and post-testing using the PBSFC. The third group (the secondary control group) were to continue in their usual routines undisturbed, serving as control of possible extraneous incidental variables present in the environment and were post-tested only using the PBSFC.

Five volunteers requiring a straight cane and two volunteers with independent ambulation chose not to participate in the study after the random drawing and the offering of the pre-test. Two of the volunteers who declined to be in the study were in the experimental group, two were in the control group, and three were in the secondary control group.

Attrition decreased the original 22 participants to 15 prior to the start of the walking program. There was no further attrition after the start of the walk program. The program started with 15 participants and ended with 15

participants, ($n=5$ in each group). A total of 4 males and 11 females participated. Two males and 3 females were in the experimental group and 1 male and 4 females were in the control group. The fourth male was in the secondary control group with 4 females.

The age range of the participants was from 72 years to 94 years with a mean age of 84.8 years. The mean age for the experimental group was 82.2 years, the control group mean age was 89.0 years and the secondary control group had a mean age of 83.2 years.

The attrition occurred primarily because of resistance to signing consent papers and "being tested." One volunteer worried about the possibility of having an appointment during a walk time, and another was concerned about a knee acting up and possibly having to miss a walk session.

The purpose of the secondary control group, where there was no participation in the program except for post-testing, served the purpose of a "test" of the environment. Environmental changes such as new personnel, illness, or holidays might have brought about an increase or decrease in the morale of the residents, and this in turn might have affected the perceived fatigue (Guedner & Spradley, 1988).

There was a new social director hired to replace the long time social director, and a death of a resident during

the 3 weeks of the indoor walking program. These two adverse happenings did appear to upset the residents to some degree and possibly were reflected by the secondary control group. Their mean score and standard deviation in the post-test more closely matched the control group. This secondary control group was to represent the level of perceived fatigue described by the residents of the complex who did not participate in the indoor walking program.

Data Collection

The data collection process involved the following steps:

Step 1. The first 1/3 of the names of selected volunteers randomly drawn were assigned to the experimental group. They would participate in the walk of 528 feet three times a week for a 3-week-period, and be pre- and post-tested using the PBSFC.

Step 2. The second 1/3 of the names of the selected volunteers randomly drawn were assigned to the control group. This group would not walk the 528 feet and would have no other intervention with the study, but would be pre- and post-tested using the PBSFC.

Step 3. The final 1/3 remaining names of the selected volunteers were assigned to the secondary control group who would be post-tested only using the PBSFC, and would have no other participation in the study. They represented a

secondary control for extraneous variables present within the environment.

Confidentiality was maintained in this study by assigning a code number to each participant as his or her name was randomly drawn from the volunteer pool. The participants were referred to by that number during the study and in the results of the study. The investigator was the only person to hold the master key matching the number with the name of the participant. These data will be kept in a locked file for 1 year after completion of the study, then will be burned.

Scores on the PBSFC pre- and post-tests were collected and recorded as data. The scores were listed for each group. There were no names or numbers used on the data sheet which was to be used for data analysis.

Instruments

The dependent variable, fatigue, was measured by the Pearson-Byars Subjective Fatigue Checklist (PBSFC). The PBSFC (feeling tone checklist) is composed of 10 short simple-to-read items eliciting a self-perceived level of fatigue. Checklists were scored using simple weights as follows: "Better than" response, 3; "Same as" response, 2; "Worse than" response, 1. The possible overall scoring range for the instrument was 10-30: a score of 10 reflected the lowest degree of subjective experience of

fatigue, and a score of 30 reflected the highest degree of subjective experience of fatigue.

The system of using three response categories (better-than, same-as, or worse-than) was developed by Pearson and Byars (1956) as a response scale for the fatigue continuum. The rating scale is short, easy to fill out, easily understood, and simple to score. In this type of rating scale the individual is required to make some sort of a response to each of a series of words or descriptions.

The instrument consists of words commonly used and understood by adults in 1956 who are now in the geriatric age population. The reported internal coefficient of this instrument was established. The reliability was tested and results showed .92 for the experimental group and .95 for the control group. Thirteen and 11 item checklists were used in the testing and there was a decision to narrow the checklist down to 10 items. The checklist was analyzed and adequate proof for validity was reflected $p < .001$.

The ambulatory abilities and needs of the residents at the retirement complex were assessed by the author and utilizing the AFMAS (Glickstein & Spector, 1991). This form was developed by Spector to be used in assessing and reassessing ambulation skills of the elderly with gait disorders and keeping record of their type of assistive devices, prosthetic limb, orthotic devices, or safety

measures required. It assisted the physical therapy department in keeping a resource of the weight-bearing status of each resident, as well as a way to compare the progress of gait mastery level, frequency and distance of ambulation, and any occurring problems. The form has not been tested to establish the reliability and validity since it is more of a record keeping guide as stated by author.

