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PERCEIVED BENEFITS AND BARRIERS TO EXERCISE WITH SEDENTARY AND PHYSICALLY ACTIVE FEMALE ADOLESCENTS

Ву

Mary Catherine Ziola

A THESIS

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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ABSTRACT

PERCEIVED BENEFITS AND BARRIERS TO EXERCISE WITH SEDENTARY AND PHYSICALLY ACTIVE FEMALE ADOLESCENTS

By

Mary Catherine Ziola

The purpose of this study was to identify perceived "benefits" and "barriers" that differentiate exercising behaviors of sedentary and physically active female adolescents.

The Health Belief Model (HBM) was the conceptual framework in the study. The HMB originated in the 1950's for the purposes of identifying personal attributes or predictors that stimulated certain individuals to seek preventative health care.

A convenient sampling design was used. Two established closed ended questionnaires, the "Exercise Benefit/Barrier Scale" and a modified "Women and Exercise Questionnaire" was distributed to all female adolescents at a high school whose parents and teachers had consented to have the students participation in the study.

Data analysis consisted of Oneway ANOVA's, t-tests and Chi-squares to elicit significant variables that effect exercise behaviors. Results showed that physically active female adolescents perceived more benefits and less barriers to exercise compared to sedentary female adolescents. Peer and family support was also very significant. This thesis is dedicated to my husband, Robert Ziola and to my parents, Eleanor and Donald Garrett

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THE PROBLEM

Introduction

Few would dispute the physiological and psychological benefits associated with physical exercise. Regular exercise, which is defined as 20-30 minutes of aerobic exercise performed at least three times a week, has been associated with many positive changes in cardiovascular and metabolic status. Cardiovascular risk factors, including high body fat, serum cholesterol, triglycerides, and blood pressure, can be controlled or prevented by participation in a regular exercise program (Becque, Katch, Rocchini, Marks, & Moorehead, 1988; Desmond, Price, Lock, Smith, & Stewart, 1990; Reynolds, Varzeas, & Walsh, 1990; and Rowland, 1991). Sedentary lifestyles double a person's risk in developing coronary heart disease (U.S. Department of Health and Human Services [U.S. DHHS], 1990). Lowering cardiovascular risk factors is highly desirable since heart disease remains the leading cause of death for both men and women in the U.S. taking 500,000 lives every year (U.S. DHHS, 1990; Aldana & Silvester, 1989; and Chandler, 1993).

Obesity is another potentially preventable health disorder that is associated with a sedentary lifestyle and afflicts an estimated 15 percent to 30 percent of the population (Desmond, Price, Hallinan, & Smith, 1989; and O'Connell, Price, Roberts, Jurs, & McKinley, 1985). Long term repercussions associated with obesity during adolescence include increased risk for coronary artery

disease, colorectal cancer, and arthritis during adulthood (Must, Jacques, Dallal, Bajema, & Dietz, 1992). Early interventions such as healthy dietary practices and participation in fitness activities which increase metabolic rates have been linked with optimal body weight, decreasing body fat, and managing health problems including diabetes, osteoporosis, and hypertension (U.S. DHHS, 1990).

Psychological benefits associated with regular exercise include decreased depression and anxiety along with increased self esteem, productivity and feelings of well being (Hayden, Allen, & Camaione, 1986; Mason, 1990; Sechrist, Walker, & Pender, 1987; and Seigel, Johnson, & Newhof, 1988).

Although it has been noted that a vast majority of the population are knowledgeable of the health benefits of exercise, only a small portion of the population exercise on a regular basis (Dishman, Sallis, & Orenstein, 1985; Mason, 1990; Reynolds et al., 1990; Sallis, Haskell, Fortmann, Vranizan, Taylor, Solomon, 1986; and Slenker, Price, Roberts, & Jurs, 1984) with an estimated 41 percent to 51 percent of adults being considered sedentary (Dishman et al., 1985, McAuley, & Jacobson, 1991; Mason, 1990; and Sallis et al., 1986).

Although one might predict children and youth to demonstrate a higher level of participation in physical activities compared to adults, the differences between both groups is nominal. The most optimistic estimates of

children and adolescents exercising during the 1980's was between 59 percent to 66 percent (Dishman et al., 1985; and Mason, 1990), although the amount of physical activity begins to decline during the mid-adolescent years (Engstrom, 1980). Physical education class requirements at the high school level are minimal with Illinois being the only state that requires enrollment in physical education classes kindergarten through twelfth grade (U. S. DHHS, 1990).

Even more alarming, recent literature has noted a dramatic decrease in the number of adolescents exercising during the last decade (CDC, 1992, Desmond et al., 1990; and Mason, 1990). For example, in 1992, the U.S. Center of Disease Control estimated that the percentage of adolescents exercising dropped from 62 percent in 1984 to 37 percent in 1991 and that the decrease was more significant during the later years of high school, especially for females whose exercising behaviors dropped from 31 percent at ninth grade to 17 percent by the time they reached twelfth grade (CDC Report, 1992).

Purpose of Study

The purpose of this study was to identify perceived benefits and barriers to exercise that differentiate exercising behaviors of sedentary and physically active female adolescents. Since family nurse practitioners in primary care are in an opportune position to counsel clients on health promotion, research findings can be incorporated into previous counseling strategies so that commonly

perceived benefits and barriers to exercise for the adolescent population may be addressed.

This study is significant for several reasons. One, it has been shown that the greatest decrease in exercising behaviors occur during the adolescent stage of the life cycle (Desmond, 1990, Engstrom, 1980 & Tappe, Duda; and Menges-Ehrnwald, 1990). What causes this dramatic decrease in exercise behaviors remains speculative since minimal research has been done in the area of adolescent exercise behaviors. Some researchers feel that the sedentary lifestyle of the female adolescent is an outcome of socialization factors, such as minimal fitness expectations from parents and peers (Yoshida, Kenneth, Allison, & Osborn, 1988 & Tappe, Duda, and Ehrnwald, 1989) or physiological changes occurring during puberty, such as accumulation of body fat and hormonal changes, that may predispose teens to a more sedentary lifestyle (Rowland, 1990).

Although there is an abundance of research that has examined physiological aspects of exercise and diet with the adult population, there remains a paucity of literature that addresses questions related to predictors or promoters in exercise behaviors of adolescents, especially with women.

This study will attempt to fill these gaps by investigating factors contributing to the lack of exercise among young, sedentary females since, 1) healthy behaviors that are developed and reinforced in adolescence tend to have a "carry-over" effect into adult life and resist change

(Desmond et al., 1990, Dishman et al., 1985, MeKeag, 1986, Pender et al, 1987, Rowland, 1987; and Tappe et al., 1989), 2) cardiovascular disease in women is escalating, most likely due to an increase in unhealthy lifestyles, which include stress, smoking, obesity, poor eating habits, and inactivity, and 3) women are less likely to participate in aerobic exercise than men, (Dishman, 1985; Perry, Griffin, & Murray, 1985; & Yoshida et al., 1988), and are less likely to exercise on a regular basis in order to achieve any health benefits (Yoshida, 1988).

Hypothesis and Research Questions

The hypothesis for the study was:

- Ho= there is no difference between perceived "benefits" and "barriers" to exercise between sedentary and physically active female adolescents.
- H1= sedentary female adolescents perceive more "barriers" and less "benefits" to exercise than physically active female adolescents (scores on Sechrist's Exercise Benefit/Barrier Scale and Johnson's five item barrier scale).

Other research questions include:

- To what extent does peer support influence the exercising behaviors of adolescents? (Johnson's questionnaire #14,15,16, Sechrist's #11)
- 2. Do younger adolescents (ages 13 through 15) participate in exercise more frequently than older

adolescents (ages 16-18) ? (Johnson's questionnaire #1, 10).

3. Are there similar exercising patterns between family members and the adolescent's exercising patterns ? (Johnson's questionnaire: #14, 16, & 17).

Regular Exercise will be determined by the individual's participation in an aerobic exercise, such as aerobic dance, basketball, biking, fast walking, hockey, racquetball, running, soccer, stairmaster, swimming, tennis or volleyball performed at least three times a week for at least 20 minutes nonstop.

REVIEW OF LITERATURE

The Health Belief Model

Rosenstock et al. introduced The Health Belief Model (HBM) during the 1950's for the purpose of identifying predictors of preventive health seeking behaviors of the individual (Becker & Maiman, 1975). The original model examined perceptions of disease, modifying factors, and likelihood of taking health action. These components were described as subjective determinants of the individual's "readiness to take action" (Becker & Maiman, 1975). Individual perceptions were perceived "susceptibility" and "severity" which would affect an individual's perceived "threat" to an illness.

"Susceptibility" has been described as an individual's perceived vulnerability to a certain health condition (Janz & Becker, 1984). "Severity" of an illness was seen as the individual's predicted social and physical outcome of the disease (Janz & Becker, 1984).

