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THE UNIVERSITY OF ALBERTA

THE ROLE OF PHYSICAL ACTIVITY IN CONFRONTING DEATH

by

DA-HAI XU

A THESIS

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ABSTRACT

The purpose of the study was to examine the role of physical activity in confronting concerns about one's personal death, especially death thought and death anxiety. The study contributed to predicting participation in physical activity, to improving human well-being and quality of life, to understanding physical activity, and to furthering death-related studies.

A questionnaire, including a participation in physical activity scale, a death concern scale, a health status scale, a health locus of control scale, a belief in afterlife scale, and an attitude toward physical activity in dealing with death scale, was used to measure the chosen variables. A sample population of 115 (65 female and 50 male) participants in the summer fitness program at the University of Alberta and casual users of the university sports facilities took part in the study. A combination of bivariate and multivariate statistical techniques were utilized to examine the research problems. All statistical results were obtained by means of SPSSX.

As a result, the main finding of the study was that for women only, more frequent involvement in exercise was significantly related to lower death anxiety and a higher rate of participation in sport was significantly related to lower death thought. Death concern was found to be more influential than other variables tested in the study, in predicting participation in exercise or sport, except for age.

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The author is indebted to his wife Ya-jun, to whom he would like to express his deepest gratitude for her encouragement, support, and understanding. She always believes that her husband can and should achieve something. Here it is!

The writer would like to dedicate this thesis to his wife, his parents, and all those who loved and love him. He loves them all!

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Chapter I

INTRODUCTION

The confrontation with death---and the reprieve from it---makes everything look so precious, so sacred, so beautiful that I feel more strongly than ever the impulse to love it, to embrace it, and to let myself be overwhelmed by it. My river has never looked so beautiful. . . . Death, and its ever present possibility makes love, passionate love, more possible. I wonder if we could love passionately, if ecstasy would be possible at all, if we knew we'd never die.

---From a letter by Abraham Maslow, written while recuperating from a heart attack (May, 1969:99).

It is assumed that human beings are unique creatures who know clearly that they are going to die. Although other living things also perish, as far as it is known, only humans are capable of contemplating death and of thinking about its meaning. Additionally, as Feifel (1977) states, death is the greatest democracy of all, and everyone has to be the observer and participant in it. Therefore, "perhaps no other force has worked so subtly yet so powerfully upon us as this awesome knowledge; and probably no other human condition has generated any deeper, more imaginative, or more fearsome speculation than its prospects and what if anything, may lie beyond it" (Barker, 1979:1).

To author Ernest Becker (1968), nothing haunts the human "animal" quite as much as the idea and fear of death. "It is the mainstream of human activity" (p. 3). Most of our activities are designed in one way or another to avoid death's finality. All living creatures

face a fundamental problem in common, that is survival. But human beings face another severe problem -- death, because their intelligence tells them this truth. As a result, they have to adapt themselves not only to some available environment for survival, but also to death. In so doing, they created religion, magic, superstition, art, and perhaps physical activity, for dealing with death along with hunting, gathering, fishing, agriculture, and so forth, for survival.

Freud (in Hardt, 1979) theorized that every human's actions were directed by a series of conflicting instincts. Among them were what he labelled a universal or death instinct (Thanatos) and a life principle or instinct (Eros). These two instincts (buried in the Id, that part of the psyche which is completely unconscious) are in opposition throughout the human life. Suicide is seen as a condition that results from the life instinct (desire to live) being overtaken by the death instinct (desire to die). Using these beliefs as his model, Freud maintained that the basis of religion was an attempt by humans to lessen their terror of death. In other words, they invented the concepts of soul and afterlife, allowing afterlife to be more desirable than earthly existence. By doing this, their fear and lack of understanding regarding death became less frightening.

Wengle (1984) assumed that the fundamental force behind much of human behavior was the fear of death and the consequent striving for immortality. The meaning of and attitudes toward death that people have in their minds may be an important element in determining what they do with their lives in the present. The thought of death always brings the meaning of life to human consciousness and shapes patterns of behavior. Therefore, to understand the influence of death on life will perhaps lead to an understanding of human behavior, lifestyles and activities.

Physical activity, as an important aspect of human behavior, has a relationship both with the concern about death and the avoidance of death. Physical activity may be regarded as an effective counter to death, both quantitatively and qualitatively. Physical activity can extend human life effectively due to its contribution to physical and mental health, which may be interpreted as delaying death in a quantitative sense (Paffenbarger et al., 1986). To

qualitatively cope with death, physical activity can be employed to improve the quality of life by means of either engaging in meaningful and enjoyable physical activities or immortalizing the self through sport (Schmitt and Leonard, 1986). Furthermore, good health stemming from participation in physical activity can also contribute to a more enjoyable and productive life (Guyot et al., 1984). As claimed by Jangle (1985), quality rather than quantity of time becomes the premium in life, such as an individual experiencing more in one moment than others do in a lifetime, once an awareness and acceptance of death has been achieved.

People must make personal lifestyle choices about health-related behaviors such as smoking, diet, and physical activity, since these choices may determine when and how a person dies (Noland and Crosby, 1983). Conceivably, different levels of death and health concern may determine whether or not a person participates in physical activity frequently or infrequently since one's life-span is defined by health and death.

A. Definitions

Physical activity is any bodily movement activity engaged in with an awareness of enhancing physical and mental health as well as for enjoyment. Therefore, work oriented physical activities are excluded here.

Sport and exercise are two main forms of physical activity. The difference between these two activities is that sport probably brings more enjoyment to its participants whereas exercise is believed to more effectively enhance the physical and mental health of participants.

Being actively involved in sport and exercise is usually labelled "primary participation". On the other hand, "secondary participation" is where a person is involved in sport and exercise indirectly, such as attending a sport event, watching sport on television, or reading a sport magazine. Both primary and secondary involvement in physical activity will be examined in this study.

Death concern is a conscious contemplation of the reality of one's own death and the negative evaluation of that reality.

The above definition was given by Dickstein (1972) in which "the reality of death" has been changed to "the reality of one's own death" by the author. Thus, the present definition distinguishes both conscious contemplation from unconscious awareness, and personal from public death concern.

Death concern consists of two different components---death thought and death anxiety (Guyot et al ., 1984).

Death thought is the cognitive component of death concern or "conscious contemplation of personal death" which is the extent to which one thinks about one's own death.

Death anxiety is the affective component of death concern or the "negative evaluation of one's own death" which is a depressive state with anxiety over dying and fear of death being the salient symptoms.

Attitude toward physical activity in dealing with death is a person's consistently favorable or unfavorable beliefs about the function of physical activity in overcoming their death anxiety.

Belief in afterlife is to have faith that human beings still exist physically or spiritually somewhere after dying.

Health locus of control is the perceived causality of health, represented by an internal and external orientation. An "internal" is a person who tends to take responsibility for their own actions and views themself as having control over his or her own health "destiny". An "external" is a person who tends to see control over health as residing elsewhere and attributes good or poor health to outside forces.

Health Status is the extent to which an individual is physically and mentally vigorous and free from disease.

B. Purpose of the Study

The purpose of this study is to examine the role of physical activity in confronting concerns about one's personal death, specifically death thought and death anxiety.

To this end, the following sub-problems will be addressed in this study:

(1) To examine the interrelations among all variables paying particular attention to the relationship between death concern and primary participation in physical activity.

(2) To investigate the interrelations among all variables in the male and female subsamples in order to assess sex differences.

(3) To investigate the explanatory power of each variable (singly and in combination) in predicting participation in physical activity.

C. Justification of the Study

It has long interested sport administrators and theoreticians to know why some people participate in physical activity, and adhere to it for a lifetime, and others do not. They want to predict participation in physical activity and to administer sport or exercise programs in order to attract more people to physical activity. Why individuals choose a physically active or sedentary lifestyle is not only the concern of people in the exercise and health area, but it is also a serious concern of society in general.

Research conducted by Paffenbarger et al. (1986) showed that participation in exercise is related inversely to mortality, primarily to death due to cardiovascular or respiratory causes. The President's Council on Physical Fitness and Sports (1974) concluded that exercise programs have become widely accepted as an effective form of preventive medicine. Besides physical health, the literature also shows that physical activity can improve mental health. For instance, it is reported that vigorous physical activity can reduce anxiety, depression, and tension (Dishman, 1982; Folkins & Sime, 1981). Consequently, legislators, insurance companies, health educators, physical therapists, educators, and medical specialists emphasize the need for increased attention to the prevention of physical and mental disabilities and the importance of exercise on a regular basis.

