MEASURING COMMITMENT TO PHYSICAL ACTIVITY

by

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DEDICATION

The author wishes to dedicate this achievement to my father and mother for their love and continued encouragement through all my endeavors and making this study a reality. And to my husband, Jon, for his constant support and love during this year spent accomplishing this study.

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Chapter 1

INTRODUCTION

A trend toward regular involvement in leisure time physical activity is emerging in America. For example, in a national study of adults of both sexes, the increasing consciousness of physical and psychological benefits of exercise were documented (Harris and Associates, 1979). This study concluded that more than ninety million adults are now participating in some form of physical activity. This represents fifty-nine (59%) of the Americans, eighteen years and older. This is a significant growth from twenty-four percent (24%) cited in a 1961 survey (Gallup, 1980).

Physical fitness is thought by many to be an important ingredient in feelings of emotional well being and self-esteem (Cooper, 1977; Corbin, 1980; Heaps, 1979; Morgan, 1968; Collingwood, 1972; Sonstroem, 1969). The role of physical exercise has been present throughout history. "Mens sana in corpore sano," a sound mind in a sound body, a long time motto of physical educators reflects the historical link between physical and mental health (Cattell, 1960; Jones, 1979). Though many questions are still unanswered, there is ample evidence to support the importance exercise plays in developing and maintaining physical and mental health.

We do know that individuals who exercise regularly claim "a general feeling of psychological well-being" (Brunner, 1969;

Cooper, 1977; Corbin, 1980; Harris and Associates, 1979; Morgan, 1968). Unfortunately, researchers have had difficulty in substantiating this claim with objective evidence. Individuals report this 'feeling better' phenomena even when there are no significant changes in physical fitness measures.

The literature has suggested that it is people's perception of the benefit derived from regular exercise that is important in people becoming committed. Actual physical or psychological changes do not have to occur, but if an individual perceives a change, they are more likely to become committed.

Carmack and Martens (1979) explored the running phenomena in an attempt to better understand the psychological dimension. Their primary focus was the development of an instrument to measure commitment to running. They also examined changes in states of mind during different segments of the run. The results provided support for the Commitment to Running scale's reliability and concurrent validity. Their reported findings supported the concept of 'positive addiction' to running and changes in mental state which occur during a run.

While the Carmack and Martens scale is useful in determining commitment to running, it cannot be generalized to other physical activities. Since many Americans who express a commitment to physical activity are not runners/joggers, a more general Commitment to Physical Activity Scale would be useful.

STATEMENT OF THE PROBLEM

The purpose of this study was the development of an instrument to measure "Commitment to Physical Activity". More specifically, the objectives of this research were to:

1. Determine both the test re-test and split halves reliability of the instrument.

2. Determine the internal consistency of the instrument.

3. Determine the extent to which each item contributes to success on the scale as a whole.

4. Determine the concurrent validity of the instrument.

5. Determine if the Commitment to Physical Activity scale scores could be predicted by the scores on the Psychological Index, Self Perception Profile, and Patterns of Activity Involvement.

DELIMITATIONS OF THE STUDY

The following delimitations help to define the boundries of this study:

1. The subjects were volunteer college age students enrolled in basic Physical Education at Kansas State University.

LIMITATIONS OF THE STUDY

1. The subjects being volunteers could inject a bias into any generalizations made from the findings.

2. Semantics of the questionnaire and response distortions

could lead to erroneous conclusions.

3. The subject's participation in basic physical education classes could have resulted in atypical activity scores, especially for normally inactive people.

Chapter 2

REVIEW OF LITERATURE

While evidence supporting the physiological value of regular exercise participation is convincing (Cooper, 1977; Corbin, 1980; Morgan, 1969; Morgan, Roberts, and Feinerman, 1971), researchers are only in the early stages of exploring the psychological aspects of physical activity. There is limited data and hard facts to substantiate all the popular claims, particularly those claiming psychological benefits from regular exercise.

This study is designed to find out more about commitment to physical activity. No doubt commitment involves both physiological and psychological factors. Because the physiological benefits are well documented, the focus of this review will be on those psychological factors which relate most to a possible 'commitment of physical activity'.

The review of literature has been divided into five major categories. The first section reports on national surveys conducted to determine America's involvement in physical activity. Secondly, the review examined those studies dealing with commitment/addiction to physical activity. Two sections report on the general physiological factors and general psychological factors related to physical activity. A final section examined other studies which report examinations of involvement and effects of physical activity.

NATIONAL SURVEYS

In recent years, national surveys have been conducted to try to determine America's involvement in physical activity (Gallup, 1980; Harris and Associates, 1979; President's Council on Physical Fitness and Sports, 1973). The Gallup Poll (1980) reported forty-six (46%) percent of the Americans today exercise on a regular basis. This figure closely parallels the forty-seven percent (47%) recorded in a previous survey conducted in 1977 by Gallup. The 1977 findings, however, indicated a dramatic change in American lifestyle had taken place. The percentage of Americans who had exercised daily was only twenty-four percent (24%) in 1961 when the Gallup Poll first surveyed. The Poll indicated that those who report they exercise daily are the "upscale" socio-economic groups, college-educated, professionals, and others in white collar positions. The Gallup study further reported that one activity receiving considerable attention during the exercise boom is jogging. These results were based on interviews with 1,553 adults, eighteen and older, conducted in more than three hundred selected localities (Gallup, 1980).

In 1973, the President's Council on Physical Fitness and Sports conducted a National Adult Physcial Fitness Survey. Interviews were conducted with 3,975 males and females, aged twenty-two and older. The findings stated that sixty million

or fifty-five percent (55%) of American adults reported they exercised on a regular basis. Paradoxically, sixty-three percent (63%) of the non-exercisers say they get enough, while only fifty-three percent (53%) of the exercisers report they aren't as physically active as they should be. The survey found that of the sixty million that exercise, the most popular forms of physical activity were non-competitive in nature: walking, bicycling, swimming, calisthenics and jogging. It was found that the younger, better educated, and more affluent people are more inclined to exercise. These findings corroborate with the Gallup Poll survey findings (President's Council, 1973).

The Perrier Study: Fitness in America conducted by Harris and Associates (1979) was an in depth study of the commitment of Americans to physical fitness, healthful living, and to participation in regular exercise. A cross-section of people in the United States, excluding Alaska and Hawaii, were included in the sample. The sample was stratified into four regions and different sized areas (city, suburb, town and rural). The national sample consisted of two hundred interviewing areas and eight households. A telephone oversample was employed using runners who were contacted using random digit dialing.

The survey findings were based on inperson interviews with a representative sample of 1,510 individuals and 180 runners, eighteen years and older. The research was design-

ed to evaluate: (1) attitudes and perceptions regarding physical fitness, (2) physical fitness behavior and (3) awareness and knowledge about health and physical fitness (Harris and Associates, 1979).

The survey reported more than ninety million Americans are now participating in some form of physical activity. This represented fifty-nine percent (59%) of the Americans, eighteen and older, a statistic similiar to that found in previous surveys. The Perrier study supported the President's Council and the Gallup Poll in that walking, calisthenics, swimming, and a dramatic increase in jogging to be representative of the most popular forms of activity (Gallup, 1980; Harris and Associates, 1979; President's Council, 1973).

In addition to the general findings concerning frequency of adult involvment in activity, another significant finding emerged from this study. Those interviewed reported a degree of psychological benefit associated with exercise and sports activity. A total of eighty percent (80%) of all the active respondents say they 'feel better' in general. In addition, another psychological benefit of exercise was reflected in self-perceived positive personality attributes by those who reported being active. The high actives energed to be more confident, relaxed, energized and disciplined. The study's authors suggested that exercise may be recognized as a positive influence in the nation's mental health, especially in handling stress and anxiety. Also the public's involve-

ment with fitness is likely to increase due to public awareness of the health related benefits of fitness (Harris and Associates, 1979).