The cognitive abilities of the residents at the retirement complex were determined by the Short Portable Mental Status Questionnaire [SPMSQ] (Pfeiffer, 1975). Reliability studies were performed on two groups of subjects ($n=30$; $n=29$) 65 years of age and over. The SPMSQ was given twice at four-week intervals to determine the stability of response. The resulting test-retest correlations were .82 and .83 for the two groups respectively. The validity of the SPMSQ was tested using 2 non-random populations of the elderly, one group from the Oars clinic population ($N=133$), and the other group from the county ($N=80$). Results were significant at $p < .001$ (Pfeiffer, 1975).

Analysis Regarding Complications

It was impossible for the investigator to have any knowledge of how much walking the control group did on their own. Supposedly they "continued in their usual daily life," which may have included walks or exercises. They did not walk with the group on walking day. The

investigator was not aware of how much, if any, extra walking the experimental group did on their own.

No real complications were apparent during the course of the study except one threat to the results. The attrition rate brought the number of participants in each group to 5. The published study on walking as a form of exercise and its effect on fatigue level which the investigator partially replicated had a similar number of participants in each group and found significant results. They had one experimental group (n=6) and two control groups (n=5) in each of their two settings (nursing home and retirement village).

Chapter 4

ANALYSIS AND INTERPRETATION OF THE DATA

Analysis of Data

A modified Solomon four-group design approach was used in this study to evaluate the effectiveness of a walking program on the perceived fatigue among residents 65 years of age and older in a retirement complex. This design utilized the pre-test, post-test method for the experimental and control groups and including a secondary control group that was post-tested only. The Pearson-Byars Checklist for Measuring Subjective Fatigue (PBSFC) was used to measure the perceived fatigue (Pearson & Byars, 1956).

The volunteers randomly drawn were assigned to an experimental group who participated in the walking, a control group who did not participate in the walking, and a secondary control group who did not participate in the walking. Both the experimental and the control group were pre- and post-tested while the secondary control group was post-tested only using the PBSFC.

The PBSFC is composed of 10 short simple-to-read items eliciting a self-perceived level of fatigue. Checklists were scored using simple weights as follows: "Better than" response, 3; "Same as" response, 2; "Worse than" response, 1. The possible overall scoring range for the instrument was 10-30: a score of 10 reflected the lowest

degree of perceived fatigue, and a score of 30 reflected the highest degree of perceived fatigue (Pearson & Byars, 1956).

The system of using three response categories (better-than, same-as, or worse-than) was developed by Pearson and Byars (1956) for the response scale for the fatigue continuum. The rating scale is short, easy to fill out, easily understood, and simple to score. In this type of rating scale, the individual is required to make some sort of a response to each of a series of words or descriptions. The instrument consisted of words commonly used and understood by adults in 1956 who are now in the geriatric age population.

The difference in scores between the experimental and control groups was the main focus of the study. The pre- and post-tests were scored according to the weights assigned as explained above, and these scores were recorded for each participant according to their assigned number. These recorded scores were used to calculate the mean scores of the pre- and post-tests for each group, which in the results, would reveal any change in their perceived fatigue.

Interpretation of Data

Table 1 shows the group means and standard deviation of pre- and post-test scores on the PBSFC. The experimental group shows a markedly decreased level of

perceived fatigue, whereas the control group showed an increased level of perceived fatigue. The secondary control group's mean score in the post-test was identical to the control group's mean score in the post-test. The group mean scores shown on the further right column are the "difference" scores (post-test score minus pre-test score).

An independent t -test was conducted on these means to determine if a statistical difference exists between the two groups relative to their perceived fatigue as measured by the PBSFC. A t -value of 3.28 ($df=8$) reflected a statistically significant difference ($p < .05$) between the experimental group and control group as shown on Table 2.

Any environmental changes (staff changes, death of a resident) may have been reflected in the raised scores of the control group and secondary control group. These occurrences apparently did not affect the experimental group in the same way as they may have the other groups.

The graph in Figure 1 presents the pre- and post-test group mean scores for a more visual picture of the changes in the perception of fatigue over the 3 weeks indoor walking program. It exemplifies the decrease in feelings of perceived fatigue in the experimental group and increase in feelings of perceived fatigue in the control group.

The findings in this study were similar to those in the study conducted by Guelnder and Spradley (1988). They found a decrease in scores in the experimental group from

the pre- to the post-test in the nursing home residents, but a slight increase in scores (perceived fatigue) in the retirement village residents.

Between 1988 and 1992 many elders who had relied on nursing home care are actually able to live in the retirement complex setting now or in their own homes due to health teachings, increased use of home health care, and better nursing assessments in placements (Bortz, 1991, pp. 218-240). It is interesting when comparing the mean ages of the participants in the setting of this study to the mean ages of those in the nursing home setting in the partially replicated study. They are more similar than the comparison of the retirement complexes (see Table 3).