Modifying factors included demographic and sociopsychological variables, "cues to action", and perceived "threat" of a certain disease. Although demographic and sociopsychological variables have a direct impact on perceived "threat", "susceptibility", "severity", "benefits" and "barriers" to action, these two variables, (demographic and socialpsychological), only indirectly influence the likelihood of preventive health actions (Becker & Maiman, 1975, see Figure 1). Internal and



Figure 1. The Health Belief Model

external "cues to action" were considered essential in stimulating the health seeking behaviors of the individual (Becker & Maiman, 1975).

"Benefits" and "barriers" are two components that have been shown to strongly influence the participation in preventative health actions (Becker & Maiman, 1975; Janz & Becker, 1984; and Pender, 1987). "Benefits" were defined as the perceived effectiveness of the action, such as detection of disease with health screening (Pender, 1987). "Barriers" included the perceived negative associations with participating in certain health behaviors, including cost, discomfort, or time limitations (Janz & Becker, 1984). Likelihood of taking action, therefore, would be determined by perceived "benefits" minus "barriers" in initiating and receiving health care (Becker & Maiman, 1975). This suggests that even if an individual perceives a specific health action will decrease his/her's "susceptibility" or "severity" to an illness, also to be considered are the perceived or real "barriers", such as physical or financial burdens along with perceived "benefits" of seeking care.

Since the introduction of the HBM, several researchers have used the model to understand factors that influence an individual's participation in preventive health behaviors, such as receiving influenza vaccination, (Oha, 1974; and Cummings, Jette, & Brock, 1979), screening for Tay-Sachs disease (Becker, 1975), and performing breast self exam, (Manfredi, Warnecke, & Graham, 1977; and Kelly, 1979).

Recently, different components of the HBM have been used to identify predictors of a person's exercising behaviors (Bonheur & Young, 1991; Desmond, et al., 1990; Nelson, 1991; O'Connell et al., 1985; Sechrist et al., 1987; Slekner, Price, Robert & Jurs, 1984; and Tappe, et al., 1989).

Some studies have shown perceived "susceptibility" to illness is a significant factor in predicting preventative health behaviors (O'Connell et al., 1984; Pender, 1988; and Slenkner et al., 1984). However, previously studies that have examined the influence of "susceptibility" on adolescent health behaviors have shown inconclusive results (Desmond, 1990, O'Connell et al., 1985, and Slekner et al., 1984). Further, "severity" to illness appears to be a weak determinant in exercising behaviors (Desmond et al., 1989; O'Connell et al., 1985, and Slekner et al., 1984).

Modifying factors also have an impact on preventative health behaviors, including demographics, "cues to action", and psychosocial variables. Demographic variables correlated with participation in exercise include age (younger individuals were more active) and sex (males were most frequently active) (Perry et al., 1985; Perry, Klepp, Halper, Dudovitz, Golden, Griffin, & Smyth, 1987; Slenker et al., 1984 and Yoshida et al., 1988). O'Connell et al. (1985) found "cues to exercise" including peer pressure to be most significant in predicting obese and non-obese adolescent's participation in exercise.

Social support was a strong determinant in adult women exercisers (Johnson, Corrigan, Dubbert, & Gramling, 1990; Reynolds et al., 1990, and Seigel et al., 1988) as well as adolescent exercisers (Desmond et al., 1989 and O'Connell et al., 1985). There has been minimal research done on the family's impact on the adolescent's exercising behaviors, although Dishman (1985) found that physical activity levels during adulthood were affected by past modeling and support from the mother during the individual's adolescent years (Dishman et al., 1985). Weather or not paternal or sibling support influences adolescent exercising behaviors has yet to be explored.

Some studies have found a positive relationship between family and peer support and the adolescent's participation in exercise when peer and parental support was evaluated together as one variable (Butcher, 1983; and Reynolds et al., 1990). But when parental and peer support were analyzed separately, parental support had little or no influence on the adolescent's exercising behaviors (Greendorfer, 1977; and Perry et al., 1985).

A few studies have looked at the types of leisurely activities that the family participates in together and showed over 50 percent of the respondents reported the family's activities as being sedentary (Perry et al., 1985; and Yankelovich, Skelly, & White, 1979). One might predict that the parent's physical activity level would, at least, indirectly influence the adolescent's exercising behaviors.

When all components of the HBM are examined, perceived "benefits" and "barriers" stand out as being the most significant predictors of preventive health behaviors (Janz & Becker, 1984). Perceived "benefits" has a strong correlation in predicting dieting behaviors (O'Connell et al., 1985) and jogging behaviors (Boeheur & Young, 1991; and Slenker et al., 1984).

Perceived "barriers" has been shown to be the strongest predictor of exercise participation with adult females (Boeheur & Young, 1991; and Slenker et al., 1984) and adolescents (Tappe et al., 1990). Frequently cited "barriers" to exercise among the adult population include time constraints, lack of interest, lack of an exercise partner, and unavailability of exercise facilities (Dishman et al., 1985, Slenker et al., 1984; and Johnson et al., 1990). Lack of time also appears to be a significant "barrier" to exercise for adolescents (Desmond et al., 1988 and Tappe et al., 1990). Other "barriers" noted with adolescents were school and work commitments, lack of interest, inaccessibility to facilities, and unsuitable weather (Tappe et al., 1989, 1990).

One limitation in using the HBM to examine "barriers" to exercise is that the model elicits "perceived" responses which may not necessarily be the real reasons why the individual does not exercise. For example, a person may rationalize that the primary "barrier" to exercise is the

lack of time when the true reason is lack of motivation of the individual.

Conceptual Model

The HBM originally developed by Becker (1975) and modified by Given (1990) was used as the theoretical framework for this study (see figure 2.). Modifying factors included demographic information including age, grade, and race of client, all previously linked with exercising behaviors (CDC, 1992, & Desmond et al., 1988) along with sociopsychological factors, such as peer and family support. Perceived "benefits" and intrinsic and extrinsic "barriers" were examined. "Cues to action" were not examined. Conceptual and operational definitions of perceived benefits and barriers will be discussed in the methods section. Figure 2. Health Beliefs of Adolescent Women Regarding Exercise



Adapted from Becker and Maiman (1975)

METHODS

<u>Methodology</u>

A non-experimental, descriptive, survey research design was utilized by administering a closed-ended questionnaire based on the Health Belief Model. The population was female students enrolled in grades 9 through 12 at a large inner city high school. All age groups were studied to see if a relationship exists between age and exercising behavior. A high school was chosen since it was felt this population would elicit a heterogenous sample of female adolescents and exercising behaviors. A convenience sample included all female students in which teacher and parental permission was received.

Procedures for Data Collection

Prior to the study taking place, five conditions were met, 1) permission from the school research review committee 2) permission from the principal, 3) contact with teachers whose classrooms participated in the study, 4) parental consent, and 5) approval from the human subjects review committee at Michigan State University.

The following time schedule was used for data collection:

January 25-February 12. The researcher sent a memo to the 97 teachers at Eastern High School and requested permission to have their class participate in the study. Teachers were requested to respond by February 12th. The researcher then contacted the 16 teachers who agreed to participate in the study to distribute instructions that

included information on 1) the parental/student consent form; 2) what should be disclosed by the teachers to the students about the study; and 3) when, where and by whom the questionnaire would be distributed.

Teachers were requested to distribute and collect the parental/student consent forms during class and announce the study date one week prior to data collection taking place. Ten out of the 16 teachers received parental/consent forms back from their students. Types of classes that the survey was administered included Art (1), Chorus (2), Chemistry (2), French (2), Government (1), Health (2), Physical Education (8), and Psychology (3). Out of the 360 parental/student consent forms sent home with the adolescent, a total of 125 were signed and returned, for a response rate of 35 percent.

February 26-March 15. Data collection took place during class time that was agreeable to the teachers. The researcher distributed the questionnaire in the classroom, gave brief instructions on completing the form, received verbal assent, and answered student's questions. Those students not participating in the study, including males and those females who did not return the parental/student consent form , were given a nutritional quiz to read. All students placed either the completed questionnaire or nutritional quiz in an envelope and placed in a designated box on the teacher's desk. The questionnaire took

approximately 10-15 minutes to complete. Answers from the nutritional quiz were analyzed.

<u>Conceptual and Operational Definitions</u>

Listed below are the specific definitions for the research variables.

<u>Conceptual Definitions:</u>

- <u>Aerobic Exercise</u>: Vigorous exercise in which the heart rate is elevated at least 65 percent maximal capacity.
- <u>Benefits:</u> perceived physical and/or psychological well being that results from participation in exercise.
- 3. <u>Barriers:</u> perceived physical or psychological obstacles that an individual attributes to their lack of participation in exercise.
- <u>Reqular Exercise</u>: participation in vigorous exercise on a regular, weekly basis in which heart rate is elevated at least 65 percent maximal capacity.
- 5. <u>Sedentary:</u> a description of an individual who rarely or never participates in regular, aerobic exercise.
- Moderately Active: a description of an individual who occasionally participates in aerobic exercise.
- 7. <u>Very Active:</u> a description of an individual who frequently participates in regular, aerobic exercise.