COMMITMENT/ADDICTION TO PHYSICAL ACTIVITY

Many writers have alluded to the motives of why people exercise. Morgan (1978), in referring to 'time out', states that any measurable psychological benefit from running may not come from the act of running itself, but from the opportunity that act gives the runner to get away from the stresses and pressures of modern civilization. He argues that it may not be as important to meditate or exercise as it is merely to take 'time out'.

However, Kostrobala contends that running can be an effective therapeutic medium for treatment of depression. In his book Joy of Running, Kostrobala suggests the occurance of 'altered states of consciousness' during which runners experience a euphoric high. According to Kostrobala, an individual needs to run forty to sixty minutes in order to experience this psychological phenomena (Kostrobala, 1976).

Glasser (1976) claims individuals become addicted to running. He maintains that not all addictions are bad or negative, that some are fulfilling and psychologically supportive. Running is one such positive experience to which we may become addicted. He believes that a chemical called enkephalin may be responsible for causing a condition he

refers to as 'positive addiction'. The brains reaction to physical activity (running) is to release a 'pleasure factor', enkephalin, upon which the central nervous system becomes dependent. At the core of Glasser's concept is the contention that the activity causes an extremely pleasurable, often euphoric, mental effect, which makes the experience so pleasing as to be addicting. This mental effect he has termed as 'spinning free', is a trancelike, trancendental mental state that accompanies the addictive exercise (Glasser, 1976).

Pargman (1980) argues that strength of motivation for running may be located on a continuum. One end of the continuum is designated as addiction or dependence and the other end, commitment or dedication. Addiction is suggestive of a psychological or physiological reliance upon regular sustained running, to the extent that a withdrawal syndrome is suffered when continuation of the regimen is interrupted. Those who are truly psychologically hooked fall toward the addicted end, and those who are volitionally pledged, fall toward the committed end. Pargman argues that the addicted runner needs to participate purely in terms of affect or emotions generated by the run as well as feeling experienced before and during the run. The committed runner, on the other hand, partcipate to satisfy basic and practical needs. They run irrespective of the extent to which their perception is psychobiologically correct. However, no matter if addicted

or committed, most describe a sense of physical well being brought about by running (Pargman, 1980).

Sime suggest three basic groups of individuals who exercise: (1) the exercise complier who continues in a regime of exercise only as long as it is comfortable and convenient, (2) exercise adherers are motivated to stay involved by very positive exercise benefits and (3) exercise addicts are physically and psychologically dependent upon the effects of exertion (Sime, 1979).

Carmack and Martens conducted a study to measure people's commitment to running and to examine changes in state of mind during different segments of the run. The subjects, 250 male and 65 female runners of varying levels and experience, responded to a questionnaire which requested information regarding demographics, attitudes toward running, mental states during the run, and perceived outcomes of running. Substantial support for the reliability and concurrent validity of the Commitment to Running Scale was provided. Regression analysis indicated that perceived addiction, state of mind, and length of run are significant predictors of Commitment to Run. They concluded their results support the concept of 'positive addiction' and changes in mental states (Carmack and Martens, 1979).

GENERAL PHYSIOLOGICAL FACTORS

The physiological effects derived from conditioning

programs have been well documented. (de Vries, 1974; Cooper, 1977; Corbin, 1980). The changes induced by exercise in the various systems and organs of the body are called 'training effects'.

Cooper (1977) reported that by engaging in aerobic exercises the lungs operate more efficiently, blood vessels are enlarged and more pliable; therefore, reducing resistance to blood flow, increases in the blood supply, yields healthier body tissues, and conditions the heart (Cooper, 1977).

Regular physical activity can contribute to the achievement of physical fitness and sound physical health. However, regular exercise is not a panacea. There is no evidence that exercise can reduce viral or bacterial infections (Corbin, 1980).

DeVries (1974) reported the following physiological changes brought about by training:

1. lower resting heart rate
2. lower heart rate for any submaximal workload
3. Greater maximal stroke volumn
4. lower ventilation equivalent
5. greater maximum oxygen consumption
6. less utilization of anaerobic energy sources
7. capacity for greater oxygen debt

In addition to the major benefit of improved cardiovascular/respiratory fitness, it has been reported that physical

activity can improve strength, muscular endurance and flexibility, provide greater lean body mass, reduce body fat, decrease muscle tension, and delay the aging process (deVries, 1974, Corbin, 1980).

GENERAL PSYCHOLOGICAL FACTORS

Attitudes

Attempts at discovering and understanding the psychological benefits of physical activity have been conducted recently; among these are studies of attitudes toward physical activity. While people may have a favorable view of physical activity, many individuals have sedentary lifestyles (Safrit, 1981).

Kenyon designed the Attitude Toward Physical Activity Scale (1968) to evaluate the individual's attitudes toward physical activity. Kenyon defines attitude to be held as a 'latent or non-observable, complex, but relatively stable behavioral disposition reflecting both direction and intensity of feeling toward a particular object, whether it be concrete or abstract' (Kenyon, 1968). He assumed that physical activity can be reduced to specific components. His results provide a definition of the psychological object toward which attitudes are held. The model is comprised of six dimensions: (1) a social experience, (2) health and fitness, (3) the pursuit of vertigo, (4) an aesthetic experience, (5) catharsis,

(6) an ascetic experience (Kenyon, 1968).

Sonstroem proposed that both attraction to physical activity and estimation of physical abilities can be altered with participation. The Physical Estimation and Attraction Scale (1978) model proposed that an interest in physical activity, as well as perception for success are necessary for participation and recognizes that attitudes can change (Sonstroem, 1969, 1978). Hall reported that from the studies she had reviewed, people tend to bring their attitudes in line with their behavior rather than behavior being a function of attitudes. She stated "positive behaviors reap positive feelings and attitudes which in turn reinforce desirable behaviors. This appears to be the more promising route to 'positive addiction' to regular physical activity" (Hall, 21:1978).

Based on studies using the PEAS Scale, Sonstroem hypothesized that for a person to participate in physical activity, the person must be interested in or attracted to physical activity. Therefore, the psychological model theorized that estimation and attraction would work in a complemental fashion in predicting exercise participation and performance (Sonstroem, 1978). The estimation scale measures perceptions of reality rather than reality itself. It is anticipated that greater understanding of people in physical activity will be obtained from examinations of these discrepancies between self-perceptions of ability and ability

itself. Sonstroem in his paradigm suggests that it is not how fit or healthy your body really is that counts. Rather, it is how healthy you think it is that leads to feelings of security (Sonstroem, 1978). It is recognized that appraisals of the self are never completely objective and that an amount of the distortion between reality and self-conception is attributable to factors in the environment and the striving for consistency in self-perception (Wylie, 1967). Research with the PEAS has developed the conclusions regarding male adolescent self-perceptions and perceptions of physical activities: (1) self-perception of physical ability is positively related to global self esteem and (2) interest in vigorous physical activity is postively related to the level of voluntary physical activity (Sonstroem, 1978).

Self Concept

Numerous researchers have been suggesting that manipulations of physical fitness through physical training can be used to change psychological functioning in predictable directions (Heaps, 1979). It has been proposed that a person's perception of the body exerts a strong influence on behavior (Heaps, 1979). Collingwood and Willett reported that an increase in physical fitness facilitate a more positive self concept and body attitude (Collingwood and Willett, 1971). Collingwood, using male rehabilitation clients, hypothesized that those subjects who were receiving physical training

would demonstrate greater positive changes not only in physical fitness, but in body attitude and self concept. His data support the contention that healthy attitudes progress through the physical sphere and that physical activity has potential as a facilitative and therapeutic mode (Collingwood, 1972).

Secord and Jourard (1953) examined body cathexis, which was believed to be integrally related to the self-concept, although it remained identifiable as a separate aspect. The most significant result demonstrated that the body and the self tend to be cathected to the same degree (Secord and Jourard, 1953). Wylie, commenting on these findings of the body and self being cathected, stated: "the findings are congruent with the assumption that deviations of body characteristics from the subject's idea may lead to lowered self regard" (Wylie, 160:1967).