The age range of the participants in Gueldner and Spradley's study in 1988 was 60 to 93 years in the nursing home and retirement village as compared to the age range of 72 years to 94 years in the current study. The mean age for the experimental group in the nursing home equal to 79.1 and 72.7 in the retirement village as compared to 82.2 in the current study. The control group mean age in the nursing home was 86.6 and in the retirement village was 75.4 as compared to 89 in the current study. The secondary control group mean age in the nursing home was 80.6 and 70.6 in the retirement village as compared to 83.2 in the current study.

Table 1

Group Means and Standard Deviations of Pre-test and Post-test Scores on the Pearson-Byars Subjective Fatigue Checklist (PBSFC) (N = 15)

<u>Group</u>		<u>Pre-test</u>	<u>Post-test</u>	<u>Diff</u>
<hr/>				
Experimental (<u>n</u> = 5)				
	<u>M</u>	16.0	13.2	-2.8
	<u>SD</u>	2.1	1.5	1.3
Control (<u>n</u> = 5)				
	<u>M</u>	18.6	20.2	1.6
	<u>SD</u>	3.7	3.2	2.7
Secondary Control (<u>n</u> = 5)				
	<u>M</u>	--	20.2	--
	<u>SD</u>	--	2.9	--

Note. Diff = Difference Score (Post-test minus Pre-test)
between groups.

Table 2

Independent Samples t-Test Using the Difference Scores
(Post-test minus Pre-test) Between Groups (N = 10)

Group	<u>M</u>	<u>SD</u>	<u>p</u>
Experimental (<u>n</u> = 5)	-2.8	1.3	.011*
Control (<u>n</u> = 5)	1.6	2.7	

* $p < .05$

Table 3

Group Mean Values for Age in Comparison of Two Studies

<u>Group</u>	<u>1988 Study</u> (<u>N</u> = 32)	<u>1992 Study</u> (<u>N</u> = 15)
<u>NURSING HOME</u>		
Experimental	80.6	--
Control	73.0	--
Secondary control	80.6	--
<u>RETIREMENT COMPLEX</u>		
Experimental	75.4	82.2
Control	72.2	89.0
Secondary control	70.6	83.2

Figure 1. Pre-test and Post-test Scores on the Pearson-Byars Subjective Fatigue Checklist (PBSFC), by Group ($N=15$).

Summary

The control group showed an increase in perception of fatigue as reflected in the difference between the mean scores of the pre- and post-test. It may have been the loss of the activity director and loss of a friend in the complex that affected the control groups whose mean scores in the post-tests were identical, or it may have been the Hawthorne effect which is the fact that the control groups felt excluded because they were not selected for the experimental group (Polit & Hungler, 1987, pp. 129-130). Without the exercise of walking in the program, the control groups could very well have felt an increase in their fatigue.

The experimental group showed a decrease in the perception of fatigue as reflected in the difference between the mean scores of the pre- and post-test. The findings in this study were very similar to the findings in the study that was partially replicated.

The study conducted by this investigator was designed using ideas from the Gueldner and Spradley 1988 study. Comparing the studies, their study included outdoor walking as exercise and involved elderly at two sites. One site was in a nursing home setting and the other site in a retirement home setting. In the study conducted by Gueldner and Spradley (1988), 16 participants in the nursing home setting (Group A) were divided into three

subgroups. The participants ($n=6$) in the experimental subgroup participated in the walking protocol and were pre- and post-tested. The participants ($n=5$) in the control subgroup continued in their usual routines undisturbed except for pre- and post-testing. The participants ($n=5$) in the secondary control subgroup, with no participation in the study, were post-tested only.

Sixteen participants in the retirement village setting (Group B) followed the same number and plan of participation and testing as the participants in the nursing home setting. The secondary control group served as an index of general level of perceived fatigue in the study environments.

The experimental groups walked outdoors 0.1 of a mile three times a week for a 3-week-period. The group mean scores on the PBSFC used in pre- and post-testing were compared to evaluate the perception of fatigue level of the participants in their study. Their findings documented less perceived fatigue described by nursing home residents who participated in the 3-week walking regimen than in the control groups that did not walk in the nursing home setting, as well as in the groups who participated in the study in the retirement village setting. The pre- and post-test scores in the retirement village setting did not change appreciably.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to evaluate the effectiveness of walking on the perceived fatigue of elders residing in a retirement complex. Studies reported by the literature consider exercise to be an important aspect in physiological and psychosocial improvement in the older adult as well as among the inactive younger adults. There are very few studies performed on the relationship between exercise and fatigue level. Those reported relate aerobic exercise as beneficial in the lowering of perceived fatigue in the elderly.