Operational Definitions

- <u>Aerobic Exercise:</u> Exercise in which the individual indicates they breathe heavily and their heart beats fast, such as aerobic dance, biking, fast walking, hockey, racquetball, running, soccer, stairmaster, swimming, tennis, or volleyball (Johnson's questionnaire: 10, 11, 12, and 13).
- 2.<u>Benefits:</u> perceived improvement in physical and/or psychological health and disease prevention (Sechrist's questionnaire: 1, 2, 3, 5, 7, 8, 10, 11, 13, 15, 17, 18, 20, 22, 23, 25, 26, 27, 29, 30, 31, 32, 34, 35, 36, 38, 39, 41, and 43).
- 3.<u>Barriers</u>: perceived fatigue, self concept, health deficit, time commitments, inaccessibility to facilities, financial limitations of the individual (Sechrist's questionnaire: 4, 6, 9, 12, 14, 16, 19, 21, 24, 28, 33, 37, 40 and 42. Johnson's questionnaire: 17 A, B, C, and D).
- 4.<u>Sedentary:</u> participation in aerobic exercise less than once a week (Johnson's questionnaire: 10).
- 5.Moderately Active: participation in aerobic exercise one to two times a week (Johnson's questionnaire: 10, 11, 12, 13, and 14).
- 6.<u>Very Active:</u> participation in aerobic exercise at least three times a week (Johnson's questionnaire: 10, 11, 12, 13, and 14).

Instruments

A modified version of the Women and Exercise questionnaire by Johnson (1990) and Exercise Benefits/barriers question developed by Sechrist, Walker, and Pender (1990) was used in the study. Johnson (1990) utilized her questionnaire to examine perceived barriers to exercise and diet practices in community women and the sample size was 226. Validity and reliability of the original measure was not available. The questionnaire was modified for two reasons, 1) to delete information including certain lifestyle, dietary questions, and barriers not applicable to the adolescent population and 2) to make the questionnaire more specific for adolescents instead of adults. The revised questionnaire includes five demographic questions, four health and nine exercise questions.

Sechrist et al (1990) developed a 43 item questionnaire to specifically address cognitive/perceptual factors that affected participation level in exercise. The sample was 664 randomly selected, community members and included adults (male and female) who did and did not exercise. The standardized alpha was .95 and test-retest reliability was .89. The scale consisted of 29 benefits and 14 barriers to exercise assessed by Likert scaled questions. Higher scores on benefit items indicated greater benefits and lower scores on barrier items indicated lesser barriers to exercise, thus

a high overall EBBS scores was associated with more perceived benefits and less barriers to exercise.

Data Analysis

One way Anova's, t-tests, and Chi-squares were used to see which variables have significant impact on sedentary and physically active adolescent's exercise behaviors. Subjects were divided into three categories, those: exercising less than once a week (sedentary), exercising one to two times per week, (moderately active) and exercising three or more times a week (very active). Categories were determined by the subject's physical activity level assessed by questions 10, 11, and 13, from Johnson's scale so that a comparison between these two groups can be made.

RESULTS

Descriptive Statistics

Demographics. Of the 125 subjects who returned parental consent forms, a total of 119 female adolescents were present during classtime to complete the questionnaire. Types of classrooms surveyed included, Art, Chorus, Chemistry, French, Government, Health, History, Physical Education, and Psychology. Frequencies of age, grade and race are listed in figures 3, 4, and 5 (see below).

Figure 3. Bar Chart Of Age Distribution

| <u>AGE</u> | 0 | 10 | 20 | 30 | Pe: 40 | rcent 50 | of To 60 | otal 70 | 80 | 90 | 100 |
|------------|--------|-------|--------|--------|-----------|-------------|-------------|------------|----|----|-----|
| 14 | (n=32) | * * * | **** (| (26.9% |) | | · | | | | |
| 15 | (n=32) | *** | **** (| (26.9) | | | | | | | |
| 16 | (n=21) | **(| 17.68 | 5) | | | | | | | |
| 17 | (n=15) | *(1 | 2.6%) | | | | | | | | |
| 18 | (n=19) | **(| 16%) | | | | | | | | |

Age ranged from 14 to 18 with a greater number of younger adolescents.

<u>Fitness</u> Perceived levels of physical fitness included: "great physical shape" <u>n</u>=14 (11.8%), "good physical shape" <u>n</u>=92 (77.3%), and "terrible physical shape" <u>n</u>=13 (10.9%).

<u>Health</u> Many responded that regular exercise was important to a person's health, including, "very important" <u>n=82 (68.9%), "important" <u>n=32 (28.6%)</u> and "not important"</u>

Figure 4. Bar Graph Of Grade Distribution

| | Percent of Total | | | | | | | | | | |
|---------------------|------------------|-------|-----------|-----------|------|------|---------|-------|----|----|----|
| <u>GRADE</u> 100 | | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
| 9th | (n=62 | 2)*** | * * * * * | * * * * * | **** | **** | *** (52 | 2.1%) | | | |
| 10th | (n=1) | 8)*** | **** (: | 15.1% |) | | | | | | |
| 11th | (n=1) | 7)*** | **** (3 | 14.3% |) | | | | | | |
| 12th | (n=22 | 2)*** | **** | *(18. | 5) | | | | | | |
| | | | | | | | | | | | |

Figure 5. Bar Chart Of Ethnic Distribution

| | Percent of Total | | | | | | | | | |
|-------------------------------|------------------|---|-----|----|----|----|----|----|----|----|
| <u>RACE</u> 100 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
| White (n=77) | *** | *************************************** | | | | | | | | |
| African American (n=11) | *** | *(9.2 | :8) | | | | | | | |
| Hispanic (n=11) | *** | *(9.2 | :%) | | | | | | | |
| Biracial (n=10) | *** | *(8.4 | \$) | | | | | | | |
| Asian (n=9) | *** | (7.6% | ;) | | | | | | | |
| Indian (n=1) | * (0 | .8%) | | | | | | | | |

<u>Physical Activity</u> Students were divided into three groups by self reported activity level with sedentary adolescents (group 1) exercising less than once per week, moderately active adolescents (group 2) exercising one to two times per week, and very active adolescents (group 3) exercising three or more times per week. Students were requested not to include activities associated with physical education classes and school affiliated sports. Results included: sedentary <u>n</u>=15 (12.6%), moderately active <u>n</u>=44 (37.0%), and very active <u>n</u>=59 (59.6%). Types of activities reported are listed in figure 6. (see below).

| Figure (| 6. | Bar | Graph | Of | Types | Of | Activities | Reported | d |
|----------|----|-----|-------|----|-------|----|------------|----------|---|
|----------|----|-----|-------|----|-------|----|------------|----------|---|

| | 0 | 10 | 20 | 20 | TOTAL | NUMBE | R 60 | 70 | |
|-------------|----------|-------------|-------|-------|---------------|---------|----------|------------|----|
| ACTIVITI | <u> </u> | 10 | 20 | | 40 | | 00 | | |
| Running | **** | ***** | ***** | **** | ***** | ***** | ***** | ****n=76 | 6) |
| Biking | **** | ***** | **** | **** | * * * * * * * | ***** | ***** | **** (n=73 | 3) |
| Swimming | **** | * * * * * * | **** | **** | ***** | ***** | ***** (; | n=63) | |
| Aerobics | **** | ***** | ***** | **** | * * * * * * * | ****(| n=58) | | |
| Volleyball | *** | ***** | ***** | ***** | ***** | ** (n=4 | 9) | | |
| Walking | **** | ***** | ***** | **** | ***** | (n=47) | | | |
| Stairmaster | **** | ***** | **** | **** | ***** (1 | n=43) | | | |
| Tennis | **** | ***** | ***** | **** | * (n=36) |) | | | |
| Basketball | **** | **** (r | i=12) | | | | | | |

Most frequently performed activities that were reported are listed in figure 7. (see below).

| <u>ACTIVITY</u> | 0 | 5 | 10 | 15 | 20 | 25 | 30 | |
|-----------------|------|--------|-------------|---------|-------|--------|----|--|
| Running | **** | ***** | * * * * * * | ***** | ***** | (n=24) | | |
| Walking | **** | ***** | ***** | **** (n | =15) | | | |
| Aerobics | **** | ***** | ***** (| n=12) | | | | |
| Volleyball | **** | ***** | * (n=9) | | | | | |
| Biking | **** | **** (| n=7) | | | | | |
| | | | | | | | | |

Figure 7. Bar Graph Of Most Frequently Performed Activities

Of the moderately and very active groups, 50.4 percent of sample participated in school sports whereas 35.3 percent of sample size did not. Most frequently reported school affiliated sports include: track (<u>n</u>=11), tennis (<u>n</u>=7), volleyball (<u>n</u>=6), swimming (<u>n</u>=4), and softball (<u>n</u>=4). Number of school affiliated practices a week ranged from 2 to 8 with the mode being five. Number of sports affiliated meets per week ranged from one to three with the mode being two. Descriptive statistics on the Exercise Benefit/Barrier Scale were performed to identify the most significant benefits and barriers to exercise (see Table 1 and Table

2). Mean, standard deviation, minimum and maximum scores of 43 benefit and barrier variables are listed in Table 3. Table 1. Most Frequently Cited Benefits To Exercise

| BEI | NEFIT | $\frac{\text{MEAN}}{(\text{Range=}1-4)}$ |
|-----|---|--|
| | | (Range 1 1) |
| 1. | "increases my level of fitness" | 3.57 |
| 2. | "improves the way my body looks" | 3.55 |
| 3. | "increases my muscle strength" | 3.45 |
| 4. | "improves my flexibility" | 3.45 |
| 5. | "improves functioning of my cardiovascular system" | 3.43 |
| 6. | "sense of personal accomplishment" | 3.42 |
| 7. | "contact with friends and persons I enjoy | " 3.40 |

*NOTE: Higher mean=more frequent the benefit item was scored.