The significance of this study is the predictability of death and health concerns in determining participation in physical activity. Conversely, it may be possible to predict levels of participation in physical activity from individuals' death and health concerns. Accordingly, this might suggest effective measures to increase the frequency of physical activity.

Secondly, a sedentary lifestyle and the fear of death are obviously the enemy of good physical and mental health. Ascertaining whether physical activity alleviates death anxiety, in terms of serving as preventive medicine and a life-extending measure against death, is to explore a new approach of improving human well-being and quality of life.

Why do people participate in physical activity? What is the nature of physical activity? All these questions have been asked by lay people and sport theoreticians for many years. If answered, they would contribute a great deal to our understanding of physical activity and its function and meaning in human life. However, individuals and their society are very complicated. The nature of physical activity is also varied and complex. Despite these difficulties, this study will attempt to understand the relationship of physical activity to other aspects of human behavior.

Finally, the study may contribute to thanatology which is the study of death and death education. For example, the study may be tied into "Death as a Stimulus to Improve the Quality of Civilized Life Project" which attempts to eliminate the probability of valueless wars and to promote health-related behaviors (Leviton and Wendt, 1983). One relevant postulate (Leviton, 1976) is that the death educated person, more so than others, acts to attain his or her life's priorities and values, and consequently improve personal health in a Maslowian, self-actualizing sense.

D. Limitations and Delimitations

This study is limited to measuring the respondents' present participation in physical activity rather than their initial involvement in it. Therefore, we do not know that the independent variables are causes or consequences of participation in physical activity in this study. For instance, an independent variable, which measures subjective evaluation of health

status is influenced by the dependent variable participation in physical activity more likely than the other way around. Following this, the purported causal linkage between the independent and dependent variables in this study must be discussed with a great caution.

Insofar as only a conscious level of death thought and death anxiety was measured in the study, this becomes the second limitation. According to some research (Feifel and Branscomb, 1973), the result of measuring a "below-the-level-of-awareness" death concern was slightly different from a conscious level of death concern. The respondents' death concern below the level of awareness was stronger than at the conscious level. Therefore, the present study may not reveal the entire scope of the respondents' death awareness.

The study was further delimited to surveying individuals who were primarily white and living in a western Canadian city, and who were either participants in the summer fitness programs or people using the sports facilities at the University of Alberta at the time when they were surveyed. Thus, the study is limited by the impossibility of generalizing to other groups, especially those of a different race, ethnicity or culture.

Chapter II

REVIEW OF RELATED LITERATURE

According to previous research, death concern is mainly related to variables such as age, sex, belief in afterlife, locus of control, and health status. In the following sections, the author reviews the empirical studies that show a relationship between death concern and the above variables, as well as the major explanations for these results. Additionally, the health belief and fear-drive models, which have guided the author in formulating his assumptions, will be discussed. Finally, based on this literature and the two models, possible associations between the studied variables will be posed.

A. Death Concern and Demographic Variables

It is assumed by many researchers that demographic variables affect the degree of death concern. But according to a study by Feifel and Branscomb (1973), religious self-rating and age were the only two variables significantly related to the conscious fear of personal death. None of the other eight predictors, that is, sex, education, intelligence, socioeconomic status, marital status, number of children, nearness to death, and recent experience with death, had any reliable relationship to the fear of personal death. On the basis of these results, they suggested that the relatively favorable reaction to death shown by those rating themselves high on religiosity is not too surprising, since grappling with the meaning of death and reaching some resolution is a central theme in practically all philosophic and religious systems. With regard to age, they found that those admitting to fear were significantly younger than those who did not. The major reasons advanced for less fear in the older subjects were "it's inevitable" and "it's God's will."

Age

According to Rothstein (in Kastenbaum & Aisenberg, 1972), death anxiety is relatively low throughout young adulthood until the middle adult years. Relying on extensive interview data, they found that death anxiety peaks in the middle years. This is especially true for males, perhaps because this is the first time they become aware of their own vulnerability as a result of deaths among friends and acquaintances of their own age.

Contrary to Rothstein's findings, other research indicates that older subjects are significantly less death anxious and less fearful of their own death in that they show less self-death discrepancy than younger subjects (Robinson & Wood, 1983).

Feifel and Branscomb (1973) found that subjects over the age of fifty tended to answer "no" to the question, "Are you afraid of your own death?" more frequently than younger subjects. On the other hand, a study by Templer, Ruff, and Franks (1971) yielded results contrary to both Rothstein and Feifel and Branscomb. Testing over 2000 subjects of various ages, they found no significant correlation between age and death anxiety scores. This discrepancy in findings remains unresolved and is further complicated by a study of death anxiety at the nonconscious level. Templer et al. (1971) found that elderly subjects who reported below-average overt death anxiety exhibited nonconscious death anxiety that was just as high as that of younger subjects. Similarly, Corey (1961) found that older adults tend to show avoidance of death in projective tests. Perhaps these results can be understood if it is assumed that people are more likely to deny their fears as death becomes a more immediate threat.

Sex

Although several early studies yielded no systematic sex-related differences in death anxiety (Christ, 1961; Rhudick and Dibner, 1961; Swenson, 1961), it now appears fairly certain that, on the level assessed by their questionnaires, females fear death more than males. Templer's (1970) Death Anxiety scale has been administered to samples of apartment residents, hospital aides, psychiatric patients, ninth graders, and high school students, and

their parents (Templer, Ruff, and Franks, 1971; Iammarino, 1975), and in all cases females scored higher than males. This finding was replicated by several other researchers.

Only when death anxiety is broken down into its components do researchers find any evidence of a greater fear of death among males. According to Thematic Apperception Test responses, males have more fear of the effects of their death on dependents (Diggory and Rothman, 1961) and more fear of violence in death (Lowry, 1965). In contrast, women show more fear of the dissolution of the body and the physical pain associated with death (Diggory and Rothman, 1961).

Degner (1974) identified two clusters of responses to the concept of death by having subjects fill out 36 semantic differential scales. Among males, she found an evaluative dimension to be strongest and an emotional dimension to be weakest. In an earlier study, Folta (in Degner, 1974) found the reverse to be true for females. These studies suggest that there may be a cognitive and emotional component to death anxiety, with females viewing death in more emotional terms and males viewing death in more cognitive terms.

B. Death Concern and Health Status

Evidence of the relationship between health status and death anxiety follows a pattern similar to that of death anxiety and age. There is conflicting evidence about overt death anxiety and a possibility of denial among those subjects most threatened by impending death. Lucas (1974) studied 60 hemodialysis and surgery patients and did not find their Death Anxiety scale scores to be significantly different from the normal mean scores reported by Templer (1970). Templer, however, found a significant negative correlation between scores on the Death Anxiety Scale and a measure of physical health, indicating that the higher an individual's death anxiety, the lower his or her physical health status.

Swenson (1961) suggested that people who are unhealthy might look forward to ending it all and so might fear death less than healthy individuals. His finding, that individuals in poor health tended to look forward to death more than fear it, supports this view, although his sample included only aged individuals. Feifel and his colleagues (Feifel,

1974; Feifel, Freilich, and Hermann, 1973) found that terminally ill patients reported fearing death no more frequently than other subjects, but demonstrated higher death anxiety on a nonconscious level.

Kubler-Ross (1969) reported some impressionistic data based on interviews with 200 terminal patients. She found that although patients experienced a great deal of shock and anxiety when first informed of their terminality, most patients eventually came to accept their impending deaths. In a review of the literature on the feelings and attitudes of dying patients, Schulz (1978) concluded that the predominant response of most terminal patients is depression, rather than anxiety, shortly before their death.

C. Death Concern and Belief in Afterlife

Belief in afterlife has been suggested as an intervening variable reducing death anxiety for highly religious people. Jeffers et al. (1961) found that individuals with strong religious commitments were more likely to believe in afterlife and also showed less fear of death than less religiously committed persons. Osachuck and Tatz (1973) found that, for subjects scoring high on a Belief in Afterlife Scale, a death-threatening slide show induced still greater belief in an afterlife. In general, the link between belief in an afterlife and religiosity has been amply demonstrated. Osarchuck and Tatz (1973) and Kalish (1963) reported that active Protestants and Catholics had a higher belief in afterlife when compared to religiously inactive persons of any faith.

Recent studies show that the degree of religiosity (as measured by self-reported beliefs and churchgoing) is unrelated to death anxiety for the general population (Feifel, 1974; Kalish, 1963; Templer, 1970), but it is negatively related when subjects are religiously involved (Templer, 1972; Shearer, 1973). For Templer's sample, which included many ministers, religiosity was correlated with low levels of death anxiety. Perhaps religious persons have a stronger belief in both their religion and an afterlife.