A modified Solomon four-group design was used in this study of ambulatory elderly residents in a retirement complex in northern California. The ages of the participants ranged from 72 to 94 years with a mean age of 84.5. There was a total of 4 males and 11 females participating. Two males and 3 females were in the experimental group with an age range from 72 to 92 years (mean age of 82.2). One male and 4 females were in the control group ranging in age from 83 to 94 years (mean age of 89). One male and 4 females were in the secondary group ranging in age from 75 to 90 years (mean age of 83.2). This established a good representation of the men and women among the three groups.

The participants in the experimental and control groups were pre- and post-tested using the Pearson and Byars Subjective Fatigue Checklist (PBSFC). The secondary control group was post-tested only and had no other participation in the program. The experimental group participated in the walk program consisting of walking indoors a distance of 528 feet three times each week for a 3-week-period. The control group continued in their usual routines undisturbed except for pre- and post-testing. An independent t -test was conducted on the difference of the group means of the pre-tests and post-tests to determine if a statistical difference exists between the two groups relative to their perceived fatigue as measured by the PBSFC. A t -value of 3.28 ($df=8$) reflected a statistically significant difference ($p < .05$) between the experimental group and the control group.

The study partially replicated a study conducted by Guelldner and Spradley (1988) evaluating whether walking outdoors had an effect on the fatigue level of the elderly residents of a nursing home and a retirement village. The main changes made in this study were: (a) the extremely aged population of elders in the nursing home environment were not used since they were found to have too high an acuity level for participation in a walk program, and they did not have the cognitive ability to understand the information and directions involved; (b) the walk program

was performed indoors; and (c) the participants were not asked for demographic information and data related to quality of diet, sleep, family contact, participation in group activities and other environmental interaction patterns.

Roy's adaptation model provided the framework for this study. The major concepts of the Roy Adaptation Model are: (a) person, (b) environment, (c) health, and (d) nursing. Roy's assumptions are that the person has four modes of adaptation (a) physiological needs, (b) self-concept, (c) role function, and (d) interdependence relations.

These modes of adaptation are important for elderly persons to develop so they continue the ability to cope or adjust to environmental stimuli, maintain good feelings about themselves, and continue the ability to handle the relationships and behaviors with others. The nurse can encourage and reinforce these modes of adaptation assisting the elderly to maintain in their years of aging. These modes are used as supports for this study, encouraging the elderly to participate in an active healthy lifestyle. The way people feel is reinforced by the amount of physical exercise they get (Andrews & Roy, 1986, pp. 41-44).

Roy's model was used to support physical exercise as a means to improve the physiological and psychosocial systems of the residents in the retirement complex. The concepts contained within Roy's Adaptation Model encourage walking

as a form of exercise for the retirement complex resident.

Exercise has a beneficial effect on the physiological and psychosocial systems. The act of walking in a group gives increased time for social interaction with other residents and the indoor environment. In addition the increased stimuli benefits the residents' role function, interdependence, and self concept. Improving the health of the residents of the retirement complex through a regularly scheduled exercise program makes residents feel better physically and psychologically.

Scope and Limitations

The sample size was small, affecting the ability to generalize to a larger population. This study was restricted to those residing in a retirement complex and did not include those living in their own homes or homes of relatives. The sample size diminished when elders dropped out of the program due to disinterest or other commitments.

Conclusions

This study demonstrated that persons 65 years of age and older residing in a retirement complex had a significant decrease in the perception of fatigue after participating in an indoor walking program. A t -value of 3.28 ($df=8$) reflected a statistically significant difference ($p < .05$) between the experimental and the control groups. The experimental group showed a marked decrease in the perception of fatigue, whereas the control

group showed an increased perception of fatigue. The individual data on the control group indicated that three participants increased in the PBSFC post-test scores, 1 participant remained the same in scoring, and 1 participant decreased in the PBSFC post-test score. All 5 participants of the experimental group showed a decrease in perceived fatigue in their scoring on the post-testing.

Results of this study are comparable to the scores found in the study conducted by Gueldner and Spradley (1988), where the mean group scores of participants in the nursing home setting showed a decrease in perceived level of fatigue, using the PBSFC. As stated by Gueldner and Spradley (1988), the experimental group in the retirement village did not show as dramatic a change in their group mean post-test score. Actually there was a slight increase in their post-test scoring. They concluded that the difference in scoring between the nursing home setting and the retirement village setting could be attributed to the fact that the participants in the retirement village were in the practice of walking more often and possibly longer distances than the nursing home participants. Walking as far as 0.1 mile might have been a new adventure for the nursing home residents.