There were a total of 29 benefit and 14 barrier variables scored from the EBBS.

Table 2. Most Frequently Cited Barriers To Exercise

| BARRIER (Ra | <u>MEAN</u> ange= 1-4) |
|--|---------------------------|
| 1. "Exercise tires me" | 2.53 |
| 2. "I am too embarrassed to exercise" | 2.76 |
| 3. "I am fatigued by exercise" | 2.80 |
| 4. "Facilities do not have convenient schedules" | 2.85 |
| 5. "My family members do not encourage me" | 2.88 |
| | |

*NOTE: Lower means=more frequent the barrier item was scored.

| VARIABLE | | * <u>MEAN</u> | SD | MINIMUM | MAXIMUM |
|----------|----------------------|---------------|------|---------|---------|
| BE1 | (ENJOY EXERCISE) | 3.27 | .56 | 2 | 4 |
| BE2 | (DECREASED STRESS) | 3.23 | .77 | 1 | 4 |
| BE3 | (MENTAL HEALTH) | 3.13 | . 68 | 1 | 4 |
| BA1 | (TOO MUCH TIME) | 2.96 | . 67 | 1 | 4 |
| BE4 | (PREVENT MI) | 3.10 | .77 | 1 | 4 |
| BA2 | (TIRES ME) | 2.53 | .78 | 1 | 4 |
| BE5 | (INCREASED STRENGTH) | 3.45 | . 65 | 1 | 4 |
| BE6 | (ACCOMPLISHMENT) | 3.42 | .70 | 1 | 4 |
| BA3 | (FACIL.TOO FAR AWAY) | 3.24 | . 64 | 1 | 4 |
| BE7 | (FEEL RELAXED) | 3.14 | . 64 | 2 | 4 |
| BE8 | (PEER CONTACT) | 3.40 | .78 | 1 | 4 |
| BA4 | (EMBARRASSED) | 2.76 | .91 | 1 | 4 |
| BE9 | (AVOID HIGH BP) | 3.03 | .72 | 1 | 4 |
| BA5 | (COST TOO MUCH) | 3.39 | .72 | 1 | 4 |
| BE10 | (INCREASED FITNESS) | 3.57 | . 52 | 2 | 4 |
| BA6 | (INCONVENIENT) | 2.85 | .75 | 1 | 4 |
| BE11 | (MUSCLE TONE) | 3.32 | .71 | 1 | 4 |
| BE12 | (IMPROVED CV STATUS) | 3.45 | .61 | 1 | 4 |
| BA7 | (FATIGUE) | 2.80 | .72 | 1 | 4 |
| BE13 | (WELL BEING) | 3.23 | .65 | 1 | 4 |
| BA8 | (LACK SUPPORT) | 2.93 | .88 | 1 | 4 |
| BE14 | (INCREASED STAMINA) | 3.32 | .55 | 2 | 4 |

Table 3. Frequencies Of EBBS Scores
| VARIA | ABLE | MEAN | SD | MINIMUM | MAXIMUM |
|-------|--------------------|------|-----|---------|---------|
| BE15 | (FLEXIBILITY) | 3.45 | .56 | 2 | 4 |
| BA9 | (TIME FROM FAMILY) | 3.15 | .71 | 1 | 4 |
| BE16 | (IMP. DISPOSITION) | 3.04 | .69 | 1 | 4 |
| BE17 | (SLEEP BETTER) | 3.21 | .76 | 1 | 4 |
| BE18 | (LIVE LONGER) | 3.15 | .69 | 1 | 4 |
| BA10 | (LOOK FUNNY) | 3.15 | .76 | 1 | 4 |
| BE19 | (LESS FATIGUED) | 2.85 | .78 | 1 | 4 |
| BE20 | (MEET PEOPLE) | 2.97 | .66 | 1 | 4 |
| BE21 | (ENDURANCE) | 3.34 | .65 | 1 | 4 |
| BE22 | (SELF CONCEPT) | 3.25 | .71 | 1 | 4 |
| BA11 | (LACK FAMILY ENC.) | 2.88 | .96 | 1 | 4 |
| BE23 | (MENTALLY ALERT) | 3.03 | .68 | 1 | 4 |
| BE24 | (MORE ACTIVE) | 3.26 | .70 | 1 | 4 |
| BE25 | (IMPROVED WORK) | 3.00 | .73 | 1 | 4 |
| BA12 | (TIME FROM FAMILY) | 3.14 | .72 | 1 | 4 |
| BE26 | (ENTERTAINMENT) | 2.93 | .69 | 1 | 4 |
| BE27 | (ACCEPTANCE) | 2.70 | .77 | 1 | 4 |
| BA13 | (HARD WORK) | 2.80 | .86 | 1 | 4 |
| BE28 | (IMPROVED BODY) | 3.31 | .55 | 2 | 4 |
| BA14 | (TOO FEW PLACES) | 3.04 | .60 | 1 | 4 |
| BE29 | (IMPROVED LOOKS) | 3.55 | .78 | 1 | 4 |

* NOTE: BE=BENEFITS & BA=BARRIERS. <u>Higher</u> means on <u>benefit</u> items=more frequently item was scored, conversely, <u>Lower</u> means on <u>barrier</u> items=more frequently the item was scored.

Statistical Analysis Procedure

Statpac Gold was the statistical package in which results were analyzed. Missing data in Exercise Benefit/Barrier Scale (EBBS) was controlled by the recommendations from Sechrist et al who developed this instrument, which included, 1) if more than 5 percent of the information was missing per case (two or more responses), the value was not scored, and 2) if less than 5 percent of information was missing, the average value for all cases was calculated and used for that variable in that specific case.

Range of possible scores was 43-172 with higher scores associated with more perceived "benefits" and less perceived "barriers" to exercise. Range of scores for each individual item was one through four. Calculation of scores of benefit responses included: one=strongly disagree, two=disagree, three=agree and four =strongly agree. Barrier scoring was reversed in that one=strongly agree, two=agree, three=disagree, and four=strongly disagree. Benefit and barrier scores were then added together to obtain the total case score. Reliability of the EBBS was determined by calculating all "benefits" and "barrier" variables separately with a "benefits" alpha of .92 and a "barriers" alpha of .75.

Inferential Statistics

<u>Hypothesis</u>. A one-way ANOVA was performed on group affiliation and mean scores on the EBBS to test the hypothesis that "sedentary female adolescents perceive more barriers and less benefits to exercise compared to physically active female adolescents". T-tests performed between cell means of the three groups which were all significant, groups 1 and 2 \pm (112) = 2.60, p<.05, groups 1 and 3 \pm (112) = 4.19, p.05, and groups 2 and 3, \pm (112) = 2.12, p<.05. Based on this analysis, the hypothesis was supported with the highest EBBS scores among very active adolescents <u>F</u> (2, 112) = 9.23, p<.05 (see Table 4).

When examining the "benefits" of the EBBS by one-way ANOVA, results indicated differences in perceived benefits by exercise group affiliation, $\underline{F}(112) = 10.13$, $\underline{p} < 05$. Barrier scores were not different for sedentary, moderately active and physically active groups, $\underline{F}(112) = 2.36$, $\underline{p} = <.09$. An ANOVA was also performed to compare exercise group affiliation and mean scores on Johnson's five item barrier scale. These results were also nonsignificant, $\underline{F}(115) = 1.83$, $\underline{p} = .166$).

Other barriers to exercise that were elicited by the open-ended question "other things that keep me from exercising" were: "lazy", "lack motivation", "other things to do", "lack of transportation", "not fit", "don't feel like it", "being sick", "away from home", and "church".