Leonardson became intrigued by the reported findings of Collingwood and Willett and conducted a study to determine whether perceived physical fitness was related to self concept for 165 high school students and 53 college freshman students. Perceived physical fitness was obtained by means of a self-rating scale and self concept was determined by the Piers-Harris Children's Self Concept Scale (1969) for the high school students and an adaptation of the semantic differential by Osgood (1957) was used to obtain the college group's self concept. He found the perceived physical

fitness and self concepts scores were significantly correlated for both groups. These findings corroborated those of Collingwood and Willett. Leonardson concluded that physical fitness, determined on the basis of perceived or actual physical performance, seems to be an important aspect of self concept (Leonardson, 1977).

Leonardson and Garguilo (1978) followed up on Leonardson's first study and assessed the relationship between perceived and actual fitness and self concept based on fifteen male and female freshman. All subjects were pretested on a self rated scale of perceived physical fitness. The test-retest reliability was found to be .76. Their actual performance was based on the Twelve Minute Run. Subjects self concept was assessed by a semantic differential rating scale with test-retest reliability of .82 and internal consistency of .96. After a ten week supervised aerobic training session, posttest measurements were made. The results found perceived physical fitness and self concept to be significantly correlated on pretest and posttest scores, .53 and .57 respectively. However, failure to obtain a statistically significant increase in self concept was unexpected. Others (Collingwood, 1972; Collingwood and Willett, 1971) had found self concept increased significantly with physical training. They concluded that perceived physical fitness is a viable aspect of self concept. They also concluded that the findings may indicate that perceived physical fitness and actual

fitness are related, suggesting stability and validity of a self report measure of physical health, but the relation between perceived and actual physical fitness needs further exploration (Leonardson and Gargiulo, 1978).

Perception

It has been difficult to demonstrate a causal relationship between psychological interpretations of bodily states such as physical fitness and other areas of psychological functioning. Researchers have looked only to their physical manipulations for explanations of the changes in personal feelings and attitudes (Heaps, 1979). Heaps interpreting self concept theorists, suggests the possibility of looking at conscious or unconscious perceptions of one's body for an explanation (Wylie, 1967; Secord and Jourard, 1953). Wylie stated, "Theoretically, a person's body characteristics as he perceives them might exert a central influence on the development of his self concept...self concept theorists agree that body characteristics which are lowly valued by one may be expected to undermine his general self regard, while highly valued body characteristics should enhance self regard" (Wylie, 159:1967).

Heaps (1979) in an attempt to answer questions concerning physical and cognitive casuality of emotional or psychological states investigated the cognitions about one's level of physical fitness and the relationship between actual physical

fitness. Heap's sample was comprised of fifty-six male volunteers enrolled in required, undergraduate physical education classes. Cooper's Twelve Minute Run was used to assess the subjects actual physical fitness. The psychological measures were: (a) self acceptance inventory based on Bills, Vance, McLean's Index of Adjustment and Values; (b) California Psychological Inventory; (c) MMPI; (d) Body Cathexis Scale (1953); (e) Taylor Manifest Anxiety Scale; and (f) Marlowe-Crowne Social Desirability Scale. The data collected indicated that the subjects' perceptions of their fitness levels were positively related to feelings of self acceptance and negatively related to feeling of anxiety about bodily functioning. However, the actual fitness levels were found to be only slightly related to their estimates of their level of fitness. Heaps findings suggest that it is a person's feeling or attitude about his physical condition, not his actual fitness which is related to certain kinds of psychological functioning. These findings corroborate with those discussed by Sonstroem, (1978) Leonardson and Garguilo (1978). It is not physical improvement which results in improved psychological function, but it is one's cognitive perception or interpretation of the improvement. Heaps concluded, "There is a definite psychological benefit following consistent exercise and physical change. This benefit results not from the physical improvement, per se, but from the emotional or psychological perception of the

physical and personal value of continued exertion" (Heaps, 406:1979).

Tension Reduction

Bahrke (1979) points out that researchers are examining the effects of acute physical activity techniques in reducing tension and improving psychological states. He reviewed the literature dealing with the capability of acute physical activity to reduce tension and improved psychological states.

In a series of investigations it has been demonstrated that muscualr tension, as measured electromyographically, reduced significantly following vigorous exercise. The subjects in the exercise group reported a greater decrement in tension than a group of subjects who received a frequently prescribed tranquilizer drug (Brown, Ramirez, and Taub, 1978, Morgan, 1968).

Pitts and McClure report contridictory results. They suggested that physical activity may not be capable of reducing tension and improving psychological states and that physical activity may be contraindicated in certain people. Pitts has pointed out that some of the symptoms of anxiety neurosis are similiar to those produced by physical activity due to lactate, an exercise metabolite, provoking anxiety (Bahrke, 1979; Morgan, Roberts, and Feinerman, 1971).

Other investigations have suggested that vigorous physical activity may be useful in reducing anxiety. Bahrke

and Morgan (1979) evaluated anxiety with fifteen adult males before a vigorous workout and fifteen to thirty minutes after activity. They found that significant decrements took place in both post-exercise setting. Morgan and Balke (1979) evaluated state anxiety in forty adult males using the same method as Bahrke and Morgan. The finding revealed a significant decrease in anxiety between the pre and post exercise periods in both those subjects falling within the normal range on anxiety, as well as the high anxious subjects. Morgan and Horstman (1979) conducted other experiments and their findings corroborate with the previous mentioned studies (Bahrke, 1979).

Byrd (1963) conducted a survey on exercise and tension and the attitudes and practices of physicians on the use of moderate exercise for relief of tension. Byrd reported that ninety-eight percent (98%) of the 439 responding physicians stated they did believe moderate exercise helps to give relief from tension and ninety-five percent (95%) indicated they had prescribed or advised exercise for treatment (Byrd, 1963).

Byrd (1963) also sent surveys to practicing psychiatrists. Ninety-one percent (91%) of the fifty-four responding psychiatrists stated they believed moderate exercise helps reduce tension. Some reported that the value of exercise depended upon the level of tension or anxiety. Byrd reported that eight out of ten of the psychiatrist were prescribing

exercise for relief of anxiety and tension (Byrd, 1963). These two survey of viewpoints and practices of physicians and psychiatrist have comparable results in regard to the value of exercise in relief of tension and anxiety (Bahrke, 1979; Brown, Ramirez and Taub, 1978).

Simes (1979) conducted a study on eighty university students according to self reported high levels of test anxiety. These individuals were randomly assigned to one of five treatment groups--exercise, mediation, exercise and meditation, placebo, and control. Results showed that levels of state anxiety and muscle tension were significantly reduced in all three treatment groups. These results indicate that exercise provides some acute relief from excessive muscle tension which is also reflected in reduced subjective feeling of anxiety (Sime, 1979).

Glasser's hypothesis on 'positive addiction' suggests that physical activity decreases anxiety because of increased feelings of control, comfort, and mastery (Glasser, 1976).

OTHER STUDIES

General Feeling of Well Being

Numerous writers have emphasized the psychological values to be derived from participation in physical activity. Various investigators have reported that normal subjects state that they "feel better" following physical activity (Brunner, 1969;

Cooper, 1977; Corbin, 1980; Morgan, 1968; Morgan, Roberts, and Feinerman, 1971; Morgan, Roberts, Brand, and Feinerman, 1970).

Brunner (1969) investigated personality and motivating factors influencing participation in vigorous physical activity. The sample contained sixty male adults which were from a population of faculty members, physicians, alumni, and businessmen--thirty exercisers and thirty non-exercisers. His results revealed significant personality differences between the groups. Members of the participant group stated that the primary reason or motivation for regular participation was the desire to keep physically fit and the associated 'feeling of well-being'.

Morgan, Roberts, and Feinerman (1971) conducted a study to determine whether or not physical activity of various intensities was capable of eliciting differing psychological states in 120 professors and thirty-six students. They reported that significant psychologic changes were not observed. However, the subjects reported the exercise bouts were exhilarting and they 'felt better' following exercise. They concluded that it was possible that this sensation mirrors complex neurophysiologic and biochemical alterations which are not tapped by psychometric devices (Morgan, Roberts, and Feinerman, 1971).