Inactivity is only one factor contributing to the loss of flexibility and physiological and psychosocial function during the aging process (deVries, 1979; Gueldner &

Spradley, 1988; Moore, 1989; Webster, 1988). Every human being has a certain amount of control over the kind of aging experience they could have. Bortz (1991, pp. 89-111) emphasizes that if a person could face reality, break bad habits, and start a life of caring for their own health by following the plan of proper diet, sufficient sleep, exercise, no smoking, and moderate alcohol intake, healthful and enjoyable aging could come about despite our world pollution problems. The rest of the population can work on including the elderly in population in society and not set them aside as "retirees" or "too old." This study attempted to reverse this process of exclusion and fatigue by empowering the elderly to help themselves live an active and more healthful life.

Recommendations

Based on the findings of this study the following recommendations are made:

1. It would be preferable to have 10 to 15 participants in each of the three groups and have more than one retirement complex in the study. This would allow for the expected attrition rate, and increase the ability of generalizing the findings to a larger population.
2. There is a need for further studies to be performed on walking and its effects on the perception of fatigue in different living conditions such as those found

in the elder's own home, in a relative's home, or in a retirement complex.

3. Studies could compare outdoors versus indoor walking and their effect on perception of fatigue.

4. Compare similar studies performed in different parts of a country or continent.

5. A study could be conducted to see if the elderly who are more active require less medical attention.

6. Perform pre-testing before informing people which group they are in. Anticipation could affect the scoring.

7. It would be preferable to extend such a walking program to at least 6 months or a year to strengthen the design.

8. It would be preferable to have 10 to 15 participants in each of the three groups and have more than one retirement complex in the study.

Summary

It will be important to guide the elderly in healthful living over the next 25 years. To increase longevity, they must get sufficient exercise, eat a proper diet, and get sufficient sleep each night.

The implication for nursing is to focus on health promotion and education to prevent the onset of chronic illnesses through teaching exercise, proper diets, and promoting 8 hours of sleep each night. "Fitness becomes more important to survival the older we become" (Bortz,

1991, p. 190). Nursing can help erase the stigma of "being old" by teaching that aging doesn't have to bring on the condition of disuse.

The drain on individual, family, and country by health coverage expenses can be decreased immensely by routine check-ups with the physician, healthful living, and an approach toward chronic illnesses that minimizes discomfort or distraction by proper living habits, bringing the enjoyment of healthful added years.

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APPENDIX A
Consent Letters

A campus of The California State Univ.

Office of the Academic Vice President • Associate Academic Vice President • Graduate Studies and Research
One Washington Square • San Jose, California 95192-0025 • 408/924-2480

To: Ann G. Morton, Nursing
733 Ensign Way
Palo Alto, CA 94303

From: Serena W. Stanford *Serena W. Stanford*
Office of Graduate Studies and Research

Date: June 3, 1991

The Human Subjects Institutional Review Board has approved your request to use human subjects in the study entitled:

"The Effect of an Indoor Walking Program on the Subjective Experience of Fatigue of Persons 65 and Over Residing in a Retirement Complex"

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Dr. Serena Stanford immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that each subject needs to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

CC: Jean Sullivan, R.N., Ed.D.

- Fontana Apartments
 - Villa Apartments
 - HealthCare Center
- (408) 255-5555

Attention: Ann Morton, R.N.

You have my approval to conduct your research on a short indoor walking program which you will conduct with the residents of Villa Fontana in connection with your graduate studies in Gerontological Nursing at San Jose State University. It is my understanding that this walking program will begin after you have received approval for the project from the Institutional Review Board - Human Subjects at San Jose State University.

The plans and procedures to be followed during this project have been presented to me. I understand I will be kept informed as the program progresses and that the results will be shared with residents, families, and all the staff.

APPROVED:

Oliver Corning

 General Manager

 Villa Fontana

 4/25/91

 Date

5555 Prospect Road
 San Jose, CA 95129

School of the Applied Arts and Sciences • Department of Nursing
One Washington Square • San Jose, California 95192-0057 • 408/924-3130

AGREEMENT TO PARTICIPATE IN RESEARCH
SAN JOSE STATE UNIVERSITY

RESPONSIBLE INVESTIGATOR: ANN G. MORTON, R.N., B.S.N.

TITLE OF PROTOCOL: THE EFFECT OF AN INDOOR WALKING PROGRAM ON
THE SUBJECTIVE EXPERIENCE OF FATIGUE OF PERSONS 65 AND OLDER
RESIDING IN A RETIREMENT COMPLEX.

I HAVE BEEN ASKED TO PARTICIPATE IN A RESEARCH STUDY THAT IS
INVESTIGATING THE EFFECT OF INDOOR WALKING ON FATIGUE OFTEN FELT
BY PERSONS 65 AND OLDER. THE RESULTS OF THIS STUDY SHOULD
FURTHER MY UNDERSTANDING OF THE BENEFITS OF WALKING AS A WAY TO
REDUCE MY SUBJECTIVE EXPERIENCE OF FATIGUE.