D. Death Concern, Locus of Control and Physical Activity

Locus of control, a concept derived from social learning theory, means that a person believes that a particular outcome is under control either of the individual (internal) or of factors such as fate, luck, or powerful others (external) (Rotter, 1966). An individual who is anxious about death is concerned about an event which is inevitable and ultimately beyond a person's control. A generalized external locus of control has been found to be related positively to death anxiety (Kuperman and Golden, 1978). Other research has found that subjects with a more internal locus of control report less anxiety about death than those who have a more external locus of control (Hyams et al., 1982).

According to social learning theory, it is assumed that increasing an individual's experience in a given situation will lead to the development of specific expectancies. These expectancies subsequently play a greater role in determining one's future behavior in that situation than more generalized expectancies. Therefore, Wallston et al. (1976) introduced a Health Locus of Control Scale which is an area-specific measure of expectancies regarding locus of control developed for the prediction of health-related behavior. Their research suggested that this specific instrument would better predict weight reduction behavior. In another related study, using the Health Locus of Control Scale, O'Connell and Price (1982) found that the participants in a physical fitness-program were more internally motivated than those who dropped out or did not participate.

E. Death Concern, Physical Activity and Related Variables

Since death is a universal phenomenon, and everyone must think about it and manage to deal with it, perhaps one of the universal motivations in human behavior can be found by revealing the relationship between death concern and physical activity. Butt (1976), for example, asserts that the major source of sports motivation is biological, i.e., the struggle for survival and the will to win. She suggests that a will to exert oneself for the purpose of survival is present in all forms of life. Sports participation, approached at the most general of motivational levels, might be thought of as a representation of life, symbolic of the

biological organism's struggle for survival. This level of motivation in sport might be associated with motivation to deal with death.

There is ample evidence that the will to live is an important factor in prolonging life. Conversely, the giving-up syndrome, or sense of hopelessness, is linked with death arriving earlier than predicted (Seligman, 1975; Weisman & Worden, 1975). Owing to the fact that physical activity or sport is considered as a struggle for survival and the will to win, perhaps it may help enhance the will to live. Consequently, it may contribute to the extending-life effect in this sense.

Carter (1983), in his research relating locus of control, attitudes toward physical activity and death anxiety, found that locus of control can be used to predict death anxiety in females but not in males. The Rotter I-E Scale, the Attitudes Toward Physical Activity Inventory, and the Templer Death Anxiety Scale were employed. He then interpreted the relationship established between an external locus of control orientation and death anxiety (for females) as a result of females being allowed more latitude in the expression of a wider range of feelings and behaviors, including concern over one's death. A significant finding for both sexes was a negative relationship between "externals" and attitudes toward health and physical activity. Internals show a greater capacity for self-control, which in turn fosters the development of more positive health attitudes and behavior. Similarly, Kumar et al. (1985) sampled 50 individual athletes, 50 team athletes and 50 non-athletic male undergraduate students and discovered that there was a significantly higher death anxiety in non-athletes than in individual athletes and team athletes. Moreover, non-athletes had significantly higher scores on locus of control, (i.e., they were "externals") than individual and team athletes.

After assessing the death concern of 64 runners and 62 non-runners using Dickstein's Death Concern Scale, Guyot et al. (1984) discovered that the runners scored significantly higher in death thought and lower in death anxiety than non-runners. Their explanation was that runners, while addressing their death or mortality, are also actively doing something about it. As active runners, they reported both physical and psychological benefits from their activity.

Research on physical activity and death awareness conducted by Xu (1986) showed a significant negative correlation between participation in physical activity and death awareness, which means that people who have a lower death awareness take part in more physical activity. This study also revealed a positive correlation between participation in physical activity and perceived benefits of physical activity in dealing with death. This tells us that people who favor physical activity as a means of dealing with death are more likely to engage in physical activity frequently. The concept of death awareness used in that study was actually death anxiety because a modified Templer Death Anxiety Scale was used for measuring death awareness.

Slusher (1967) identified the way in which people use sport to deal with death. He assumed that the desire to participate in "high-risk" sports gives man [1] the attitude of "complete" living. The feeling of excitement is generated by what might be called an attempt to escape death. Man hides his anxiety about death through a process of actually testing the object of death. By facing fear, the performer is more often than not stimulated to new heights. In defeating fear he assumes he has defeated death. In truth, he has done little more than suppress and conceal death.

Slusher also suggests that sport can offer the common man immortality by becoming a hero, which is a kind of "social immortality" as defined by Barker (1979). He contends that death is always a reality, but sport provides man with "everlasting" life. The great performance is remembered and man's name becomes a part of all the stages of time. The performance on the high school football team keeps man alive. In some small, but significant way, each participant is related to the unfolding history of sport and life. Indeed, man does not enjoy facing death. To maintain immortality in the sporting hero is one way for each of us to keep our association with the far-reaching past. In this way, we each stay alive a little longer and our life is also that much richer. Schmitt and Leonard in their article "Immortalizing the Self through Sport" (1986) state similar ideas.

---

[1] I am using the term "man" here because it is Slusher's usage. Whether he meant man in a generic sense or man in a specific sense (i.e., as in males) is not known.

F. The Health Belief Model and Fear-Drive Model

The Health Belief Model

People generally agree on the importance of eating well, exercising regularly, maintaining an appropriate weight, getting enough sleep and so on. Yet many people do not adhere to these guidelines. For example, the literature shows that about half the participants who begin an exercise program discontinue exercising within the first six months (Dishman, 1982; Morgan, 1977). One line of research that seeks to explain this phenomenon has been guided by the development of what is called the Health Belief Model or HBM (Rosenstock, 1966; Becker & Maiman, 1975). The HBM places heavy emphasis on factors of a cognitive nature, particularly those regarding perceptions of the severity of a disease and one's perceived susceptibility to it.

The HBM has five major components that are related to the likelihood that an individual will follow a recommended action. The first factor is the person's subjective state of readiness to take some action, which is a function of the perceived susceptibility to and seriousness of the disease. The second factor refers to the individual's beliefs about the perceived benefits. The perception of benefits is assumed to be based upon an individual's subjective appraisal of the preventive value, the availability of the procedure, and the feasibility of its implementation. The perceived barriers to preventive action are then theorized to be "deducted" from the benefits. Such barriers consist of the physical, psychological, and monetary costs of seeking treatment.

The HBM also incorporates two components that are labelled "modifying factors". One component is made up of demographic variables (such as age, sex, race, ethnicity, etc.) and sociopsychological variables (such as personality, social class, peer and reference group pressure, etc.). Another component, regarded as a modifying factor, is labelled "cues to action", and consists primarily of situational influences (such as mass media, advice from other, illness of family, etc.) that affect an individual's perception of the threat posed by the disease. These components are assumed to work indirectly by modifying people's perceptions

of their susceptibility to the disease, its perceived seriousness and threat, and the perceived benefits of action.

Basically, the HBM suggests that the likelihood of taking preventive-health measures is a direct function of two components: the perceived threat of the disease and the perceived benefits (minus costs) of the behavior.

There are a number of similarities between the HBM and the present study. Therefore, the HBM was used to help design the research. In the sense of the HBM, for example, death concern and health status might be viewed as the perceived threat. Belief in afterlife, and attitude toward physical activity in dealing with death, might parallel the perceived benefits of the behavior. Variables like age and sex (demographic) and health locus of control (personality) are obviously similar to the modifying factors in the HBM, all determining the likelihood of participation in physical activity.

With respect to the research problem of this study, a person who has a high death concern and a poor health status might perceive his/her death as a more serious threat, since the higher death concern indicates his/her perceived seriousness of the death; and the poor health status suggests his/her susceptibility to the death. Likewise, an individual who does not believe in an afterlife, and has a favorable attitude toward physical activity in dealing with death, might think highly of the benefits of physical activity in avoiding death because prolonging life is perhaps more important for nonbelievers than believers. Therefore, high death concern, poor health status, not believing in afterlife, and a favorable attitude toward physical activity in dealing with death may all lead to frequent participation in physical activity.

The Fear-drive Model

According to the Fear-drive Model, an unpleasant feeling will motivate the subject to avoid a particular situation. This suggests that an increase in fear, which might reinforce the unpleasant feeling, is associated with an increase in accepting the recommended action so as to avoid that situation.