In summary, there was a significant difference in the number of perceived "benefits" and "barriers" to exercise between sedentary and physically active adolescents with more "benefits" and less "barriers" reported by the physically active teens.

Table 4. ANOVA On EBBS Mean Scores And Group Affiliation

| ONE-WAY ANALYSIS OF VARIANCE | | | | | | | | |
|------------------------------|----|----------|-------|---------|--|--|--|--|
| CELL DEFINITION | N | MEAN | RANGE | SD | | | | |
| GROUP 1 (sedentary) | 15 | 122.3333 | * | 12.0752 | | | | |
| GROUP 2 (mod. active) | 44 | 133.2500 | * | 15.2896 | | | | |
| GROUP 3 (very active) | 56 | 139.4286 | * . | 13.4555 | | | | |

*Range of scores were 95-167 for all cases

ANOVA TABLE SUMMARY

| SOURCE | DF | SUM OF | SQUARE | S MEAN | SQUARES | F | SIG |
|----------------------------|------|--------|--------|---------|---------|--------|-------|
| BETWEEN GROUPS | 2 | 3636. | 5633 | 818. | 2816 | 9.2352 | <.05 |
| WITHIN GROUPS | 112 | 22051. | 2976 | 196. | 8866 | | |
| TOTAL | 114 | 25687. | 8609 | | | | |
| T-TEST BETWEEN | CELL | MEANS | (VALUE | SOFPA | RE FOR | TWO-TA | ILED) |
| GROUP 1 t=2.60 t=2.1257 |)21 | GROUP | 91 t | =4.1906 | GROUP | 2 | |
| GROUP 2 p= .01 .0309 | .05 | GROUP | 93 F | .000 | GROUP | 3 p | - |

<u>Researcher question #1:</u> "To what extent does peer support influence the exercising behaviors of female adolescents". A oneway ANOVA showed a relationship between the peer support variables, 1) "exercise allows me to be with friends and persons that I enjoy", 2) number of friends who exercise, 3) "persons that I usually exercise with", and 4) number of friends who exercise" and exercise group affiliation and was significant (see Table 5.). When analyzing each peer support variable separately by Chisquare, all variables were significant except for the variable "number of friends who exercise", $X_2(4,$ <u>N=102)=7.47</u>, p=.113). However, two of the conditions for performing a Chi-squares were violated including expected frequencies being less than three and a reported "zero" in one cell, therefore results must be interpreted with caution.

In sum, although the <u>number</u> of friends who exercise was not significant, the is convincing evidence to support the premise that there is a positive association between peer support and amount of exercise performed by the adolescent.

Research question #2: Do younger adolescents (13-15 year olds) participate in exercise more frequently than older adolescents (16-18 year olds).

A Chi-square performed on younger and older adolescents by exercise group affiliation did not show a significant relationship, $X^2(8, N=118)=4.5$, p=.82. There also was no relationship between grade in school and exercise group affiliation when using the Chi-square, $X^2(6, N=118)=10.38$, p=.11. Therefore, this sample did not support the

proposition that there is a difference between age or grade and amount of exercise performed by female adolescents.

Researcher question #3: Are there similar exercising patterns between family members and the adolescent's exercising behaviors. Chi-square was used to see if a relationship exists between group affiliation and amount of exercise performed by family members. "The number of family members who exercised regularly" by exercise group affiliated showed a significant relationship, X^2 (4, <u>N=117)=11.89</u>, p<.05, suggesting that as the number of family member who regularly exercises increased, the amount of exercise that was reported by the adolescent also increased (see Table 6).

| ONEWAY ANALYSIS OF VARIANCE | | | | | | | | | |
|-----------------------------|----------------|-------|----------|----------|--------------|---------|------|--|--|
| CELL DEF | <u>TINITIO</u> | N | | <u>N</u> | MEAN | RANGE | SD | | |
| GROUP 1 2.51 | (seden | tary) | | 3 | 13.67 | (11-16) | | | |
| GROUP 2 2.70 | (moder | ately | active) | 42 | 13.86 | (8-18) | | | |
| GROUP 3 2.50 | (very | activ | e) | 59 | 15.68 | (8-18) | | | |
| | | | ANOVA | TABLE S | SUMMARY | | | | |
| SOURCE | | DF S | UM OF SO | UARES | MEAN SQUARES | F RATIO | SIG | | |
| BETWEEN | GROUPS | 2 | 85. | 92 | 42.96 | 6.45 | .002 | | |
| WITHIN G | GROUPS | 101 | 672. | 70 | 6.66 | | | | |
| TOTAL | | 103 | 758. | 61 | | | | | |

Table 5. ANOVA On Peer Support By Group Affiliation

However, when examining the variable "do parents exercise regularly" by group affiliation, results were nonsignificant, $X^2(4, \underline{N}=104)=4.38$, $\underline{p}=.36$, along with "do siblings exercised regularly", which was nonsignificant, X^2 $(2, \underline{N}=104)=1.00, \underline{p}=.60$. Therefore, even though individual exercising patterns of parents and siblings was not indicative of the adolescent's exercising behaviors, the <u>number</u> of family members who exercise regularly is associated with the teens exercising behaviors.

Table 6. Chi-square On Group Affiliation By Active Family Members

| GROUP 1 | GROUP 2 | GROUP 3 | ROW TOTAL |
|---------------------|--------------------|------------------|-----------|
| (sedentary) | (moderately active | e) (very active) | |
| NONE 7 | 8 | 7 | 22 |
| 31.8 | 36.4 | 31.8 | |
| 1-3 8 | 32 | 43 | 83 |
| 9.6 | 38.6 | 51.8 | |
| >3 0 | 3 | 9 | 12 |
| 0.0* | 25.0 | 75.0 | |
| COLUMN TOTAL: 15 | 43 | 59 | 117 |

* Note: An Expected frequencies less than three violates one condition when performing Chi-Square.

| Chi-square= | 11.89 | Valid cases= | 117 |
|--------------|-------|----------------|-------|
| DF= | 4 | Missing cases= | 2 |
| Probability= | .01 | Response rate= | 98.3% |

Other Significant Findings

<u>Race</u>. Differences found on the Exercise Benefit/Barrier Scale when performing a one-way ANOVA by race included, African American (\underline{M} =125.42, SD=13), Asian (\underline{M} =127.12, SD=12), Biracial (\underline{M} =140.40, SD=14), Hispanic (\underline{M} =135.40, SD=8.95), Native American (\underline{M} =126, SD=0) and White (\underline{M} =137.90, SD=14), F=2.5, p<.05). T-tests between cell means were all significant with the means between African America and White being most significant of the six groups, (\underline{t} (114) =2.79, p<.05). Since race was a significant factor in EBBS scores, future analysis should control for the variable "race" so that results are not falsely interpreted in that EBBS score differences might be due to ethnicity and not exercise group affiliation.

<u>Perceived level of fitness</u>. Reported fitness level of the adolescent and mean scores on the EBBS were very significant, when using a one-way ANOVA, including those who reported being in "great" shape (\underline{M} =149.61, SD=11), "good" shape, (\underline{M} =135.50, SD=24), and "terrible" shape (\underline{M} =124.30, SD=9.66), (F=11.74, p=.000) with those in great shape having higher EBBS scores. There was also was a relationship between "level of fitness" by group affiliation when performing Chi-square in which more students rated themselves in "good" or "great" shape as their activity increased X²(4, N= 118)=16.94, p<.05

<u>Importance of regular exercise</u>. Responses on "how important regular exercise was to a person's health" and mean scores on the EBBS was significant with a one-way ANOVA, including "very important" $\underline{n}=80$, (<u>M</u>=139.30, SD=13),

"important" <u>n</u>=32 (<u>M</u>=127.81,SD=13.5), and "not important" <u>n</u>=125.50 (<u>M</u>=125.5, SD=14.74), (F=8.60, <u>p</u>=.000).

<u>School sports</u>. Participation in school sports and mean scores on the EBBS were significant when using the one-way ANOVA, including "yes" <u>n</u>=58, (<u>M</u>=143.30, SD=11.46) and "no" <u>n</u>=41, (<u>M</u>=128.92, SD=13), (F=18.48, <u>p</u><.05). A Chi-square performed on participation in school sports by group affiliation (excluding group 1) showed a significant relationship in that more adolescents exercised when they were affiliated with school sports (<u>n</u>=60) compared to those who did not participate (<u>n</u>=42), $X^2(1, \underline{N}=103)=6.13$, <u>p</u>=.01.

DISCUSSION

Summary of Results

Physically active female adolescents perceive more benefits and fewer barriers to exercise compared to sedentary female adolescents. Family support significantly impacted the level of physical activity of the female adolescent, which was predicted by the conceptual model. Family support was defined as number of family members who exercised. This was a significant finding since past studies have not investigated the relationship between the family's and the adolescent's exercising behaviors (see Figure 8).