The Perrier Study (1979) stated that perhaps the most important effect of exercise and dedicated participation is

those who work out regularly report they 'feel better' in relation to those who don't. Their findings suggest that the high active group, those who have a deep commitment to exercise, report a more positive psychological frame of mind than those in the low active. The implication of these findings is that physical activity does contribute to personality adjustment as an overall pattern and that exercise has a positive impact but just how commanding cannot be determined by the study (Harris and Associates, 1979).

Carter (1977) addressed the question whether physical activity made a person happier. His subjects were 216 adults, eighteen and older. The researcher asked subjects to fill out questionnaires on exercise and happiness levels. Carter quantified the self reported level of exercise by reference to chart in Dr. Cooper's aerobics books. It was found that the exercise scores had a positive coefficient of correlation to 'happiness right now' and a positive coefficient of correlation to global happiness. There was a tendency for those who are pretty happy and those who are not too happy not to exercise as much as those who reported to be very happy. He concluded that possible reasons why increased happiness is related to physical activity was: (a) changes occur in and stimulate the limbic area of the brain which has central control in the generation of affective feeling, (b) those who exercise know they have control over their bodies and therefore are happier and influences our total

body image, (c) and/or people who are happy are more emotionally prepared to participate in exercise programs (Carter, 1977).

In a pilot study conducted by Rechnitzer (1965), four postcoronary males reported changes in moods, increased stamina, restored self-confidence and an improved sense of well being following a graduated exercise program. McPherson, Paivio, Yuhasz, Rechnitzer, Pickard, and Lefcoe (1967) conducted an experiment to examine the psychological effects of an exercise program on post infarct and normal adult men. They concluded: (a) cardiac exercisers experienced favorable changes in personality characteristics, (b) cardiac controls and experienced exercisers showed similiar degree of change in personality characteristics, (c) single exercise program produced favorable mood changes in all groups, and (d) the experienced exercisers experienced greater over-all positive change in mood states (McPherson, Paivio, Yuhasz, Rechnitzer, Pickard, and Lefcoe, 1967).

Depression

Presently, more than in times previous, individuals are searching for ways to prevent the ever increasing stresses of everyday living and to decrease health problems (Jones, 1979; Sime, 1979). Some people have looked into the therapeutic arena for help. Others are resorting to an activity that is as old as human life itself and which has been actively engaged in for centuries--running (Cooper, 1977;

Gallup, 1980; Harris and Associates, 1979; Jones, 1979; Kostrubala, 1976). Most runners can give subjective accounts of the psychological benefits of running, ranging from a sense of enhanced mental energy and concentration to heightened mental acuity (Cooper, 1977; Jones, 1979; Kostrubala, 1976). It has been suggested that running can be a form of self therapy (Griest, Klein, Eischens and Faris, 1978; Jones, 1979; Higdon, 1978; Kostrubala, 1976). Kostrubala concluded that from conversations with runners--runners of long, medium and short distances, running done in a particular way is a form of natural psychotherapy and a powerful catalyst to the individual's psyche (Kostrubala, 1976). Though the body of knowledge is far from complete, research studies conducted on the effects of running have found increases in physical fitness and depression, anxiety, and self-centeredness decrease (Cooper, 1977; Heaps, 1979; Higdon, 1978; Kostrubala, 1976; Morgan, Roberts, Brand, and Feinerman, 1970).

A study (1973) of the psychological affects of running was completed at Purdue Unversity. Sixty middle aged staff members who participated in a four month exercise program which consisted mostly of running were tested. The Catell 16 PF Questionnaire was administered and the results showed the subjects to be more emotionally stable, self-sufficient, and confident than non-runners. The researchers concluded that "physical activity can change one's state of mind, establishing a fact more important that the value of exercise"

(Ismail & Trachtman, 82:1973). Jones and Weinhouse (1979) in a study conducted using running as therapy corroborated the findings of Ismail and Trachtman (Jones, 1979).

Depression is a common psychiatric disorder found in large scale population surveys (Brown, Ramirez, and Taub, 1978; Griest, Klein, Eischens, and Faris, 1978). Doctors have used psychopharmacology, psychophysiology, and psychotherapy to treat depression, but many are reporting the benefits many depressed patients have derived from systematic periods of regular exercise such as jogging, swimming, walking, tennis, and the like (Brown, Ramirez, and Taub, 1978; Cooper, 1977; Griest, Klein, Eischens, Farris, 1978; Higdon, 1978; Kostrobala, 1976).

In 1970, Morgan, Roberts, Brand, and Feinerman investigated the psychological effect of chronic physical activity on 168 male subjects. They examined the relationship between depression and selected physical variables and the psychological effect of participating in various physical activities for six weeks. The Zung Self-Rating Depression Scale (SDS) was administered as a pretest-posttest. The treatment group was divided into circuit training, jogging, swimming, laboratory, and control sub-groups. The exercise program included three sessions per week for six weeks. The findings did not support the view that psychological states (depression) is close related to the selected physical variables and that the physical activity did not produce significant changes in

depression. However, eleven of the 101 subjects were depressed at the outset and their mean depression scores decreased from 51.45 to 44.45. Furthermore, the common report by many of the subjects was they 'felt better' as a result of participating in the exercise program. Unfortunately, the psychometric tools did not exist for objective assessment of this state (Morgan, Roberts, Brand, and Feinerman, 1970).

Brown, Ramirez, and Taub (1978) investigated the psychological correlates of exercise in normal and depressed subjects. The first phase involved 167 university students who were placed in an exercise treatment group or control group. All subjects were administered psychological tests including Zung Depression Scale, Eysenck Personality Inventory, and Human Figure Drawing. Pre and Post tests were administered to determine the effect of the ten week exercise program.

In the second phase of the study, the researchers were concerned with the multidimensional mood changes reported. The subjects consisted of a depressed exercise group (n=91), a depressed control group (n=10), a normal exercise group (n=406), and a normal non-exercise group (n=54). The exercise treatment was a jogging program of three times or five times per week. All subjects were administered the psychological tests (Brown, Ramirez, and Taub, 1978).

Brown, Ramirez, and Taub (1978) concluded that the

apparent antidepressant effect of exercise may depend to some degree on intensity, duration, and frequency of physical activity. When the most depressed were allowed to select their exercise they chose the most vigorous. They found that people free of dysphoric moods reported a feeling of well being associated with exercise, also became less depressed and less anxious when physical activity was achieved.

Griest, Klein, Eischens, and Faris (1978) state that the search continues for additional treatment for moderate depression because more effective and/or less costly treatments would contribute subsequently to the management of this common health problem. They discuss some effects of running on mood and believe that many physical activities such as swimming, cycling, fast walking, and dancing, which involve the regular rhythmic movement of large muscle masses, will produce similiar mood effects. (Griest, Klein, Eischens, and Faris, 1978).

In 1973, they conducted a pilot study of running as a treatment for moderate depression. Males and females between ages eighteen and thirty were randomly selected to psychotherapy or running treatment. The results of the running therapy favorably compared with those of psychotherapy (Griest, Klein, Eischens, and Faris, 1978).

They suggested that there are biochemical changes associated with physical activity at both the central and peripheral sites and it seems that the sensation of feeling better

is mediated by brain hormones, which may be regulated toward a more normal functional state by physical activity (Brown, Ramirez, and Taub, 1978; Carter, 1977; Glasser, 1976; Griest, Klein, Eischens, and Faris, 1978; Morgan, Roberts, and Feinerman, 1971). They also state that some patients consciously substitute running, which they view as positive addiction, for the negative addictions that lead them to feel depressed. However, running is not a pancea. There will be some depressed patients who don't respond to running therapy because their depression is unresponsive to the treatment method (Griest, Klein, Eischens, and Faris, 1978).

SUMMARY-DISCUSSION

The surveys report a continual commitment of Americans to the exercising lifestyle. It is clear the increasing public's involvement in physical activity from twenty-four percent in 1961 to fifty percent in 1980 (Gallup). However, those who don't exercise, perceive they get enough and those who do exercise, perceive they don't get enough (Harris & Associates, 1979).