However, empirical results do not always support the model. For example, on the basis of their finding that high fear-arousing communication is less persuasive than low fear-arousing communication, Janis and Terwilliger (1962) proposed that when a relatively high level of fear is induced, the recipients will become motivated to develop psychological resistances, so-called defensive avoidance, to the recommendations. Insofar as there is controversy over the Fear-drive Model, Xu (1987) carried out a meta-analysis of five independent studies on fear-arousing communication and attitude change to test the proposition of Janis and Terwilliger (1962). The Stouffer Combined Test was utilized to determine the overall significance of the five independent studies. The nonsignificant result indicated that high fear-arousing communication may not evoke defensive reactions. It seems to depend on the situation, individual personality and motivation. Moreover, low fear-arousing communication may not produce a high acceptance of the recommendations if they are irrelevant and uninteresting.

In summary, the Fear-drive Model may be effective if the increase in fear is coupled with an increase in the efficacy of the recommended action and with specific instructions as to how to perform the recommended action. Therefore, in relation to the present study, if the increase in death concern is coupled with an increase in favorable attitude toward physical activity in dealing with death, death concern may drive a person to participate in physical activity more frequently.

G. Proposed Framework

Having reviewed the related literature and models, a proposed framework for the study was generated by the author in an attempt to demonstrate the relationships among the variables to be tested (see Figure 1).

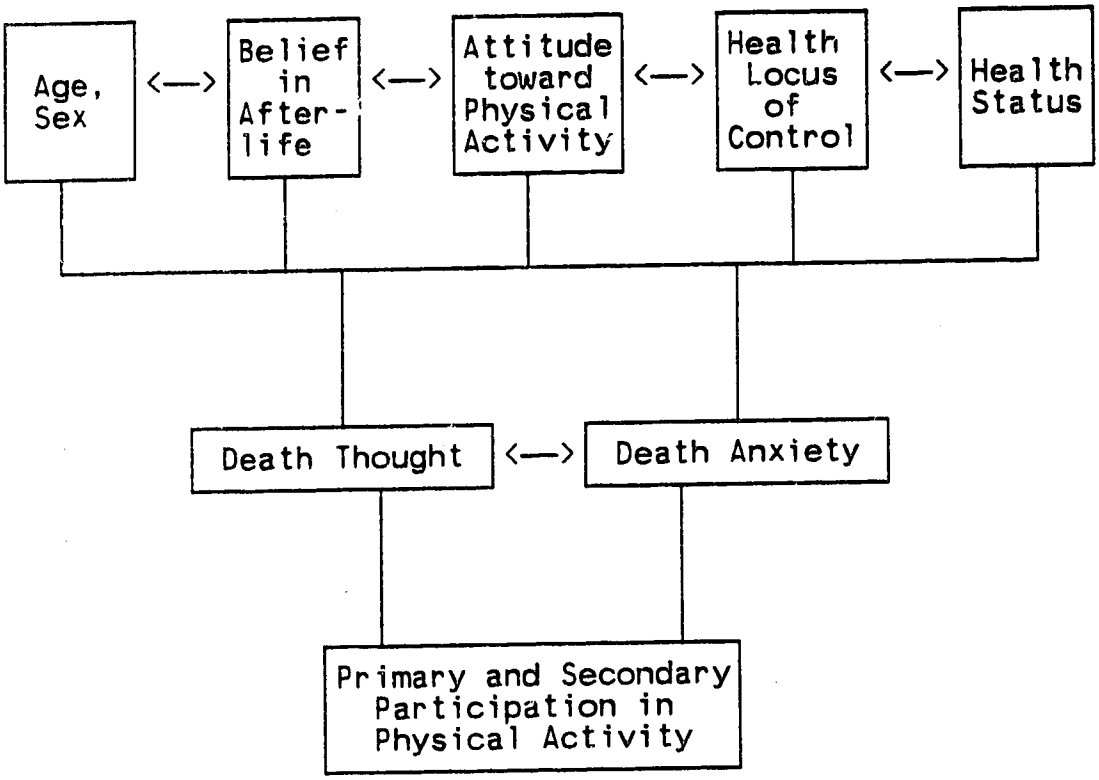

Figure 1: Proposed Framework for the Relationships between Dependent and Independent Variables

It was suggested that all of the independent variables, including age, sex, belief in afterlife, attitude toward physical activity, health locus of control, health status, death thought, and death anxiety would have an effect on primary and secondary participation in physical activity (dependent variables). Among the independent variables-- age, sex, belief in afterlife, attitude toward physical activity in dealing with death, health locus of control, and health status-- were considered as mediating variables suggesting that the effect of death thought and death anxiety on the participation in physical activity would be mediated by them.

In addition, the independent variables in the first row of the diagram might affect each other. Accordingly, it was expected that these variables would exert an interaction effect on both death concern and participation in physical activity. As shown in the diagram, death thought and death anxiety were presumed to influence each other, thus affecting participation in physical activity jointly.

On the other hand, primary and secondary participation in physical activity might affect all the independent variables except for age and sex, especially death thought and death anxiety.

Chapter III

METHODS AND PROCEDURES

To investigate the research problems (see page 5), the survey method was used to collect data. A six part, self-administered questionnaire (see Appendix) was constructed. The validity and reliability of the measuring instruments were assessed in a pilot study, and in the study reported here. A stratified sampling method was used to obtain the sample population for the study. The data were analyzed utilizing a computer package for the social sciences (SPSSX).

A pilot study was conducted by the researcher with the purpose of testing the validity of the scales and subsequently modifying them. Forty-eight respondents, including 27 males and 21 females were given a pilot questionnaire. Their ages ranged from 19 to 78 years old and the mean age was 35 years. They were mostly the residents in a neighborhood in Edmonton where the researcher lived.

In this chapter, the author will discuss how the variables were operationalized and measured, how the sample was selected, the questionnaire results, and how the data were analyzed.

A. Measures of the Variables

The data were collected by a self-completing questionnaire in which all variables were included. The variables treated in the study were operationalized and measured as follows.

Primary participation in physical activity was operationalized as the frequency of involvement in *sport* (e.g., basketball, tennis, track and field, etc.) and *exercise* (e.g., jogging, aerobics, swimming, etc.). Respondents were asked to indicate the frequency of their primary participation on a seven-point numerical scale (see Part 6 in Appendix) with

"never" (1) at one end and "everyday" (7) at the other.

Secondary participation in physical activity was operationalized as the frequency of attending a sports event, watching sports on television, and reading the sports page or a sports magazine. Respondents were asked to indicate the frequency of their secondary involvement on a seven-point numerical scale (see Part 6 in Appendix) with "never" (1) at one end and "everyday" (7) at the other.

Health status was operationalized as a subjective health evaluation, mainly physiological health, measured by a seven-item scale (see Part 1 in Appendix). The scale was primarily invented by the author although three out of the seven items were adopted from the Health Evaluation Scale created by Dixon (1985). A high scale score indicates good health status. Scores could range from a high of 33, and a low of 7.

The present scale was not tested in the pilot study because another health status scale created by Langner (1962) was used at that time. However, it was found that the items in Langner's scale were too subjective and conditional, and a decision was made not to use it.

The item-to-scale correlation and the Guttman split-half were utilized to test the validity and reliability of the present scale respectively. With regard to the item-to-scale correlation for all scales, the acceptable criterion was established at .30. In fact, for the health status scale used in this study, the item-to-scale correlation for each item was greater than .35 which demonstrates good content validity. With respect to reliability, the Guttman split-half reliability coefficient was .71 indicating good internal consistency.

Health locus of control was measured by the Health Locus of Control (HLC) Scale (see Part 2 in Appendix) which was created by Wallston et al. (1976). It is an area-specific measure of expectancies regarding locus of control developed for prediction of health-related behavior, and is purported to be a better predictor than the traditional, more generalized Internal-External Locus of Control (I-E) Scale (Rotter, 1966). Ten out of eleven items were

utilized in the present study. The scale is scored in the internal direction, meaning that a high score represents greater internal orientation. The original HLC has a potential range of 66 to 11.

The validity and reliability of the original HLC were assessed and reported by Wallston et al. (1976). From an original pool of items, the eleven chosen all had a significant item-to-scale correlation ($r > .20$), and a wide distribution of response alternatives on the item. Split-half reliability (alpha) of the items was .72 for a sample of college students. Construct validity of the HLC was evidenced by a .33 correlation ($p < .01$) with Rotter's I-E scale for the same sample, although as Wallston et al. (1976 : 581) point out: "The overlap with the I-E scale was kept purposely low to enhance its discriminant validity, thus meeting the requirement that a new test not correlate too highly with measures from which it is supposed to differ." The more specific the instrument, they argue, the better the prediction of a particular behavior in a particular situation.