I UNDERSTAND THAT

1) I WILL BE ASKED TO PARTICIPATE IN COMPLETING A SHORT
QUESTIONNAIRE SERVING AS A PRE-TEST AND A POST-TEST. THERE WILL
BE 2 TRAINED ASSISTANTS AND THE INVESTIGATOR ACCOMPANYING THE
INDOOR WALKS 3 TIMES A WEEK FOR A 3-WEEK-PERIOD. THE LENGTH OF
THE WALK WILL BE 528 FEET IN THE FIRST FLOOR HALLWAYS OF VILLA
FONTANA. EACH WALK SHOULD INVOLVE ABOUT ONE HALF HOUR. THE
FIRST GROUP OF 10 OR MORE, RANDOMLY DRAWN, WILL BE IN THE WALKING
PROGRAM AND WILL TAKE THE PRE- AND POST-TESTS. THE SECOND GROUP
OF 10 OR MORE, RANDOMLY DRAWN, WILL CONTINUE IN THEIR USUAL
ROUTINES UNDISTURBED, HAVING NO INTERVENTION, BUT WILL TAKE THE
PRE-AND POST-TEST. THE THIRD GROUP OF THE REMAINING SUBJECTS,
WILL CONTINUE IN THEIR USUAL ROUTINES UNDISTURBED, AND WILL TAKE

THE POST-TEST ONLY.

2) THE POSSIBLE RISK OF THIS STUDY MIGHT BE THE MINIMAL RISK OF FALLING WHILE WALKING. THE POSSIBILITY OF FALLING IS VERY REMOTE SINCE THE INDOOR WALKING PROGRAM IS IN FAMILIAR, WELL LIT HALLWAYS, AND I WILL WEAR MY WELL FITTED WALKING SHOES WITH NON-SKID SOLES. I UNDERSTAND THAT TWO APPROPRIATELY TRAINED ASSISTANTS AND THE INVESTIGATOR WILL BE PRESENT TO ASSIST ME. I UNDERSTAND THAT IF NEEDED I MAY USE A WALKING AIDE OR USE ARM SUPPORT FROM ONE OF THE TRAINED ASSISTANTS OR THE INVESTIGATOR. I WILL BE ABLE TO WALK AT MY OWN PACE AND NOT BE PRESSURED INTO A TIME LIMIT TO COMPLETE EACH WALK.

3) THE POSSIBLE BENEFITS OF THIS STUDY MIGHT BE FEELING DECREASED FATIGUE, PERCEIVING INCREASED SOCIALIZATION AND FRIENDSHIPS, AND EXPERIENCING THE OPPORTUNITY TO PARTICIPATE IN RESEARCH TO HELP UNDERSTAND FATIGUE IN PERSONS 65 AND OLDER.

4) NO ALTERNATIVE PROCEDURES WILL BE INITIATED IN THIS STUDY.

5) THE RESULTS FROM THIS STUDY MAY BE PUBLISHED, BUT ANY INFORMATION FROM THIS STUDY THAT CAN BE IDENTIFIED WITH ME WILL REMAIN CONFIDENTIAL AND WILL BE DISCLOSED ONLY WITH MY PERMISSION.

6) I WILL NOT RECEIVE ANY COMPENSATION FOR MY PARTICIPATION IN

THE RESEARCH STUDY.

7) ANY QUESTIONS ABOUT MY PARTICIPATION IN THIS STUDY WILL BE ANSWERED BY THE INVESTIGATOR, ANN G. MORTON, R.N., B.S.N. AT 415/494-8396. COMPLAINTS ABOUT THE PROCEDURES MAY BE PRESENTED TO THE ADVISOR FOR GRADUATE STUDENTS BOBBYE GORENBERG, D.N.Sc, R.N. at 408/924-3134. FOR QUESTIONS OR COMPLAINTS ABOUT RESEARCH SUBJECTS' RIGHTS, OR IN THE EVENT OF RESEARCH RELATED INJURY, CONTACT SERENA STANFORD, Ph.D. (ASSOCIATE ACADEMIC VICE PRESIDENT FOR GRADUATE STUDIES & RESEARCH) at 408/924-2480.

8) MY CONSENT IS GIVEN VOLUNTARILY WITHOUT BEING COERCED. I MAY REFUSE TO PARTICIPATE IN THIS STUDY OR IN ANY PART OF THIS STUDY, AND I MAY WITHDRAW AT ANY TIME, WITHOUT PREJUDICE TO MY RELATIONS WITH SJSU.

9) I HAVE RECEIVED A COPY OF THIS CONSENT FORM FOR MY FILE.