Contrary to past findings and the conceptual model, barriers to exercise were not a significant indicator of whether an adolescent was sedentary or active. There are a few possible explanations why barriers were not significant in the study. One, sample bias may have been present since only those students who took the initiative to return the parental/student consent form back to the teacher could participate in the study, thus these students were most likely to be physically active or interested in exercise. Two, this age group lacks work and family commitments that impact adult exercising behaviors, thus there may be less time-related barriers to exercise during adolescence compared to adulthood.

Peer support was pivotal in whether or not the adolescent participated in exercise which was consistent with past research. In the conceptual model,

Figure 8. Revised Health Beliefs of Adolescent Women Regarding Exercise



a unidirectional relationship between peer support and perceived benefits to exercise was predicted and supported by the study, although the <u>number</u> of peers participating in exercise was not found to be associated with whether the adolescent was sedentary or active. The amount of exercise performed was similar for younger and older adolescents and the grade in school of the adolescent was not predictive of exercise group affiliation.

Race of the client was the only significant "modifying factor" and was associated with the number of perceived "benefits" and "barriers" to exercise, which was congruent with the model.

Limitations of the Study

There were several limitations of this study: 1) a small, inner-city convenience sample was utilized, therefore results were not generalizable to the adolescent population; 2) a large number of students (\underline{n} =62) were from 9th grade physical education classes, thus a large portion of the sample consisted of younger students who were currently participating in required physical fitness activities; 3) a significant proportion of the sample participated in school sports (50%), which may have lead to an overinflated number of teens who exercised regularly; 4) self-reported activity levels were used to distinguish sedentary from physically active adolescents. Actual observations of exercising activity to validate self reported physical activity level would be useful; and 5) the EBBS was developed for the adult

population, therefore, questions may not have been sensitive to the adolescent's exercise perceptions.

Future Research

More research is needed to focus on the relationship between family member's exercising behaviors. Interviews or questionnaires could elicit information on what types of exercise are performed by family members individually and collectively, along with perceived "benefits" and "barriers" to exercise reported by family members. Since lifelong exercise patterns are developed during the adolescent years, more research is needed to understand the impact of family members on exercise behaviors.

Since race was a significant factor in exercise group affiliation, more research needs to examine the impact of ethnicity, culture, and socioeconomic class on exercise behaviors. For example, barriers to exercise may be more prevalent in lower socioeconomic adolescents exercise compared to more affluent individuals, including limited access to community fitness centers and less time to exercise due to family or job responsibilities. Family Clinical Nurse Specialist Implications

The Family Clinical Nurse Specialist (FCNS) is in an excellent position to impact exercising behaviors through assisting the client in recognizing, addressing, and overcoming obstacles that block participation in regular exercise. The FCNS should be attuned to recognizing perceived "benefits" since these components of the Health

Belief Model were the most connected with exercising behaviors in this sample. By developing and administering an assessment tool that elicits the client's perceptions of exercise, the FCNS can plan interventions that capitalize on the client's perceptions of benefits and help eliminate barriers.

After assessing the adolescent's perceptions of exercise, the FCNS must approach exercise as a positive self-care behavior that should be performed primarily for the health benefits associated with physical fitness. Thus, the FCNS needs to be cautious not to overemphasize the "improved physical appearance" benefit to exercise since this may encourage the adolescent to exercise solely to please others or to conform to society's emphasis on body weight which may exacerbate or foster undesirable health conditions such as anorexia and bulimia. If the adolescent approaches regular exercise as a way to strengthen her physical and psychological well being, she may not only experience a sense of empowerment and improved self esteem due to taking care of her body, but she may also may continue to be physically active throughout her life span since she is doing this activity for herself and not to please others.

Sources of peer and family support also need to be assessed by the FCNS. Female adolescents appeared to greatly benefit from peer interaction during exercise, thus interventions for facilitating the sedentary individual in

beginning an exercise program should involve activities that include other teens. The FCNS might suggest types of group activities that are very flexible and less expensive activities, such as fast walking with friends. The clinician might also address the stressors in the adolescent's life and suggest exercise as both a stress reducer and a time to socialize with friends while exercising.

Along with assessing the individual's exercising behaviors and perceptions, the family's exercising patterns also need to be considered since the number of family members who exercise was associated with the amount of exercise performed by the adolescent. A family exercise assessment tool should be incorporated into each client's history and physical so that the FCNS can promote and encourage physical activities that the family might participate in together. For small families, the FCNS might first encourage activities that family members could perform together. If family exercise is not feasible due to overlapping schedules or lack of interest, the FCNS could then encourage the adolescent to exercise with friends or participate in school affiliated sports.

Lastly, the finding that adolescents who participated in school affiliated sports were the most physically active and scored higher on the EBBS compared to those students who were not involved in school sports has two vital implications. One, the FCNS should encourage participation

in school sports whenever possible. If involvement in school sports is not practical due to time constraints or lack of available extracurricular activities, the FCNS could then suggest other options, such as community recreational programs. The FCNS might also be in a position to develop and implement a fitness program with the assistance of community or school personnel. The FCNS could tailor a fitness program specifically for female adolescents in which she might incorporate other health promotion activities, such as nutritional counseling.

In summary, the FCNS holds the expert knowledge and skills to promote family exercise and fitness. Heart disease, which is associated with obesity and sedentary lifestyles, remains the leading killer of men and women in the this country. The FCNS can assist the client in establishing lifelong exercise behaviors during the teen years, thus prevent obesity and cardiovascular disease later in life. By incorporating health promotion strategies into her/his practice, the FCNS has the ability to be the catalyst in transforming one's lifestyle from sedentary to physically active. Only when the individual is directed and encouraged to participate in wellness-focused, self-care activities will this nation begin to see a decrease the number of preventable illnesses, including heart disease, diabetes, and obesity.

APPENDICES

APPENDIX A

YOUNG WOMEN AND EXERCISE QUESTIONNAIRE

APPENDIX A

YOUNG WOMEN AND EXERCISE QUESTIONNAIRE DEMOGRAPHIC INFORMATION

- 1. AGE: A) 13 YEARS OLD
 - B) 14 YEARS OLD
 - C) 15 YEARS OLD
 - D) 16 YEARS OLD
 - E) 17 YEARS OLD
 - F) 18 YEARS OLD OR OLDER
- 2. GRADE: A) 9th
 - B) 10th
 - C) 11th
 - D) 12th
- 3. RACE: (OPTIONAL)
 - A) AFRICAN AMERICAN
 - B) ASIAN OR PACIFIC ISLANDER 5) WEIGHT
 - C) HISPANIC
 - D) WHITE
 - E) OTHER

HEALTH INFORMATION

- 6) DO YOU HAVE ANY MEDICAL CONDITIONS THAT KEEP YOU FROM EXERCISING?
 - A) YES (please specify)
 - B) NO
- 7) DO YOU HAVE ANY OF THE FOLLOWING HEALTH PROBLEMS DIAGNOSED BY A DOCTOR OR NURSE PRACTITIONER (ASTHMA, HEART TROUBLE, HIGH BLOOD PRESSURE, OR OBESITY) ?
 - A) YES (CIRCLE ALL THAT APPLY)
 - B) NO

EXERCISE

8) HOW PHYSICALLY FIT DO YOU THINK YOU ARE?

| 1 | 2 | 3 | | | |
|----------------------|------------|----------|--|--|--|
| great shape shape | good shape | terrible | | | |

9) REGULAR EXERCISE IS DEFINED AS EXERCISE PERFORMED AT LEAST THREE TIMES A WEEK FOR AT LEAST 20 MINUTES NONSTOP AT MODERATE INTENSITY IN WHICH YOUR HEART BEATS FAST AND YOU BREATHE HEAVILY. HOW IMPORTANT IS ENGAGING IN REGULAR EXERCISE TO A PERSON'S HEALTH? 3 1 2 very important important not important

4) HEIGHT

- 10) HOW MANY <u>TIMES A WEEK</u> DO YOU EXERCISE <u>NONSTOP FOR AT</u> <u>AT LEAST TWENTY MINUTES</u> AT A MODERATE INTENSITY IN WHICH YOU BREATHE HEAVY AND YOUR HEART BEATS FAST ?
 - A) NEVER OR LESS THAN ONCE A WEEK (<u>IF YOU CIRCLE THIS</u>, SKIP TO QUESTION #14)
 - B) ONE TO TWO TIMES A WEEK.
 - C) THREE TIMES A WEEK OR MORE
- 11) FOR <u>EACH EXERCISE</u>, CIRCLE THE <u>NUMBER</u> THAT CORRESPONDS TO HOW OFTEN YOU WORK-OUT FOR <u>AT LEAST 20 MINUTES NONSTOP</u>. DO NOT INCLUDE EXERCISE DONE IN YOUR PHYSICAL EDUCATION CLASS OR SCHOOL AFFILIATED SPORT ACTIVITIES!