Research has well documented the physiological aspects that are derived from regular exercise programs. The health related aspects of physical fitness--cardiovascular fitness, muscular strength and endurance, flexibility, and body composition--have been found to improve in those individuals who exercise regularly (deVries (1974); Corbin (1980); Cooper (1977).

Approaches have been made to investigate the relationships between psychological dimensions and participation in physical activity. The studies have examined the following dimensions: attitudes, self-concept, perception, mood states, anxiety, and motives.

An interesting condition was described by those who have participated in physical activity on a regular basis. The phenomena has been referred to as "altered states", "addiction", and "a general feeling of improved physical and mental well-being".

It was also reported the psychological and physiological reliance upon regular activity. People continue to exercise as long as they perceive they are benefiting. Whether peoples' perception is psychobiologically correct seems not to be as important as their perception that they are well, they feel fit, and exercise is beneficial.

The studies reviewed suggested peoples' perceived benefits of exercise and perceived commitment could be significant predictors. If an instrument could be developed to measure peoples perceived commitment, a better understanding may be gained in dealing with active and non-active individuals and peoples involvement in physical activity.

The studies presented in this review may not provide substantial evidence to state their findings as fact; however, they are representative of what has been observed previously. In addition, due to the design and possible limitations which may influence the findings and conclusions drawn, one can't generalize the findings. Some major weaknesses that posed problems in which further research should be conducted to overcome these are: small sample size and sampling techniques, less than ideal instruments and devices used to collect data, and response and processing errors. Though potential problems existed in some studies, they are somewhat postive and do aid in understanding commitment and the psychological dimension in relation to physical activity.

Chapter 3

PROCEDURES

The purpose of this study was the development of an instrument to measure commitment to physical activity. This study represents a modified version of the Commitment to Running Scale developed by Carmack and Martens (1979).

SELECTION OF SUBJECTS

Volunteers from seven classes of Concepts in Physical Education at Kansas State University, Manhattan, Kansas were used in this study. Concepts in Physical Education is a required undergraduate course. The subjects were students enrolled in the scheduled laboratory meeting, Fall, 1980. 139 students were enrolled in the seven classes. Eleven students were absent the third laboratory meeting; therefore, they were not included in the study and reduced the sample size to 128. Six of the subjects present on the third meeting were not present the fourth meeting which resulted in a total of 122 subjects that actually completed the study. Seventy-one male and fifty-one female subjects whose average age was eighteen years represented the final sample.

The subjects were informed about the study and asked to sign an informed consent document (Appendix E) which provided information on the potential risks involved in the study. Subjects were assured their responses would remain confidential.

DATA COLLECTION

A four part questionnaire (Appendixes A,B,C,D) was administered to each of the seven classes during the third and fourth scheduled laboratory sessions. The total time to complete the questionnaire was thirty minutes.

Two parts of the questionnaire and the informed consent document (Appendix E) were passed out at the beginning of the third laboratory meeting. The researcher introduced herself and informed the students of her status at Kansas State University. The informed consent document was given verbally and those who decided to become participants were asked to sign and date the document on the designated spaces available.

The subjects were asked to identify their age, sex, and social security number. Each subject was reassigned a color coded number so that confidentiality was protected as only a number was used to identify each subject.

The subjects were asked to read along silently as the direction was given verbally for each part of the questionnaire. The instructions asked each subject to indicate how well each statement described their feeling most of the time and stressed that there were no right or wrong answers. If the students had any questions, they were helped individually.

The Commitment to Physical Activity Scale, modified from Carmack and Martens Commitment to Running Scale (1979) (See Appendix A), was administered as part one of the questionnaire.

The Commitment to Physical Activity Scale was designed to describe a person(s) commitment to physical activity. The questionnaire contained twelve items. Items used a five point Likert scale with possible responses ranging from strongly disagree to strongly agree.

The Psychological Index of Self Assessment, modified after the questionnaire developed by Harris and Associates (1979), was administered immediately following the completion of the Commitment to Physical Activity Scale. The instrument contained eighteen perceived psychological benefits of physical activity. The participant indicated if physical activity had been of major, minor, or no benefit at all. Upon completion of the data, the documents were collected.

On the fourth scheduled laboratory meeting, the Self-Perception Profile (Harris and Associates, 1979), was administered. The profile described positive attributes felt due to involvement in physical activity. The profile contained ten components in which the participant answered on a five point Likert scale how they perceived their own psychological well being.

The Patterns of Physical Activity Involvement Scale was designed from a scale developed by Harris and Associates (1979). This scale listed physical activities in which the subjects indicated the activities they participated in, frequency per week, duration per involvement, and if the involvement in that particular activity was on a seasonal basis. If the

activity was not listed, spaces were available for the participant to write in other activities. The two documents were collected upon completion.

One week following the administration of the questionnaire, the Commitment to Physical Activity Scale was read-administered to only three of the original seven calsses due to limitations in calss time for the test re-test reliability. Forty-six of the fifty-three subjects who completed the four part questionnaire from the three classes, completed the Commitment to Physical activity scale. The subjects were instructed that it was a part of the previous questionnaire they had completed and to read the instructions and answer each item that best described their feelings about physical activity.

QUESTIONNAIRES

Commitment to Physical Activity Scale

The Commitment to Physical Activity Scale (Appendix A) was modified from the Commitment to Running Scale (1979) developed by Carmack and Martens. The term physical activity was inserted as a substitute for the term running. There were twelve items on the scale. The responses were given on a five point Likert scale with SD referring to strongly disagree, D--disagree, U--uncertain, A--agree, and SA--strongly agree.

The Commitment to Running Scale was designed to predict

individual's commitment. Carmack and Martens reported that each of the twelve items selected for the final Commitment to Running Scale had a correlation efficient of .78 (mean coefficient = .83), indicating that each item was sensitive to measuring commitment or dislike for running. Reliability of the scale was calculated using the analysis of variance outlined by Kerlinger (1964). The reliability coefficient thereby obtained was .93. Internal consistency was assessed by a correlation matrix among the twelve items; a mean inter-item of correlation coefficient of .30 was obtained. The Kuder-Richardson formula was applied obtaining a reliability coefficient of .97 (Carmack and Martens, 28-29:1979).

Psychological Index

The Psychological Index of self assessment (Exhibit B) employed in this study was developed by Harris and Associates (1979). They reported that a high degree of psychological benefit was associated with exercise. It was clear in the finding to suggest that the high active group, those who have a deep commitment to exercise, reported a more positive psychological frame of mind than those in the low active group. Carmack and Martens (1979) also reported that the high committed runners seem to perceive that they derive more beneficial outcomes from their running than do the low committed runners. This scale was selected to determine peoples perceived outcomes from involvement in physical activity and

to contribute to the prediction of commitment. This scale will be used as a criterion variable to determine validity of the commitment to physical activity scale. The scale employs a three point Likert scale representing individual's agreement or disagreement to a statement of benefits from exercise and sport participation.

Self-Perception Profile

The Self Perception Profile (Appendix C) used was developed by Harris and Associates (1979). The scale included adjective pairs from each of the three dimensions: (a) evaluation-pairs 1,2,4, and 9; (b) potency-pairs 2,5, and 7; (c) activity-pairs 6,8, and 10. Harris and Associates reported a psychological benefit of exercise seen in the self-perceived personality attributes. The high actives emerged more positive than the nonactives (Harris and Associates, 1979). Carmack and Martens (1979) reported that the psychological well being factor and uneasiness factor were significant to predicting commitment to run. Self perception is a constant force in everyday life since it is generally felt that the value one places on one's self may be a prime determiner in involvement (Kirkendall and Gruber, 1980; Sonstorem, Neale, and Metz, 1969; Wylie, 1967). The scale was loaded with those items which describe positive feelings and optimism such as optimistic, energetic, and winner. A second factor which the items connoted the converse, included

negative, unpleasant feelings such as depressed, tired, and loser. These state of mind factors were used as criterion variables to determine the validity of the Commitment to Physical Activity Scale an as a predictor variable for commitment to physical activity.