The original HLC was tested in the pilot study although one item was removed because it was assessed to be conflicting and vague. The item-to-scale correlation also showed that several items (specifically #1, 7 and 10) were below the requisite .30 level ($r = .14, .16, .02$ respectively). However, it was decided that these items should remain in the scale and be tested with a larger sample. Interestingly enough, these items had a high item-to-scale correlation ($r = .56, .46, .56$ respectively) when used with a much larger sample in the present study. Moreover, three other items (#4, 5 and 6) indicated a relatively low item-to-scale correlation ($r = .11, .08$, and .14 respectively). Therefore, these items were removed from the scale, and only the remaining seven items were used to calculate a total health locus of control score. The Guttman split-half reliability coefficient for the remaining items was .84, demonstrating high internal consistency.

Death Concern was measured by a fourteen-item scale (see Part 3 in Appendix) which includes two subscales. The first eight items measure death thought and the last six items measure death anxiety.

These scales have been developed as a result of the work of Dickstein (1972), and Klug and Boss (1976, 1977), particularly the latter. An original death concern scale of thirty items was developed by Dickstein (1972). It was a measure of the extent to which an individual consciously contemplates death and evaluates it negatively. However, further factor analytic work by Klug and Boss (1976, 1977) revealed that the scale actually measured two aspects of death concern, namely, the conscious contemplation of death (death thought) and the negative evaluation of death (death anxiety). The construct validity of the death anxiety scale was confirmed by a high correlation ($r = .68$ and .60 for two samples) between that scale and Templer's Death Anxiety Scale (1970), and a negative correlation ($r = -.29$ and $-.33$) with Klug's (1976) Death Acceptance Scale. However, the nature of death thought was not as clear since the scale items correlated moderately with both the death anxiety items (and Templer's Death Anxiety Scale) but not at all with death acceptance.

In the first subscale (death thought scale), the highest possible scores are 40 and the lowest possible scores are 8 with high scores indicating more death thought. And in the second subscale (death anxiety scale), the highest scores are 30 and the lowest are 6 with high scores indicating higher death anxiety.

The Death Thought Scale was tested in the pilot study. The ten items used in that scale were all above .32 on their item-to-scale correlation. However, in order to make the scale shorter, two items were eliminated in the present study primarily because they were unrelated to thoughts about one's own death. The remaining eight items in the scale were all above .33 on their item-to-scale correlation when tested in the present study indicating good content validity. The Guttman split-half reliability was .79 for the scale demonstrating reliable internal consistency.

The validity of the Death Anxiety Scale was tested in the pilot study where ten items were used. But most items in that scale were not significantly correlated with the total score of the scale according to the acceptable criterion. Out of ten items in that scale, six items were between .20 and .29 on their item-to-scale correlation and the remaining items were above .30. The problem might lie in the fact that the researcher did not employ the six-item

scale suggested by Klug and Boss, which were highly loaded on the same factor; instead he used a ten-item scale with four more items than suggested. Accordingly, the suggested six-item scale was used in the present study. The item-to-scale correlations of the remaining six items were all above .52, indicating excellent content validity. The Guttman split-half reliability was .86 demonstrating good internal consistency.

It is also worth mentioning that the Guttman split-half reliabilities of .79 for the death thought scale and .86 for the death anxiety scale were significantly higher than the correlation coefficient (.40) between the death thought and death anxiety scales calculated in the present study, indicating that the two variables are interrelated to a degree but are not the same construct as suggested by Klug and Boss (1976, 1977).

Belief in afterlife was measured by the Belief in Afterlife (BA) Scale (see Part 4 in Appendix). The scale used in this study comprises eight items from Form A of the BA scale developed by Osarchuk and Tatz (1973). It was reported that the subjects' estimate of their belief in afterlife correlated significantly with their scores on the BA scale ($r=.43$, $df=309$, $p<.001$), indicating a reasonable degree of construct validity for the scale. No measures of reliability were reported in the original study. A high score (maximum of 40) on the scale indicates a higher degree of belief in afterlife.

Ten items were tested for their validity in the pilot study, and they were all highly correlated with the total score of the scale. However, to make the scale shorter and more reasonable, two items were eliminated from the final study. Those two questions, "Earthly existence is the only existence we have" and "Some existentialists claim that when a human being dies he or she ceases to exist", may only reflect the existentialists' perspective on death and afterlife, and therefore they were considered inappropriate for this study. The item-to-scale correlations for the remaining eight items in the scale were all above .55. The Guttman split-half reliability of the Belief in Afterlife Scale was .92 when tested in the present study. Taken together, the results of the two studies indicate that the scale is very consistent and reliable.

Attitude toward physical activity in dealing with death was measured by a six-item Likert scale created by the author (see Part 5 in Appendix). Respondents replied to each statement on a 5-point scale, with 1 representing strong disagreement, and 5 representing strong agreement. Therefore, higher scale scores (maximum of 30) than lower scores (minimum of 6) represent a favorable attitude toward physical activity in dealing with death.

Tested by the researcher in the pilot study, four out of five items on their item-total correlations were above .50 and the remaining one was .29 which was quite close to the acceptable criterion of .30. In the present questionnaire, one more item was added in the scale: "Physical activity can help slow down the aging process". The validity and reliability tests for the present study showed that for all items, the item-to-scale correlations were above .41 except for the second item ($r=.18$). As a result, the second item, "I seldom think about death after I have just finished physical activity," was eliminated. The Guttman split-half reliability coefficient for the remaining five items was .77.

Religious preference or affiliation was operationalized as four categories (see Part 6 in Appendix): "none", "protestant", "catholic" and "other" religions. These categories were developed based on information received from the Population Laboratory in the Department of Sociology. According to their statistics, 19.4% of the population of Alberta indicate no religious preference or affiliation, 59.2% indicate they are Protestant, 19.7% indicate they are Catholic, and the remaining 1.7% identify with some other religion.

Age and sex. Age was assessed by asking the simple question, "How old are you?". Sex was obtained through letting respondents indicate either "male" or "female".

Experience with grief and affect of loss. Finally, respondents were asked about their recent experience with grief through a yes/no response to "Have you lost anyone who was close to you in the past year?". If they responded "yes" to this question, they were asked to briefly describe how this loss was affecting their lives.

B. Sampling Procedure

Sampling was completed in two stages. In the first stage, 150 questionnaires were distributed among the participants in the summer fitness program at the University of Alberta. The response rate was 46 percent with far more females (59) responding than males (10). This was due to the fact that the program attracted mainly females. The second stage of sampling consisted of the researcher personally approaching people who were using the sports facilities (mainly the track area and weight-training room) and asking for their cooperation in completing the questionnaire. Only males were approached in an attempt to balance the sample with regard to sex. 100 males were approached, and 46 questionnaires were received in return, six of which were from females which meant that they had completed the survey for the person to whom it had been given originally. Of the total sample of 115 respondents, therefore, 65 (57%) were female and 50 (43%) were male.

The age of the respondents in the study ranged from 18 to 76 years old. The mean age for the total sample was 36.4 (SD=12.3) meaning that approximately 68 percent of the respondents ranged in age from 24 to 49 years old. Males had mean age of 41.6 years (SD=13.0) whereas the mean age of the females was 32.3 years (SD=10.0). The female respondents tended to be younger because they were primarily members of the support staff at the university, whereas the males came more from the academic staff.

C. Treatment of the Data

After the results of the questionnaires were coded, different statistical techniques were utilized in accordance with the specific research problems. The computerized statistical program SPSSX was used to analyze all data.

In describing the questionnaire results, descriptive statistics and univariate analysis were used to present the freqency of the respondents' primary participation in physical activity and the central tendency of the scale results. Bivariate analysis was also used to determine the differences of the scale results between sexes. In investigating the research problems, bivariate analysis was used to ascertain the strength of the association between

variables. The specification method coupled with bivariate analysis was used to determine whether the relationship between the original two variables differed for various types of people. Multivariate analysis was used to assess the joint impact of all independent variables and the single impact of each variable on the dependent variable.

To test the stability of the death thought and death anxiety variables, one-way analysis of variance was used to determine the difference in death thought and death anxiety between different religious affiliation groups, between different experience with grief groups, and between those whose lives were affected by that loss, and those whose lives were not affected.