I HAVE MADE A DECISION WHETHER OR NOT TO PARTICIPATE. MY SIGNATURE INDICATES THAT I HAVE READ THE INFORMATION PROVIDED ABOVE AND THAT I HAVE DECIDED TO PARTICIPATE.

DATE

SUBJECT'S SIGNATURE

INVESTIGATOR'S SIGNATURE

APPENDIX B
Data Collection Forms

SHORT PORTABLE MENTAL STATUS QUESTIONNAIRE (SPMSQ)

INSTRUCTIONS: ASK QUESTIONS 1 THROUGH 10 IN THIS LIST AND RECORD ALL ANSWERS. ASK QUESTION 4A ONLY IF PATIENT DOES NOT HAVE A TELEPHONE. RECORD TOTAL NUMBER OF ERRORS BASED ON 10 QUESTIONS.

1. WHAT IS THE DATE TODAY? _____

MONTH
DAY
YEAR
2. WHAT DAY OF THE WEEK IS IT? _____
3. WHAT IS THE NAME OF THIS PLACE? _____
4. WHAT IS YOUR TELEPHONE NUMBER? _____
- 4A. IF YOU DON'T HAVE A PHONE _____

WHAT IS YOUR ADDRESS?
5. HOW OLD ARE YOU? _____
6. WHEN WERE YOU BORN? _____
7. WHO IS THE PRESIDENT OF THE U.S. NOW? _____
8. WHO WAS PRESIDENT JUST BEFORE HIM? _____
9. WHAT WAS YOUR MOTHER'S MAIDEN NAME? _____
10. SUBTRACT 3 FROM 20 AND KEEP SUBTRACTING 3 FROM EACH NEW NUMBER, ALL THE WAY DOWN. _____

_____ TOTAL NUMBER OF ERRORS

Scoring: 0-2 errors = intact mental function
 3-4 errors = mild intellectual impairment
 5-7 errors = moderate intellectual impairment
 8-10 errors = severe intellectual impairment
 Allow one more error if subject had only grade school education.
 Allow one fewer error if subject has had education beyond high school.

Reprinted with permission of Duke University Medical Center and the American Geriatrics Society, Short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients, E. A. Pfeiffer, Journal of the American Geriatrics Society, 23, 433-441, 1975.
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SAMPLE ASSESSMENT FORM

MAINTAINING AMBULATION SKILLS-
THE AMBULATION PRESCRIPTION

RESIDENT'S NAME _____
 _____ ASSESS _____ REASSESS (DATE)

1. Assistive devices
 - straight cane
 - quad cane
 - walker
 - other (specify)
2. Prosthetic limb
 - above the knee (AK)
 - below the knee (BK)
3. Orthotic devices
 - ankle-foot orthosis (AFO)
 - long leg brace
 - shoe insert(s)
 - other (specify)
4. Weight-bearing status: Right lower extremity/
 Left lower extremity
 - full weight bearing (FWB)
 - partial weight bearing (PWB)
 - non-weight bearing (NWB)
5. Safety measures required
 - contact guard
 - standby assist
 - distant supervision
 - ambulation belt
6. Gait mastery level
 - independent
 - needs assistance
 - totally dependent
7. Frequency of ambulation (daily or times per week)
8. Distance limits
9. Problems to chart
 - difficult transfers
 - endurance
 - safety considerations
 - falls
 - confusion
 - too slow
 - other (specify)

Glickstein, J. K., & Spector, M. (Eds.). (1991, April).
 Sample assessment form: Maintaining ambulation skills-the
 ambulation prescription. Focus on Geriatric Care &
 Rehabilitation, 4(10), 5. Reprinted by permission from
 Aspen Publishers, Inc., copyright 1991.

**MODIFIED PEARSON AND BYARS' CHECKLIST FOR
MEASURING SUBJECTIVE FATIGUE**

BELOW ARE 10 STATEMENTS WHICH DESCRIBE DIFFERENT DEGREES OF FRESHNESS OR PEPPINESS AND TIREDNESS. FOR EACH STATEMENT YOU WILL HAVE TO DETERMINE IF IN YOUR OWN MIND YOU FEEL AT THIS INSTANT (1) "BETTER THAN", (2) "SAME AS", OR (3) "WORSE THAN" THE FEELING DESCRIBED BY THAT STATEMENT. WHEN YOU HAVE DECIDED, PLACE AN "X" IN THE APPROPRIATE BOX.