| OFTEN=3 | OR MORE TIMES A | A WEI | EK *** | SOME | TIMES =1 TO | 2 T | IMES A |
|-------------------|---------------------|-------|--------|------|-------------|-----|--------|
| <u>WEEK</u> A) | RUNNING | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| B) | BIKING | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| C) | <u>SWIMMING</u> | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| D) | AEROBIC DANCE | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| E) | FAST WALKING | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| F) | TENNIS | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| G) | STAIRMASTER | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| H) | VOLLEYBALL | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |
| I. <u>(</u> | OTHER: (SPECIFY) | 1) | OFTEN | 2) | SOMETIMES | 3) | NEVER |

- 12) WHICH EXERCISE DO YOU PARTICIPATE IN MOST OFTEN (CIRCLE ONE)?
 - A) RUNNING
 - B) BIKING
 - C) SWIMMING
 - D) AEROBIC DANCE
 - E) FAST WALKING
 - F) TENNIS
 - G) STAIRMASTER
 - H) VOLLEYBALL
 - I) OTHER
- 13) DO YOU PARTICIPATE IN A SCHOOL AFFILIATED SPORT?
 A) YES (please specify)
 - IF YES, HOW MANY PRACTICES A WEEK_____ HOW MANY GAMES WEEK
 - B) NO

- 14) DO ANY OF THE FOLLOWING PEOPLE EXERCISE REGULARLY ? (CIRCLE ALL THAT APPLY)
 - A) PARENTS
 - B) SIBLINGS
 - C) FRIENDS
- 15) HOW MANY OF YOUR FRIENDS EXERCISE ? (CIRCLE ONE) A) NONE
 - B) ONE TO THREE
 - C) MORE THAN THREE
- 16) DO YOU USUALLY EXERCISE: (CIRCLE ONE)
 - A) WITH FRIENDS
 - B) WITH FAMILY
 - C) ALONE
- 17) HOW MANY MEMBERS IN YOUR FAMILY EXERCISE REGULARLY ?
 A) NONE
 B) ONE TO THREE
 C) MORE THAN THREE
- 18) RATE <u>EACH</u> OF THE FOLLOWING AS TO <u>HOW MUCH</u> THEY KEEP YOU FROM EXERCISING: <u>(CIRCLE NUMBERS)</u>
 - A) <u>HEALTH PROBLEMS:</u>

| | 1 never | 2 sometimes | 3 always |
|----|------------|------------------------|-------------|
| B) | LACK OF | AN EXERCISE PARTNER: | |
| | 1 never | 2 sometimes | 3 always |
| C) | FIND EX | ERCISE BORING: | |
| | 1 never | 2 sometimes | 3 always |
| D) | LACK OF | TIME DUE TO WORK OR SC | HOOL: |
| | 1 never | 2 sometimes | 3 always |
| E) | BAD WEA | THER: | |
| | 1 never | 2 sometimes | 3 always |
| F) | OTHER: | (PLEASE LIST AND RATE) | |
| | | 2 sometimes | 3 always |

EXERCISE BENEFITS/BARRIERS SCALE

DIRECTIONS: Below are statements that relate to ideas about exercise. Please indicate the degree to which you agree or disagree with the statements by circling SA for strongly agree, A for agree, D for disagree, or SD for strongly disagree

| 1. | I ENJOY EXERCISE | SA | A | D | SD |
|-----|--|----|---|---|----|
| 2. | EXERCISE DECREASES FEELINGS OF STRESS AND TENSION FOR ME | SA | A | D | SD |
| 3. | EXERCISE IMPROVES MY MENTAL HEALTH | SA | A | D | SD |
| 4. | EXERCISE TAKES TOO MUCH TIME | SA | A | D | SD |
| 5. | I WILL PREVENT A HEART ATTACK BY EXERCISING | SA | A | D | SD |
| 6. | EXERCISE TIRES ME | SA | A | D | SD |
| 7. | EXERCISE INCREASES MY MUSCLE STRENGTH | SA | A | D | SD |
| 8. | EXERCISE GIVES ME A SENSE OF PERSONAL ACCOMPLISHMENT | SA | A | D | SA |
| 9. | PLACES FOR ME TO EXERCISE ARE TOO FAR AWAY | SA | A | D | SD |
| 10. | EXERCISE MAKES ME FEEL RELAXED | SA | A | D | SD |
| 11. | EXERCISE LETS ME HAVE CONTACT WITH FRIENDS AND PERSONS THAT I ENJOY | SA | A | D | SD |
| 12. | I AM TOO EMBARRASSED TO EXERCISE | SA | A | D | SD |
| 13. | EXERCISE WILL KEEP ME FROM HAVING HIGH BLOOD PRESSURE | SA | A | D | SD |
| 14. | IT COSTS TOO MUCH MONEY TO EXERCISE | SA | A | D | SD |
| 15. | EXERCISING INCREASES MY LEVEL OF FITNESS | SA | A | D | SD |
| 16. | EXERCISE FACILITIES DO NOT HAVE CONVENIENT SCHEDULES FOR ME | SA | A | D | SD |
| 17. | MY MUSCLE TONE IS IMPROVED WHEN I EXERCISE | SA | A | D | SD |
| 18. | EXERCISING IMPROVES FUNCTIONING OF MY CARDIOVASCULAR SYSTEM | SA | A | D | SD |

| STRONGLY AGREE=SA *AGREE=A DISAGREE=D *STRO | NGLY DI | SAG | REE | =SD |
|---|-----------|-----|-----|-----|
| 19. I AM FATIGUED BY EXERCISE | SA | A | D | SD |
| 20. I HAVE IMPROVED FEELINGS OF WELL BEING FEELINGS OF WELL BEING FEELINGS | ROM SA | A | D | SD |
| 21. MY SPOUSE (OR BOYFRIEND) DOES NOT ENCOUR ME TO EXERCISE | AGE SA | A | D | SD |
| 22. EXERCISE INCREASES MY STAMINA | SA | A | D | SD |
| 23. EXERCISE IMPROVES MY FLEXIBILITY | SA | A | D | SD |
| 24. EXERCISE TAKES TOO MUCH TIME FROM FAMILY RELATIONSHIPS | SA | A | D | SD |
| 25. MY DISPOSITION IS IMPROVED BY EXERCISE | SA | A | D | SD |
| 26. EXERCISE HELPS ME SLEEP BETTER AT NIGHT | SA | A | D | SD |
| 27. I WILL LIVE LONGER IF I EXERCISE | SA | A | D | SD |
| 28. I THINK PEOPLE IN EXERCISE CLOTHES LOOK FUNNY | SA | A | D | SD |
| 29 EXERCISE HELPS ME DECREASE FATIGUE | SA | A | D | SD |
| 30. EXERCISE IS A GOOD WAY TO MEET NEW PEOPL | e sa | A | D | SD |
| 31. MY PHYSICAL ENDURANCE IS IMPROVED BY EXERCISE | SA | A | D | SD |
| 32. EXERCISE IMPROVES MY SELF CONCEPT | SA | A | D | SD |
| 33. MY FAMILY MEMBERS DO NOT ENCOURAGE ME TO EXERCISE | SA | A | D | SD |
| 34 EXERCISE INCREASES MY MENTAL ALERTNESS | SA | A | D | SD |
| 35. EXERCISE ALLOWS ME TO CARRY OUT NORMAL ACTIVITIES WITHOUT BECOMING TIRED | SA | A | D | SD |
| 36. EXERCISE IMPROVES THE QUALITY OF MY WORK | SA | A | D | SD |
| 37. EXERCISE TAKES TOO MUCH TIME FROM FAMILY RESPONSIBILITIES | SA | A | D | SD |
| 38. EXERCISE IS GOOD ENTERTAINMENT FOR ME | SA | A | D | SD |
| 39. EXERCISE INCREASES MY ACCEPTANCE BY OTHER | RS SA | A | D | SD |
| 40. EXERCISE IS HARD WORK FOR ME | SA | A | D | SD |

STRONGLY AGREE=SA * AGREE=A * DISAGREE=D * STRONGLY AGREE=SA

- 41. EXERCISE IMPROVES OVERALL BODY FUNCTION SA A D SD FOR ME
- 42. THERE ARE TOO FEW PLACES FOR ME TO EXERCISE SA A D SD
- 43. EXERCISE IMPROVES THE WAY MY BODY LOOKS SA A D SD

* * * THE END * * *

THANK YOU VERY MUCH FOR YOUR TIME. I WILL BE BACK IN MAY TO DISCUSS THE RESULTS OF THE STUDY, OFFER ADVICE ON EXERCISE AND TO ANSWER ANY QUESTIONS ON DIET OR EXERCISE

(K. Sechrist, S. Walker, N. Pender, 1985. Reproduction without authors express written consent is not permitted)

APPENDIX B

UCRIHS APPROVAL

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OFFICE OF VICE PRESIDENT FOR RESEARCH AND DEAN OF THE GRADUATE SCHOOL

February 10, 1993

TO: Ms. Mary Ziola 2714 Elmwood Ann Arbor, MI 48104

RE: IRB #: 93-028 TTTLE: PERCEIVED BENEFITS AND BARRIERS TO EXERCISE WITH SEDENTARY AND PHYSICALLY ACTIVE FEMALE ADOLESCENTS REVISION REQUESTED: N/A CATEGORY: 1-C APPROVAL DATE: 02/10/1993

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must seek updated certification. Request for renewed approval must be accompanied by all four of the following mandatory assurances.