Patterns of Activity Involvement

The Patterns of Activity Involvement Scale (Appendix D) was modified from Harris and Associates (1979). The respondents were asked to report their actual involvement in physical activity. The scale was designed to help differentiate between the subject's magnitude of involvement. All forms of physical activity are not equal. Some activities are more strenuous, utilize more energy, and require a greater discipline. Many sports are scheduled on a seasonal basis. In order to sort out such differences, the number of times per week (frequency) as well as the number of minutes per week (duration) spent on that activity were important considerations. The scale established a numerical value of an individual's involvement. The scores were calculated by determining the number of minutes per week (frequency x duration) a person reported being involved and an intensity level assigned to the activity on a four point scale. The activities were assigned a value of 1,2,3, or 4 based on the cardiovascular intensity level established by Corbin in Fitness for Life (1979). A value of 4 represented an

excellent/high intensity and a value of 1 represented poor/ low intensity. The scores on the patterns scale were used to determine the validity of the Commitment to Physical Activity Scale and as a predictor variable.

DATA ANALYSIS

All the data collected was transferred on to data cards for the purpose of data analysis. The Pearson Product Moment Correlation was employed to determine the reliability of the instrument. An item discrimination index outlined by Magnusson (1966) was used to determine if each item was sensitive to measuring commitment. An alpha coefficient was employed to determine the validity of the instrument and the extent to which the items were interrelated and tended to measure commitment. Correlation coefficients were determined between the Commitment to Physical Activity Scale and the selected measures obtained from the Psychological Index, Self-Perception Profile, and the Patterns of Activity Involvement to establish the concurrent validity of the instrument. Also a multiple regression analysis was used to determine the extent to which Commitment to Physical Activity could be predicted from the other instruments used.

Chapter 4

RESULTS

The development of a scale to measure Commitment to Physical Activity was the central focus of this research. Outlined previously in Chapter 2 were the specific purposes of this study. The subjects were selected and the data collected in accordance to the procedures discussed in Chapter 3. The statistical treatment of the data employed included correlation coefficients, coefficient alpha, an item discrimination index, an analysis of variance, and a regression analysis.

The subjects were administered a four part questionnaire during the scheduled laboratory sessions. The subjects responded to each of the following instruments: (a) a twelve item Commitment to Physical Activity Scale to determine their feelings toward physical activity, (b) an eighteen item Psychological Index of Self Assessment (Harris and Associates, 1979) to determine the perceived benefits gained from involvement in physical activity, (c) a ten item Self-Perception Profile (Harris and Associates, 1979) to determine the perceived feelings about theirselves, and (d) a Patterns of Activity Involvement scale to determine their activity behavior. The subjects responded on data sheets prepared specifically for this study. The subjects responses to the instruments were rekeyed and coded on to a data card for

purposes of scoring each instrument. The Commitment to Physical Activity Scale was reversed scored on items 2,3,4, 8, 10 and 11 to facilitate computer scoring. The Psychological Index of Self Assessment was scored with benefit assigned a value of 3, minor benefit assigned a value of 2, and no benefit assigned a value of 1. The Self-Perception Profile was reversed scored for each item. The calculated mean and standard deviations for each instrument is presented in Table 1.

Table 1

Instrument	Cases	Mean	Std Dev
Commitment Pretest	122	46.8525	7.2050
Commitment Posttest	46	47.3261	8.5194
Psych Index	122	44.1311	7.3966
Self Profile	122	40.9836	5.3982
Activity	122	552.7257	349.5961

Specific Objective One

The first objective of the study was to determine the reliability of the Commitment to Physical Activity Scale. Measures of reliability were calculated using a Pearson Product Moment Correlation Coefficient.

The well-known test-retest method was one measure used to determine the reliability. All 122 subjects were administered the four part questionnaire during two laboratory sessions. Of the 122 subjects, 46 subjects were readministered the Commitment to Physical Activity Scale one week following the first testing. The first and second test scores for those 46 subjects were used to obtain the test-retest reliability. The reliability coefficient thereby obtained was 0.9077 which is well above the accepted criterion level recognized to be between .60 and .70.

The test-retest reliability method always contains some degree of unknown reactivity due to the subjects invariably being able to recall their responses from previous testing. Therefore, a second measure of reliability of the Commitment Scale was used; a split halves reliability. The split halves reliability was determined by correlating odd and even items to each other. Thus a reliability coefficient for a six item test was established. An extension of the split halves was applied with the Spearman-Brown Prophecy Formula to determine the reliability coefficient for a twelve item test. The reliability coefficient calculated by the split halves procedure was 0.85799 and when extended using the Spearman-Brown Prophecy Formula, the calculated coefficient was 0.92357.

Specific Objective Two

The second objective was to determine the extent to which

each item was a 'good' test item. An item discrimination index was employed (Magnusson, 1966). The item discrimination index indicates to what extent success on an item is related to success on the scale as a whole. A high discrimination index indicates that those who did well on a specific item also did well on the total test. The item analysis were computed for differences between extreme groups. The upper 27 percent and the lower 27 percent of the total score distribution were separated. This analysis compared the individuals at each extreme who responded to the item consistent with the total test score to those individuals who answered the item opposite their total test score classification. Those items with higher indices were being answered consistent with the total test score classification. A minimum acceptable index level is .20 for all items except extremely easy or difficult items.

Keyed responses of four and five were designated as desirable or correct responses while responses one, two and three were designated as undesirable or incorrect responses for the purposes of this analysis. Scoring responses for items 2,3,4,8,10, and 11 were reverse scored due to the negative conotation of each item. In addition, a percentage of the desirable or correct responses was determined for each item. Responses to the twelve items of perceived commitment are presented in Table 2.

All items except item number four met or exceeded the

criterion level of .20. Item four was considered acceptable due to the high percentage of agreement among all subjects. Items two and nine were particularly good with an index of .88 and .82 respectively. Items eight through twelve were determined to be good items as they satisfied the criteria for acceptance and had relatively low correct response rates. All items were found to be sensitive to measuring both extremes of the dispositions in that they discriminate and in most cases the statistics reveal reasonable item difficulty.

Table 2

Item No.	No. Correct	% Correct	Item Discrimination		
			Hi 27%	Lo 27%	Index
1	114	92.7	33	25	+0.24
2	46	37.4	31	2	+0.88
3	110	89.4	33	23	+0.30
4	117	95.1	33	27	+0.18
5	101	82.1	33	13	+0.61
6	108	87.8	33	20	+0.39
7	100	81.3	33	19	+0.42
8	95	77.2	33	14	+0.58
9	81	65.9	33	6	+0.82
10	91	74.0	32	11	+0.64
11	98	79.7	33	15	+0.55
12	54	43.9	28	3	+0.76

Specific Objective Three

The third objective was to determine the validity of the instrument. A coefficient alpha was employed to determine the extent to which all items were interrelated and tended to measure the same thing, namely commitment to physical activity. A high alpha would suggest that items cluster together to measure one attitudinal construct rather than several. The alpha coefficient obtained was 0.8682 and the standardized item alpha obtained was 0.8776.

The second measure determined the concurrent validity of the instrument by using the relationship between Commitment to Physical Activity scores and selected predictor variables. Other indicators of commitment were correlated with the Commitment to Physical Activity Scale. These other measures were the Psychological Index, Self-Perception Profile, and Patterns of Activity Involvement. The Commitment scale was expected to yield moderate positive correlation coefficients due to the patterns reported by other studies (Harris and Associates, 1979; Carmack and Martens, 1979). As shown in Table 3, all the correlation coefficients obtained were positive and in the moderate range.