FEELING TONE CHECKLIST

	BETTER THAN	SAME AS	WORSE THAN	STATEMENT
1.	()	()	()	VERY LIVELY
2.	()	()	()	EXTREMELY TIRED
3.	()	()	()	QUITE FRESH
4.	()	()	()	SLIGHTLY POOPED
5.	()	()	()	EXTREMELY PEPPY
6.	()	()	()	SOMEWHAT FRESH
7.	()	()	()	PETERED OUT
8.	()	()	()	VERY REFRESHED
9.	()	()	()	FAIRLY WELL POOPED
10.	()	()	()	READY TO DROP

Pearson, P., & Byars, G. (1956). The development and validation of a checklist measuring subjective fatigue (Report No. 56-115) pp. 1-35. Randolph Air Force Base, Texas; School of Aviation Medicine, US Air Force.
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APPENDIX C
Copyright Permission Letters

**American Geriatrics Society
Permission to Reprint**

Requestee: Ann G. Morton, RN, BSN
Company/
Institution: San Jose State University
Purpose: Educational

Publication: The Journal of the American Geriatrics Society
Issue: 1975, 23, (10) 433-441
Title: "A Short Portable Mental Status Questionnaire of the Assessment of Organic Brain Deficit in Elderly Patients"
Author(s): Eric Pfeiffer

The American Geriatrics Society hereby grants the above mentioned permission to reprint the requested article. The primary author's permission should also be obtained for permission to reprint. Permission to use this materials is contingent upon proper credit being given to the *Journal of the American Geriatrics Society*. The credit line should read: "Reprinted with permission of the American Geriatrics Society, (Title of Article), by (Author), *Journal of the American Geriatrics Society*, (Vol. No.), (pp.), (year)."

The above request is approved on the conditions specified above and on the understanding that full credit will be given to the source.

Approved by:

Title:

Date:

Melissa Silvestri

Communications Asst.

2/24/92

DUKE UNIVERSITY MEDICAL CENTER
 CENTER FOR THE STUDY OF AGING AND HUMAN DEVELOPMENT

April 14, 1992

Office of the Director

Ann G. Morton, RN
 733 English Way
 Palo Alto, CA 94303

Dear Ms. Morton:

You have our permission to reproduce and use the OARS/MFAQ for the purposes stated in your letter. We have one requirement and one suggestion. The requirement is that the Duke Center copyright appear on the face of all reproductions of the instrument and that any modifications of the instrument must also be noted on the face page, reported to us, and noted in publication of results.

The suggestion is that you keep in touch with us as your work progresses. There are over 150 users of the OARS/MFAQ nationwide. You may want to be in touch with other users with interest similar to your own.

The person with whom you would correspond in the future about OARS is Gerda Fillenbaum. You can write to her at Box 3003, Duke University Medical Center, Durham, NC 27710.

Sincerely,

Harvey Jay Cohen, M.D.
 Professor of Medicine
 Chief, Geriatrics Division
 Center Director
 Director, GRECC/VAMC

HJC/gs

Aspen Publishers, Inc.

6/13/91

Reference #: 9106036

Ann G. Morton, RN, BSN
733 Ensign Way
Palo Alto, CA 94303

Material Requested: Page 5 of Focus on Geriatric Care & Rehabilitation, Vol. 4, No. 10, © 1991.

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Sincerely,

Neal Pomea

Neal F. Pomea
Permissions Administrator
Editorial Services

March 16, 1992

Lester J. Robeson
SLACK Incorporated
6900 Grove Road
Thorofare, NJ 08086

Attn: Permissions Department,

I am interested in obtaining permission for reprinting of the Pearson-Byars Subjective Fatigue Checklist, which appeared in the article "Outdoor Walking Lowers Fatigue" written by S. H. Gueldner and J. Spradley. This article appeared in the Journal of Gerontological Nursing Volume 14 (10) 1988, pp. 6-12. The authors of this checklist are Richard G. Pearson and George E. Byars, Jr. (1956).

This checklist is ideal for the walk program in preparation for my master's degree in Geriatric Nursing at San Jose State University. The program is my research project for the thesis, exploring the effects of exercise on the fatigue level of elderly residents in a retirement complex.

I am writing for permission to use this form in my thesis, with the understanding that full credit be given to the publication of the material listed by editor, author, publication title, date, volume, issue number, and page. If the copyright of this questionnaire belongs to Richard Pearson and George Byars, do you have an address where I can contact them for permission to reprint for my thesis project?

Enclosed you will find a sample of how I set up the form for use in my walk program. Please advise me of any additions or corrections in the credits.

Thank you for your attention to this matter. I hope to be hearing from you soon.

PERMISSION TO REPRINT THE
CITED MATERIAL IS HEREBY GRANTED.
PROVIDED IT IS USED SOLELY AND
EXPLICITLY AS INDICATED ABOVE.

Sincerely,

Ahn G. Morton RN
Ahn G. Morton RN, BSN

Lester J. Robeson

3-23-92

DATE

RAVEN PRESS

1185 AVENUE OF THE AMERICAS
NEW YORK, N.Y. 10036

March 27, 1992

Attn: Ann G. Morton, RN, BSN

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Sincerely
Soyla Daccarett
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