The Pearson correlation was utilized to examine the interrelations among all the variables. To investigate the interrelations among variables between the sexes, the Pearson correlation between variables was calculated for males and females respectively.

Finally, multiple regression was used to determine the explanatory power of all variables and each variable in predicting participation in physical activity.

D. Questionnaire Results

Table 3.1 presents the frequency of *sport* participation among the respondents in the study. Females participated less in sport than did males, a finding common to all studies of this nature. For instance, nearly 60 percent of the females either never participated in sport or at most once a month, as compared to 46 percent of the males. The numbers participating in sport on a regular basis (at least 3 days a week) represent less than 30 percent of the total sample (males 40%; females 20%).

Participation in *exercise* activities was much higher, for both males and females, in this study. Table 3.2 presents the data for exercise participation. A small proportion of males (18%) and even smaller proportion of females (13.8%) indicated that they did not exercise at least three times per week.

Table 3.1

FREQUENCY OF PARTICIPATION IN SPORT

Frequency	*Male*	*Female*	*Total Sample*
Never	22.0%	33.9%	30.4%
Once a Month	24.0%	21.5%	22.6%
Twice a Month	6.0%	12.3%	9.6%
Once a Week	8.0%	9.2%	8.7%
3 Days a Week	22.0%	10.8%	15.7%
5 Days a Week	14.0%	7.7%	10.4%
Everyday	4.0%	1.5%	2.6%

Table 3.2

FREQUENCY OF PARTICIPATION IN EXERCISE

Frequency	*Male*	*Female*	*Total Sample*
Never	2.0%	1.5%	1.7%
Once a Month	4.0%	0.0%	1.7%
Twice a Month	4.0%	4.6%	4.3%
Once a Week	8.0%	7.7%	7.8%
3 Days a Week	38.0%	43.1%	40.9%
5 Days a Week	34.0%	30.8%	32.2%
Everyday	10.0%	12.3%	11.3%

With regard to respondents' scores on the six scales contained in the survey, Table 3.3 presents a comparison of measured and expected mean scale scores for the total sample.

Table 3.3

COMPARISON OF MEASURED AND EXPECTED MEAN SCALE SCORES

Scale	*Measured Mean*	*Measured Std Dev*	*Expected Minimum*	*Expected Maximum*	*Expected Mean*
Health Status**	26.6	3.3	7	33	20.0
Health Locus of Control**	25.8	4.6	7	35	21.0
Death Thought*	16.2	5.5	8	40	24.0
Death Anxiety**	12.9	5.6	6	30	18.0
Belief in Afterlife	26.0	9.5	8	40	24.0
Attitude toward Physical Activity**	18.8	3.4	5	25	15.0

** $p < .001$, * $p < .01$ on the chi-square test

With regard to health status, the majority (68%) of respondents had scores between 23 and 30, of a possible 33 points. Since their measured mean (26.6) was significantly higher than the expected mean (20.0), it seems that most respondents felt they were healthier than others of a similar age. The Health Locus of Control (HLC) Scale scores suggested that the vast majority (almost 84%) of the respondents were "internals" who felt responsible for and wanted to control their own health. Similarly, they had a significantly lower than average score on death thought and death anxiety. Althought they had a slightly higher belief in an

afterlife than would be expected, it was not significant. Finally, they had a significantly more favorable attitude toward the role of physical activity in dealing with death than was expected.

The individuals in this study were different from the general population in Alberta in terms of religious affiliation. A much higher percentage (36.3%) indicated they had no religious affiliation, as compared to 19.4 percent in the general population. 36.3 percent of the respondents indicated they were Protestant (as compared to 59.2% in the general population), 18.6 percent indicated they were Catholic (compared to 19.7%), and a much higher percentage (8.8%) said they were of some other religious affiliation as compared to only 1.7 percent in the general population. There were no obvious sex differences in religious affiliation.

Table 3.4

COMPARISON OF MALE AND FEMALE MEAN SCALE SCORES

Scale	*Males Measured Mean*	*Males Mean Std Dev*	*Females Measured Mean*	*Females Mean Std Dev*	*Sig T*
Health Status	26.6	3.0	26.7	3.5	.86
Health Locus of Control	25.7	4.2	25.9	4.9	.78
Death Thought	15.6	5.2	16.7	5.6	.26
Death Anxiety	12.1	4.9	13.5	5.9	.16
Belief in Afterlife	25.0	10.1	26.8	8.9	.31
Attitude toward Physical Activity	18.2	3.7	19.3	3.2	.09

With respect to sex differences, Table 3.4 presents the comparison between male and female mean scores on the six scales. By and large, the male and female respondents in the study had similar scale scores since no T-test was significant regarding the difference between male and female scale scores. Relatively, the females had slightly more anxiety and thought about death than the males. Besides, they had a slightly stronger belief in an afterlife and a slightly more favorable attitude toward physical activity in dealing with death.

In sum, the descriptive statistics uncovered some striking characteristics among the respondents. They tended to believe that they were healthier and more energetic than others of their age and to feel responsible for their own health. They seemed to fear less and think less about their death. Furthermore, they tended to believe that physical activity could help them deal with death. In addition, they participated more frequently in exercise and less frequently in sports. Finally, more of them than in the general population tended to be secularists, which may be linked to the internal orientation tendency of the respondents.

Chapter IV

RESULTS AND DISCUSSION

In this chapter, both significant and non-significant results will be discussed in more detail. Special attention will be paid to some obvious tendencies reflected in the statistical analysis. Since all statistics were evaluated by a two-tailed test of significance, a significance level of .05 was established as the best criterion for statistical significance.

A. Death Concern and Demographic Variables

Age and sex were the two demographic variables measured in this study. However, due to the fact that sex differences will be reported and discussed for most of the relationships, the author will not report and discuss sex differences independently in this section. Also reported here are the relationships between death concern and religious affiliation, experience with grief, and affect of loss.

Death Concern and Age

As shown in Table 4.1, the correlations between death anxiety and age of females, as well as between death anxiety and the age of the total sample were the only significant results in the matrix. Moreover, it is most likely that the highly significant level for the total sample in that relationship was determined by the stronger correlation for females. That is to say, the only significant relationship between death concern and age was that between death anxiety and age for females. The negative association between the two variables indicates that older persons have a lower death anxiety.

Table 4.1

CORRELATIONS BETWEEN DEATH CONCERN AND AGE

Death Concern	*Age of Male*	*Age of Female*	*Total Sample*
Death Thought	.088	-.180	-.087
Death Anxiety	-.180	-.364*	-.301*

* $p < .05$

However, it is difficult to compare the present result with former findings because most researchers have not examined the relationship between death concern and age separately in different sexes. On the other hand, the finding in the present study may explain why contradictory results appeared in previous research. If females contribute more to the negative relationship between death anxiety and age, then the proportion of females in the sample would dramatically change the results. For example, a larger proportion of females in this study made an obvious contribution to the significant correlation for the total sample. If the proportion of females in the sample was reduced, the correlation between death anxiety and age among the total sample would be weakened.

The finding in this study may have some similarities with Rothstein's (in Kastenbaum and Aisenberg, 1972) results. He found that death anxiety peaked in the middle years for males. Comparatively, females did not have a high death anxiety in their middle years. However, the males in this study also had a tendency to fear death less as they became older although it was not statistically significant.

The difference between males and females regarding their death anxiety and age may be explained in terms of the cognitive and emotional components to death anxiety. According to Folta (in Degner, 1974), females view death in more emotional terms such as the fear of the dissolution of the body and the physical pain associated with death (Diggory and

Rothman, 1961), whereas males view death in more cognitive terms such as the fear of the effects of their death on dependents (Diggory and Rothman, 1961) and the fear of violence in death (Lowry, 1965). The emotional reaction of females to death was supported by a female respondent's comment on her questionnaire:

I believe physical fitness keeps you young, fairly healthy, in shape, mentally prepared to handle stress, but it will not prevent you from dying unless your death is to be of an unnatural means (p.s. sickness to me is unnatural) rather than sleep.

The above quotation reflects this woman's fear of an "unnatural" death caused by sickness and her belief in the function of physical activity in preventing people from dying unnaturally. The females in this study had actively participated in a physical fitness program and subseqently had a better feeling about their own health status (see Table 3.3). Therefore, seemingly these women need not fear the dissolution of the body and the physical pain associated with death since they had stronger bodies and were physically fit.