Table 3

Pretest Commitment	Post Commitment	Psych Index	Self Profile	Activity
Prestest Commitment	0.9077	0.5529	0.5307	0.3467
Post Commitment		0.6422	0.6836	0.4919
Psych Index			0.4248	0.2269
Profile				0.3061

Specific Objective Four

The fourth objective was to determine the predictability of commitment. Based on the literature, three predictor variables were selected. More specifically, the variables were the Psychological Index, Self-Perception Profile, and Patterns of Activity Involvement. The literature supports that those people who are active on a regular basis report greater positive benefits and greater positive personality attributes (Harris and Associates, 1979, Carmack and Martens, 1979). Therefore, it was expected that these three variables could be used to predict commitment of physical activity. A regression analysis using the Psychological Index, Self-Perception Profile and Patterns of Activity Involvement as independent variables and Commitment to Physical Activity as

the dependent variable was calculated. The multiple R obtained was 0.66 ($F_{3,118}$ = 30.42, p .01), which is of little value in determining the predictability of commitment from the independent variables. More useful is the R^2 value (43.6) which indicates that 43.6% of the variance for commitment was explained by the three independent variables. Thus nearly half of the variance is explained, indicating that commitment can be predicted to a certain extent from the Psychological Index, Self-Perceptions Profile, and Patterns of Activity Involvement but not exceptionally well.

DISCUSSION

It has been demonstrated in the literature that commitment can be measured. The Perrier Study (Harris and Associates, 1979) reported that fifteen percent of the population interviewed had a high degree of commitment to physical activity as measured by a Caloric Expenditure Index. Those classified as high actives, those with a deep commitment, spent more time exercising, were active over longer periods of the year, and were involved in sports that demanded more exertion than the rest of the population. Sonstroem (1978) developed the PEAS in attempts to answer how one gets people involved initially in physical activity and then to adhere to a program of personal physical activity--or become committed if you will. He examined the attitudinal constructs of estimation and attraction to physical activity. Further research is being conducted to establish validity and reliability of the PEAS. Carmack and Martens (1979) demonstrated through the development of the Commitment to Running Scale that commitment for a precise phenomena could be determined. They found the Commitment to Running Scale to be a reliable and valid. However, the scale could only be used to determine an individual's commitment to the specific activity, namely running. Therefore, in order for physical educators, athletics, and exercise and fitness specialists to determine commitment to physical activity in general, the

Commitment to Physical Activity scale was developed. It appears that measuring commitment to this general phenomena of physical activity can be achieved. The results of the Commitment To Physical Activity scale were found to be consistent with those reported by Carmack and Martens (1979).

The findings also suggest that the same items to measure commitment to running are useful in measuring commitment to physical activity. All the items were found to be good items and sensitive to measuring both extremes of the disposition. The average score on the Commitment of Physical Activity scale was expected to be high as alot of people are now exercising (Gallup, 1980; President's Council, 1973; Harris and Associates, 1979). Furthermore, other attitude inventories yield higher than neutral responses on most items. The mean reported for the Commitment to Running Scale was 47.9 and the mean reported for the Commitment to Physical Activity scale was 46.8, which both were above the hypothetical mean or neutral response of .36.

The Commitment to Physical Activity Scale was found to be a valid scale and measured commitment. The correlations between the Commitment to Physical Activity scale and the predictor variable were expected to be moderate due to the heterogeneous sample tested and the less than ideal measurements of some variables related to commitment. The Perrier Study (Harris and Associates, 1979) observed that those who

were committed and worked out regularly reported a more positive psychological frame of mind than the low or non-active population. Carmack and Martens (1979) suggested that the high CR runners seem to perceive that they derive more beneficial outcomes from their running than do the low CR runners. They also reported that the psychological uneasiness factor and the psychological well being factor, which are similiar to the Self-Perception Profile, were significant in predicting commitment to running.

It was unexpected to observe the low correlations between the reported activity behavior and the Commitment to Physical Activity scale, Psychological Index, and Self-Perception Profile. Others (Harris and Associates, 1979; Carmack and Martens, 1979; Brunner, 1969) have reported that those who were determined to be active reported greater positive benefits and greater positive personality attributes as compared to the non-active. More importantly, those who were determined committed, were found to report greater activity behavior. Therefore, it was expected to find the relationship between the Commitment to Physical Activity scale and the activity behavior to be greater. From these observations, it was determined that the activity scale was weak and the information collected was not accurately yielding activity behavior. The weaknesses were accounted for by people not accurately reporting their activity behavior, some activities are seasonal in nature, and the intensity level of the activity

affecting the activity scores. Reviewing the individual data sheets, it was observed that many of the subjects inflated the activity behavior as it would be improbable that one could be involved in that much activity on a regular basis. It suggested if the activity behavior could be determined more accurately the low correlations might increase. In addition, the possibility exists that the relationship between the commitment and activity behavior may not be linear and other statistical treatment may be more helpful in the predictability measures.

Though the commitment scale was found to be somewhat predictive in terms of participation, the more important finding observed is people's perceived commitment. Commitment may be determined by a person's perception of their activity involvement on a regular basis. A person may not perform activities at a level to induce fitness gains in actuality, but if they perceive gain or benefit from their involvement, they are more likely to report a commitment. It is how one perceives oneself that leads to feelings of security and commitment. These findings corroborate with those reported by Heaps (1979) in that gains in physical fitness, per se, may not be as important as people's perception of improvement. Heaps suggested that it is a person's perception about his physical condition, not his actual fitness which is related to certain kinds of psychological functioning. Sonstroem (1978) suggests that a better understanding of people's

involvement in physical activity can be obtained by examining self-perceptions. Therefore, a person's perceived commitment may be the important factor in predicting people's involvement in physical activity.

The results provide support for the Commitment to Physical Activity scale's reliability and concurrent validity. The reliabilities were well above the accepted criterion level. All twelve items were determined to be good test items and sensitive to measuring both extremes of the disposition. The scale tended to measure one attitudinal construct, namely commitment, suggested by the high alpha coefficient and the moderate positive correlations with the predictor variables. In addition, the R^2 value suggests we can to a certain extent predict commitment and almost half of the variance can be explained by the relationship between the Commitment to Physical Activity Scale and Psychological Index, Self-Perception Profile, and the Patterns of Activity Involvement.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

The purpose of this study was the development of an instrument to measure 'commitment' to physical activity. More specifically, the objectives of this research were to:

1. Determine both the test re-test and split halves reliability of the instrument.
2. Determine the internal consistency of the instrument.
3. Determine the extent to which each item contributes to success on the scale as a whole.
4. Determine the concurrent validity of the instrument.
5. Determine if the Commitment to Physical Activity scale scores could be predicted by the scores on the Psychological Index, Self-Perception Profile, and Patterns of Activity Involvement.

The subjects were volunteers from a required undergraduate physical education course at Kansas State University. 71 males and 51 females subjects made up the sample and had an average age of 18 years.

The subjects responded to a four part questionnaire. Forty-six of the subjects were given the Commitment to Physical Activity scale one week following the completion of the original questionnaire. The subjects responses were coded

on to data cards and were rekeyed for scoring purposes which were tabulated by this researcher.

Results were calculated by using reliability measures, item discrimination index, validity treatments, and a regression analysis for predictability.

CONCLUSIONS

1. The Commitment to Physical Activity Scale as determined to be a reliable scale.

2. The items on the Commitment to Physical Activity scale tended to discriminate between both dispositions.

3. The Commitment to physical Activity Scale was determined to be reasonably valid in terms of the relationship to actual physical activity behavior.

RECOMMENDATIONS

1. A further look should be taken in respect to determining people's activity commitment behavior at other age levels and within this same age group.

2. Different means of obtaining and assessing physical activity behavior should be sought to improve the predictability of commitment.

3. Further research needs to be conducted to understand the phenomena of psychological functioning in relation to physical activity.

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APPENDIX

APPENDIX A

S.S.#_____

FEELINGS ABOUT PHYSICAL ACTIVITY

The following statements may or may not describe your feelings about physical activity. Physical activity is interpreted to include all individual/dual sports, all team sports, and all individual exercises. Examples of these activities are tennis, badminton, yoga, racquetball, soccer, football, basketball, cycling, dance, running, swimming, weight training, fitness calisthenics, etc. Please CIRCLE the appropriate letter or letters to indicate how well the statement describes your feelings most of the time. There are no right or wrong answers. Do not spend too much time on any one item, but give the answer which seems to describe how you generally feel about physical activity.