- 1. The human subjects protocol is the same as in previous studies.
- 2. There have been no ill effects suffered by the subjects due to their participation in the study.
- 3. There have been no complaints by the subjects or their representatives related to their participation in the study.
- 4. There has not been a change in the research environment nor new information which would indicate greater risk to human subjects than that assumed when the protocol was initially reviewed and approved.

There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. Investigators must notify UCRIHS promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 336-1171.

Sincerely,

David E. Wright, Ph.D. **UCRIHS** Chair

DEW:pjm

cc: Dr. Linda Beth Tiedje

APPENDIX C

LANSING SCHOOL DISTRICT RESEARCH REVIEW COMMITTEE APPROVAL



9 December 1992

Mary Catherine Ziola 2714 Elmwood Ann Arbor, MI 48104

Dear Ms. Ziola:

In regard to the proposed study, "Perceived Benefits and Barriers to Exercise with Sedentary and Physically Active Female Adolescents", the request to conduct the study in the Lansing School District has been approved.

The following comments apply to the study:

Eastern High School has agreed to participate. Any teacher participation must be clearly voluntary. Written parent/guardian permission must be on file before any student participation may occur. Please revise your letter to parents/guardians to reflect this requirement and forward a copy to me. One reviewer questioned the wording of item 21, Exercise Benefit/Barrier Scale, for this population. If your experience has been that the item works with high school students, go with it.

Good luck with your project and let me know if I can help.

If you have any questions or need additional information, please contact me (374-4347).

<u>Th</u>ank you. (stansen)

Pat Petersen

PP/mlc

cc: Research Review Committee Members

Research & Evaluation Services Office 500 W. Lenawee St. Lansing, Michigan 48933 APPENDIX D

EXERCISE BENEFIT AND BARRIER SCALE APPROVAL



AMERICAN ASSOCIATION OF CRITICAL-CARE NURSES

November 30, 1992

Mary Ziola 2714 Elmwood Ann Arbor, MI 48104

Dear Mary:

Thank you for sending the abstract of your proposed research and the statement of agreement with terms of use of the <u>Exercise</u> <u>Benefits/Barriers Scale</u>. You have our permission to use the instrument in your research.

Best wishes with your study. We will look forward to a report of the results.

Sincerely,

sun R. Suchier

Karen R. Sechrist, PhD, RN, FAAN Director of Research

President Marianne Chulav N DNk

President-Elect Nancy C. Molter

Treasurer Melissa A. Miccolo

Secretary Joanne M. Krumberger MN RN CCRN

Directors Victor G. Campbell

Karen K. Carlson

Karen Clark

Beth B. Eagleton RN MN PhD CORN

Patricia Lee Hooper IN MSN. CLIIN

Debra J. Lynn-McHale RN MSN CS. CCRN

Patricia A. Moloney-Harmon RN M5 CCRN

Cindy Strzelecki INN RN. CCRN

Joan M. Vitello

Chief Executive Officer Sarah J. Sanford IN MA CHAA FAAN

101 Columbia, Aliso Viejo, CA 92656-1491 714-362-2000 714-362-2050 (Auto Attendant) FAX 714-362-2020 X 296937 AACN UR APPENDIX E

WOMEN AND EXERCISE QUESTIONNAIRE APPROVAL

52 THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER 2500 North State Street JACK50N, MISSISSIPPI 39216-4505

School of Medicine Department of Psychiatry and Human Behavior Division of Psychology Area Code 601 984-5855

September 10, 1992

Mary Ziola 2714 Elmwood Ann Arbor, Michigan 48104

Dear Ms. Ziola:

Enclosed please find the modified version of the Exercise and Diet Questionnaire used in the article "Perceived barriers to exercise and weight control practices in community women". The questionnaire can easily be further modified to obtain more precise information from the respondents. In particular, I would consider altering the response format for the barriers questions to a seven point Likert scale (1 = never, 2 = rarely, 3 = some of the time, 4 = about half of the time, 5 = a good deal ofthe time, 6 = most of the time, 7 = all of the time). The question would then read, "pleaseindicate how often each of the following get in your way of regular exercise" (gettingmore exercise, reasons why you quit, going off the diet, etc).

I hope that you find the questionnaire useful. Our knowledge of exercise and diet habits and barriers is minimal for girls and women. Do not hesitate to contact me if I might provide further information. Good luck with your thesis project. Thank you for your interest.

Sincerely,

Cheryl A. Johnson, Ph.D. Assistant Professor of Psychiatry & Human Behavior (Psychology) Licensed Clinical Psychologist

CAJ:wsv

APPENDIX F

LETTER TO TEACHERS

•

MARY ZIOLA 2714 ELMWOOD ANN ARBOR, MI 48104 JANUARY 25, 1993

EASTERN HIGH SCHOOL 240 NORTH PENNSYLVANIA LANSING, MI. 48912

Dear Eastern High School Teacher:

I am a graduate student from the College of Nursing at Michigan State University and I am conducting a study on benefits and barriers to exercise with female adolescents at your school. Recent research has shown a dramatic decrease in the number of female adolescents who exercise regularly. This significantly increase their lack of exercise will susceptibility to future health risks during adulthood. Further, the teen years seem to be a critical time for establishing life long health habits. The purpose of my study is to identify factors that influence exercising behaviors so that educators and health care providers can develop successful strategies aimed to increase or improve exercising behaviors of our youth.

I have obtained the consent of the Lansing School District and Bill Allen and would like your permission to administer the questionnaire during classroom time. The questionnaire will take approximately 15-20 minutes to complete. I will be present to administer the questionnaire and to answer any questions. I would like to distribute the questionnaires during the first three weeks of February during class time that is <u>convenient</u> for you.

Please check the appropriate box below and place in the envelope entitled "Exercise Survey", which is located near your mailbox by Friday, January 29th.

Thank-you for your time and please feel free to contact me at 313-971-3279 or my advisor, Linda Beth Tiedje, Ph.D at the College of Nursing at 517-353-4827 with any questions or concerns.

Sincerely,

Mary Catherine Ziola, R.N. Clinical Nurse Specialist Student Michigan State University

[] I agree to have my class(es) participate in this survey.

[] I do not agree to have my class(es) participate in this survey.

Teacher's Name Title of Class(es)

APPENDIX G

PARENTAL/STUDENT CONSENT FORM

MARY ZIOLA 2714 ELMWOOD ANN ARBOR, MI. 48104 313-971-3279 FEBRUARY 12, 1993

Dear Parent or Guardian:

I am a graduate student from the College of Nursing at Michigan State University and I am conducting a study of benefits and barriers to exercise with female adolescents. I have obtained the consent of the Lansing School District and Eastern High School and would like your permission for your daughter to participate in the study which consists of completing a questionnaire on exercising behaviors.

Your child would be one out of about 100 to 150 females who will be involved in the study. The questionnaire will be distributed and completed during class time in February or March. Those students who do not participate will be given reading materials on health to examine while other students are completing the questionnaire.

Questions to be asked include demographic information (age, grade, race, height, and weight), exercise activities of self and family, and reasons why exercise is or is not being performed, such as time constraints or lack of facilities. The questionnaire should take about 10 minutes to complete.

Your signature and your daughter's signature is needed in order for her to participate in the study. Please sign and assist your daughter in signing the enclosed consent form if you both <u>agree</u> to have her participate in the study. Please ask her to return this form to the teacher from whom she received it by <u>friday, February 19th</u>. Please note that you are completely free to withdraw your consent at any time and that your daughter's participation is completely voluntary. Also note that both her responses and participation in the study will be completely confidential.

The study is an important way of finding out what helps young women to exercise or what prevents them from exercising. The teen years are a particularly important time for starting life-long healthy habits. I do hope you'll give your permission for your daughter to participate in this important study.

Thank you for your time and feel free to call me with any questions or concerns about this study.

Sincerely, Mary Catherine Ziola, R.N. Clinical Nurse Specialist Student Michigan State University
PARENTAL/GUARDIAN AND STUDENT CONSENT FORM

(Parental/Legal Guardian Signature)

(Date)

I agree to participate in the study on "Perceived Benefits and Barriers to Exercise with Sedentary and Physically Active Female Adolescents". My participation in completely voluntary and I may cease participation in the study at any time without penalty.

(Student Signature)

(Date)

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