Stillion (1985) believes that the elderly have experienced a life in which they have had time to achieve that which they were capable of doing, and therefore death becomes less of a loss to them. Also, he thinks that quality of life issues may play a role in older people fearing death less. As people age, they inevitably experience loss of bodily functioning, of friends and of desires, thus perhaps decreasing their joy in existence. Therefore, it is more likely that the death is accepted by older people, as evidenced by a respondent's statement:

I do not plan to live beyond 80 years! This does not necessarily mean that I accept death. I fear the loss of my youth and thus my abilities. I am willing to die rather than live fully dependent on others. Life is not worth living if I have no goals or am unable to achieve them. I would rather die than live a useless life with no direction in a nursing home.

Accordingly, it could be speculated that older females may have more reasons than the young to view death with less fear, depending on whether their concern for the physical pain associated with death is alleviated.

In comparison to females, older males feared death relatively more perhaps because of their cognitive characteristics, although they may have more reasons, such as life achievement and loss of ability, than the young to view death with less fear. Physical fitness programs and exercise might not change their cognitive anxieties, e.g., "the fear of the effects of their death on dependents". This cognition may be reflected in the slightly higher death thought in the older males as opposed to the relatively lower death thought in the older females, as shown in Table 4.1.

Nevertheless, the negative tendency for males, and the significant negative association for females, demonstrate that the "common sense" expressed by some respondents in this study was a questionable perception. For example, an elderly respondent (aged 70) doubted that young people could possibly be concerned about their death. Another respondent stated his doubt about this more specifically:

> *...how do you get young people to react to questions about death? As Charles Laurel, the English essayist, remarked, "The young man until thirty does not realize that he is mortal."*

Death Concern and Other Demographic Variables

As shown in Table 4.2, no significant result occurred for the F-ratio among death concern (death thought and death anxiety) and the three demographic variables--religious affiliation, experience with grief, and affect of loss. This means that there was no significant difference between the four religious affiliation groups (none, protestant, catholic, and other), between the experience with grief group and the no experience with grief group, and between the affect of loss group and the no affect of loss group, on their death thought and death anxiety.

Table 4.2

F-RATIO OF DEATH CONCERN AND THREE DEMOGRAPHIC VARIABLES

Death Concern	*Religious Affiliation*	*Experience with Grief*	*Affect of Loss*
Death Thought	1.944	.073	.871
Death Anxiety	.075	.094	.020

B. Death Concern and Attitudinal Measures

Table 4.3 presents the Pearson correlations between all attitudinal measures and death thought and death anxiety respectively for both males and females. No significant result was discovered regarding death concern and health status for both sexes as shown in Table 4.3. Notwithstanding, all correlations in this relation for both sexes illustrate a negative tendency suggesting that people in better health had a slightly lower death thought and death anxiety. This tendency may support, though not strongly, the finding obtained by Templer (1970) that the higher an individual's death anxiety, the lower his or her physical health status. In addition, the tendency may suggest that the other results (Swenson, 1961; Feifel, 1974; Feifel et al., 1973; Kubler-Ross, 1969), showing that unhealthy individuals feared death less than healthy individuals, might not be applicable to the healthier people in this study. The individuals in those studies, who were mainly aged or terminally ill patients (see pages 10 and 11), might avoid or accept death when confronting their immediate death so that they could lead a comfortable life without fearing the coming future. The "avoidance" or "acceptance" reaction to their immediate death may be an adaptation approach to the inevitable destiny.

Table 4.3

CORRELATIONS BETWEEN DEATH CONCERN AND ATTITUDINAL MEASURES

Attitudinal Measures	*Male Death Thought*	*Female Death Thought*	*Male Death Anxiety*	*Female Death Anxiety*
Health Status	-.205	-.052	-.064	-.126
Locus of Control	-.310*	.038	-.320*	.135
Belief in Afterlife	-.094	.053	-.275*	-.003
Attitude to P.A.	-.037	.008	.021	.022

* $p < .05$

Table 4.3 also shows that the internal orientation in health locus of control was significantly correlated to lower death thought and death anxiety in males whereas the opposite tendency was present in females. The findings for males in this study were consistent with the most relevant studies (Kuperman and Golden, 1978; Hyams et al., 1982). The difference between males and females may lie in the socialization process in North American culture. Through socialization, some males have developed stereotypic attitudes such as "keep a stiff upperlip", be a powerful loner, be a provider and macho man (Stillion, 1985). Therefore, males are taught to rely totally on their own efforts to improve their health, and to fight their final "destiny" alone. On the other hand, practising self-reliance makes a man feel confident in his ability to change the situation to his advantage. In this case, he might feel that his health outcome was under his control and therefore he could improve his health effectively to extend his time of death. Consequently, the more internally oriented a man was and the more successfully he could improve his health, and fight his final "destiny", the lower his death anxiety. Conversely, females are sometimes taught to be

anxious, hysteric, a clinging vine, a nurturer, fragile, and ultrafeminine (Stillion, 1985). As a result, women are used to depending on others for help. Thus, she might doubt her own ability to improve her health even though she felt responsible for it.

According to the results shown in Table 4.3, there is a significant relationship between death anxiety and belief in afterlife for males only, meaning that the more strongly he believed in an afterlife, the lower his death anxiety. This finding, coupled with the finding (Osachuck and Tatz, 1973) that a death-threatening slide show induced still greater belief in an afterlife, suggests that a belief in an afterlife may be an effective way to reduce death anxiety; however, only for males based on the results of this study. This result may also be related to the significant negative correlations between males' death concern (death thought and death anxiety) and their internal health locus of control orientation. That is to say, believing in an afterlife is simply another way for males to control the situation to their advantage.

One's attitude toward the role of physical activity in dealing with death was not correlated to death concern for either males or females (see Table 4.3), suggesting that to think favorably about the role of physical activity in dealing with death does not reduce death thought or death anxiety.

C. Death Concern and Physical Activity

Relationships Among the Physical Activity Variables

It is not surprising that primary participation in physical activity was highly correlated with sport participation and exercise involvement for both males and females because primary participation in physical activity was the combination of these two activities (see Table 4.4).

As shown in Table 4.4, there was a significant positive relationship between primary participation and secondary involvement in physical activity, but only in females. As a matter of fact, this result was mainly determined by a significant positive association between sport participation and secondary involvement in physical activity in the females. The results

suggest that, for the females, only those who participated frequently in sport also watched sport or read sports magazines frequently. On the other hand, most of the males enjoyed watching or reading about sports no matter whether they liked participating in sport personally or not. Besides, it is reasonable that exercise participation was not significantly related to secondary involvement in physical activity because the items measuring secondary involvement in physical activity were exclusively concerned with sport attendance, etc. Thus, secondary involvement in physical activity was virtually the secondary involvement in sport.

Table 4.4

CORRELATIONS AMONG PHYSICAL ACTIVITY VARIABLES

	Sport	*Exercise*	*Secondary Involvement*
Male Primary P.A.	.819*	.480*	.196
Female Primary P.A.	.869*	.619*	.488*
Male Sport	----	-.111	.158
Female Sport	----	.149	.589*
Male Exercise	----	----	.098
Female Exercise	----	----	.040

* $p < .05$

Table 4.4 demonstrates that sport participation and exercise involvement were not significantly related for both sexes. Furthermore, the correlations presented the opposite

tendencies for the different sexes. For instance, there was a negative correlation between sport and exercise in the males, whereas a positive correlation existed in the females suggesting that the more a male participated in sport, the less he engaged in exercise, and vice versa. The more a female participated in sport, the more she pursued exercise as well. As far as the present results are concerned, sport and exercise may be quite different in terms of their outcomes and purposes although they are both forms of physical activity. The respondents might select one form and reject another, especially the males. Therefore, in the discussion which follows, it has been decided to abandon the notion of primary participation in "physical activity" and to discuss participation in sport and exercise independently.

Death Concern and Exercise, Sport and Secondary Involvement in Sport

Death Concern and Exercise

With regard to the relationship between death concern (death thought and death anxiety) and exercise, the only significant result was the negative association between death anxiety and exercise in the females (see Table 4.5), demonstrating that the more frequently a woman was involved in exercise, the lower her death anxiety. Although not significant, there was a negative relationship between both death anxiety and thought with exercise for males.

The results were consistent with the finding obtained by Guyot et al. (1984) that nonrunners reported more anxiety about death than did runners. It should be pointed out that the result in that study stemmed from comparing runners with nonrunners. However, almost all of the respondents in the present study could be compared to these runners insofar as they exercised regularly. In addition, the results were also similar to the finding obtained by Xu (1986) in which he found a significant negative correlation between participation in physical activity and death anxiety. Again, it should be pointed out that the physical activity he measured in that study consisted of sport, exercise, and recreational activities instead of exercise alone. Nevertheless, the consistency between these three independent studies demonstrates a negative relationship between death anxiety and exercise.