SD--STRONGLY DISAGREE U--UNCERTAIN SA--STRONGLY AGREE
D--DISAGREE A--AGREE

EXAMPLE:

I enjoy physical activity	SD	D	U	A	SA
	1	2	3	4	5
1. I look forward to physical activity	SD	D	U	A	SA
2. I wish there were a more enjoyable way to stay fit than vigorous physical activity.	SD	D	U	A	SA
3. Physical activity is drudgery.	SD	D	U	A	SA
4. I do not enjoy physical activity.	SD	D	U	A	SA
5. Physical activity is vitally important to me.	SD	D	U	A	SA
6. Life is enhanced as a result of physical activity.	SD	D	U	A	SA
7. Physical activity is pleasant.	SD	D	U	A	SA
8. I dislike the thought of doing regular physical activity.	SD	D	U	A	SA
9. I would arrange or change my schedule to participate in physical activity.	SD	D	U	A	SA
10. I have to force myself to particpate in physical activity.	SD	D	U	A	SA
11. To miss a day without physical activity is sheer relief.	SD	D	U	A	SA
12. Physical activity is the high point in my day.	SD	D	U	A	SA

APPENDIX B

S.S.# _____

Please read each statement carefully about some of the possible benefits that physical activity has provided for you personally.

		Major	Minor	NO Benefit
1.	Feel better in general	( )	( )	( )
2.	Positive psychological effects	( )	( )	( )
3.	Am less tense	( )	( )	( )
4.	Sleep Better	( )	( )	( )
5.	Am more relaxed	( )	( )	( )
6.	Will let me live longer	( )	( )	( )
7.	Look better	( )	( )	( )
8.	Concentration	( )	( )	( )
9.	Feel less tired	( )	( )	( )
10.	Have become more disciplined	( )	( )	( )
11.	Have a better self image	( )	( )	( )
12.	Have gained confidence	( )	( )	( )
13.	Have improved outlook on life	( )	( )	( )
14.	Am better able to cope with life's pressures	( )	( )	( )
15.	Productivity has improved	( )	( )	( )
16.	Am more assertive	( )	( )	( )
17.	Thing more creatively	( )	( )	( )
18.	Smoke less	( )	( )	( )

APPENDIX C

S.S.# _____

HOW DO I FEEL ABOUT MYSELF?

Below is a list of some pairs of words which represent different descriptions of people. For Example, the first pair of words is "happy-sad". If happy is represented by number '1' and sad is represented by number '5', how would you describe yourself for each pair of words on the list--1,2,3,4,5,?

A.	Happy	1	2	3	4	5	Sad
1.	Usually not depressed	1	2	3	4	5	Usually depressed
2.	Disciplined	1	2	3	4	5	Undisciplined
3.	Stand up well under pressure	1	2	3	4	5	Do not Stand up well
4.	Optimistic	1	2	3	4	5	Pessimistic
5.	Influential with friends	1	2	3	4	5	Non-influential
6.	Energetic	1	2	3	4	5	Tired
7.	Outgoing	1	2	3	4	5	Shy
8.	Relaxed	1	2	3	4	5	Tense
9.	Winner	1	2	3	4	5	Loser
10.	Competitive	1	2	3	4	5	Non-competitive

APPENDIX D

Please circle the activities you are involved in, indicate the frequency you participate, and give an estimation of the duration you are participating in that activity. Please indicate if your involvement is on a seasonal basis.

ACTIVITY	FREQUENCY PER WEEK	DURATION PER TIME	SEASONAL
Backpacking	1 2 3 4 5 6 7	_____min.	Y N
Badminton	1 2 3 4 5 6 7	_____min.	Y N
Baseball/softball	1 2 3 4 5 6 7	_____min.	Y N
Basketball	1 2 3 4 5 6 7	_____min.	Y N
Bicycling	1 2 3 4 5 6 7	_____min.	Y N
Canoeing	1 2 3 4 5 6 7	_____min.	Y N
Dance, Aerobic	1 2 3 4 5 6 7	_____min.	Y N
Dance, Ballet/ Modern	1 2 3 4 5 6 7	_____min.	Y N
Dance, Disco	1 2 3 4 5 6 7	_____min.	Y N
Fitness Calisthen- ics	1 2 3 4 5 6 7	_____min.	Y N
Football	1 2 3 4 5 6 7	_____min.	Y N
Golf, (walking)	1 2 3 4 5 6 7	_____min.	Y N
Gymnastics	1 2 3 4 5 6 7	_____min.	Y N
Handball	1 2 3 4 5 6 7	_____min.	Y N
Hiking	1 2 3 4 5 6 7	_____min.	Y N
Jogging/running	1 2 3 4 5 6 7	_____min.	Y N
Karate/judo	1 2 3 4 5 6 7	_____min.	Y N
Raquetball/Paddle- ball	1 2 3 4 5 6 7	_____min.	Y N
Rope Skipping	1 2 3 4 5 6 7	_____min.	Y N
Rowing, Crew	1 2 3 4 5 6 7	_____min.	Y N
Skating, Ice	1 2 3 4 5 6 7	_____min.	Y N
Skating, Roller	1 2 3 4 5 6 7	_____min.	Y N
Skiing, Cross Country	1 2 3 4 5 6 7	_____min.	Y N
Skiing, Downhill/ water	1 2 3 4 5 6 7	_____min.	Y N
Soccer	1 2 3 4 5 6 7	_____min.	Y N
Swimming	1 2 3 4 5 6 7	_____min.	Y N
Tennis	1 2 3 4 5 6 7	_____min.	Y N
Volleyball	1 2 3 4 5 6 7	_____min.	Y N
Weight Training	1 2 3 4 5 6 7	_____min.	Y N
Yoga	1 2 3 4 5 6 7	_____min.	Y N
Other _____	1 2 3 4 5 6 7	_____min.	Y N
_____	1 2 3 4 5 6 7	_____min.	Y N

APPENDIX E

INFORMED CONSENT

I am interested in studying how people feel about physical activity and exercise. I would like you to answer four questionnaires pertaining to your feelings and involvement in physical activity during our scheduled laboratory sessions. These questionnaires will take approximately 15 minutes to complete. There are no foreseen risks and you may withdraw at any time.

During the administering of the questionnaires, you will be identified by your social security number. After all the data is collected, the answer sheets will be reassigned a code number and a master list will be made for future study. Your social security number will be removed from the answer sheets and the answer sheets will be kept for analysis and compilation of the findings. The master copy will be kept secured and available only to the conductor of the study.

If you agree to be a participant, please sign below and date the form. Your name in no way will be associated with the results, nor will it effect your grade in the Concepts of Physical Education course in anyway.

Your cooperation and participation is appreciated.

_____ _____

Signature Date

MEASURING COMMITMENT TO PHYSICAL ACTIVITY

by

CANDACE E. GRUGER

B.S., New Mexico State University, 1977

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Health, Physical Education and Recreation

KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Abstract

The purpose of this study was to develop, validate, and establish the reliability of a scale to measure commitment to physical activity. More specifically, the objectives of this research were to determine: (a) test re-test reliability and split havles reliability, (b) the internal consistency, and (c) the concurrent validity of the Commitment to Physical Activity Scale.

The subjects, 71 males and 51 females enrolled in a required undergraduate physical education course, responded to four questionnaires. In addition to a twelve item Commitment to Physical Activity scale modified after the Commitment to Running scale (Carmack and Martens, 1979), the subjects completed the perceived personality attributes, perceived state of mind, attitudes toward physical activity, and activity behavior scales. Basic demographic data was obtained.

The data were analyzed by use of correlation coefficients, coefficient alpha, an item discrimination index, an analysis of variance, and a regression analysis. Substantial support for the Commitment to Physical Activity scales's reliability and concurrent validity was provided. The results indicated that measuring commitment to physical activity is possible.