Table 4.5

CORRELATIONS BETWEEN DEATH CONCERN AND PHYSICAL ACTIVITY VARIABLES

Physical Activity	*Male Death Thought*	*Female Death Thought*	*Male Death Anxiety*	*Female Death Anxiety*
Exercise	-.267	-.011	-.232	-.304*
Sport	-.070	-.258*	.134	.150
Secondary Involvement	-.351*	-.065	.067	.285*

* $p < .05$

The explanation for this relationship given by Guyot et al. (1984) may also be applicable to this study:

> *Doing something about the anxiety or fear can involve relaxation training, cognitive restructuring, or running. This is generally done while thinking about what causes the anxiety (imagery) or directly experiencing what causes the anxiety. It is presumed that the sympathetic (autonomic) anxiety response is inhibited by a competing physiological response, cognitive learning, or a combination of both cognitive learning and competing physiological responses. It may be that runners, by thinking about death and doing something about it (running), are reducing death anxiety through a process similar to what behavior therapists use for reducing anxiety.*

In this case, exercise may play both the role of a competing physiological response as well as the role of cognitive learning that eventually contributed to inhibiting the death anxiety response (Rimm and Masters, 1979; Wolpe, 1973). The strongly physiological responses, such as a higher heart rate, heavier breathing, and muscle movements could easily dominate over

other responses. In addition, learning new skills and practising them needs a great deal of concentration which could inhibit other responses. Cognitive learning may play an important part in physical fitness programs where an instructor is there to teach some new methods or skills. This may be one reason why the females in this study have more effectively reduced their death anxiety through exercise since they participated in a structured physical fitness program.

Besides the physiological and cognitive responses, exercise may make an impact on an individual's outlook, as one respondent said on her questionnaire:

> *Athletes tend to have a more positive outlook towards life and death, in my opinion. They work hard and feel better about their bodies, so death is not a great fear for them to die.*

This so-called "outlook" might be the idea of improving the quality of life or immortalizing the self through sport (Schmitt and Leonard, 1986). The "feel better about their bodies" concept may stem from the idea that physical activity can extend human life effectively due to its contribution to physical and mental health, which may delay death in a quantitative sense (Paffenbarger et al., 1986). The significantly higher health status in the respondents than the expected mean score (see Table 3.3), and the negative tendency for the relationship between health status and death anxiety, may support the notion of exercise as a factor in delaying death.

The significant negative relationship between death anxiety and exercise for females may be congruent with the significant relationship between death anxiety and age for females (see Table 4.1). Hence, the explanation for the difference between the two sexes in the relationship of death anxiety and age may be applicable to this result. Due to the emotional orientation of females to death (see page 10), they may not fear the dissolution of their body and the physical pain associated with death since the women of this study had a higher health status (see Table 3.3 and Table 3.4), i.e., they "feel better about their bodies", perhaps through exercising. In comparison, the cognitive orientation of males to death was hardly changed by exercising.

With respect to the relationship between death thought and exercise, no significant Pearson correlations occurred for both sexes (as shown in Table 4.5). However, the negative tendencies of the relationship between death thought and exercise in both males and females of this study were contrary to the finding of Guyot et al. (1984) that runners scored significantly higher than nonrunners on the death thought scale. The difference in the results of the two studies may lie in the fact that Guyot et al. compared runners with nonrunners, whereas in the present study a comparison was made among "exercisers" who were somewhat comparable to the runners of the Guyot et al., study. Nonetheless, no convincing explanation can be provided, and further reseach is needed to clarify the inconsistency.

Death Concern and Sport

With regard to the relationship between death concern and sport, the only significant result was the negative correlation between death thought and sport participation in females as shown in Table 4.5. Combined with the negative tendency in the relationship between death thought and exercise, the finding may support the belief that "sport (maybe exercise as well) can keep people's minds off their serious problems". Considering that the elements conducive to reducing death anxiety may contribute to reducing death thought simultaneously, such as competing physiological responses and cognitive learning, more frequent participation in sport may reduce death thought -- a serious problem for those who know clearly that they are going to die.

The result was similar to Leviton's (1968) finding that sportsmen at the time of their event were unconsciously vigilant to the possibility of death. At the conscious level, death thoughts immediately before and during a sport event were effectively avoided and a "non-interfering" attitude of mind was realized which denied the possibility of death. Therefore, he concluded that suppression of the probability of death on the conscious level, and vigilance on the unconscious level, were dual functions that helped persons meet, with maximum effectiveness, the exigencies in a sport situation.

The tendency of sport to keep death off an individual's mind can be supported by the "flow experience" proposed by Csikszentmihalyi (1975). At least four out of six elements,

which are merging action and awareness, centering of attention, loss of ego, control of action and environment, demands for action and clear feedback, and autotelic nature of flow, of the flow experience obviously contribute to forgetting about death. First of all, the experience of merging action and awareness makes forgetting about death possible. In this experience, one is very aware of one's action, but not of the awareness itself, as an outstanding chess-player described: "The game is a struggle, and the concentration is like breathing---you never think of it. The roof could fall in and if it missed you, you would be unaware of it" (Csikszentmihalyi, 1975:46). The merging of action and awareness is made possible by another element-- centering of attention on a limited stimulus field. To insure that people will concentrate on their action, potentially intruding stimuli must be kept out of attention. The third relevant element is the loss of ego. When an activity involves the person completely with its demands for action, "selfish" considerations become irrelevant. The final relevant element is the control of action and environment in which a person in flow is in control if his actions and the environment. On the other hand, in nonflow states, such a feeling of control is difficult to sustain for any length of time. There are too many imponderables, as Csikszentmihalyi (1975) noticed, "Personal relationships, career obstacles, health problems---not to mention death and taxes---are always to a certain extent beyond control" (p.51). In sum, an individual in the flow experience may forget about death completely and may also feel his or her death is under control.

In the present study, the negative relationship between death thought and sport, which was much more significant for females than for males, may be due to their different behavior patterns in sport. Usually, males are inclined to engage in more dangerous and higher risk sports insofar as they are socialized to be more aggressive and violent than females. As a consequence, they may be more likely to think about possible accidents in these sports. However, this explanation is highly speculative since little was known about the actual sports behavior among the males of this study.

With regard to the relationship between death anxiety and sport, although the results were not significant for either males or females (as shown in Table 4.5), the positive tendency

for both sexes shows that more frequent involvement in sport led to a higher death anxiety. This result was contrary to the finding obtained by Kumar et al. (1985) who discovered a significantly higher death anxiety in non-athletes than among individual and team athletes. It is worth mentioning that their study was conducted in India, and the cultural differences should be considered when comparing the two studies.

However, the result of a positive tendency for the relationship between death anxiety and sport may support, even though not strongly, the proposition put forth by Xu (1988) that the transformation of death anxiety into an optimal level of stimulation was an important element that determined the enjoyment of the participation in high-risk recreation activities, including sports. The tension encountered while engaging in sports represented a stress on the individual (Loy and Donnelly, 1976). As there is often much concern for the negative influences of stress, it seems odd that there should be people who actively seek it out. Schreyer et al. (1978) contended that the answer lay in the fact that stress could be a form of stimulation or arousal. Klausner (1968) asserted that both positive and negative types of stress were drawn from the same energy base. He linked this type of stimulus to the optimal level of arousal that an individual sought. If insufficient stimulation existed in a person's environment, then the person would likely become bored and seek more stimulation. The greater the arousal created, the greater "the high" resulting from the experience. Therefore, it was assumed that death anxiety was the most important form of stimulation or arousal in sports since it was the greatest fear of all according to Klein (1955).

Meier (1978) declared that risk sports did not represent a death wish so much as a life wish. Although initial participation might result from the attractiveness of the thrill of facing unknown dangers, much of the motivation for continued involvement represented an extension of some common and generally non-neurotic needs such as challenge/mastery and sensory arousal. Slusher's (1967) statement is insightful:

> *More often than not, the desire to participate in "high-risk" sports gives man the attitude of "complete" living. The feeling of excitement is generated by what might be called an attempt to escape death, and not life as is commonly thought. Man hides his*

anxiety about death through a process of actually testing the object of death. Death, in this way, is not a reality; rather, fear of death becomes the reality. By facing fear the performer is more often than not stimulated to new heights. In defeating fear he assumes he has defeated death. In truth, he has done little more than suppress and conceal the actual. His performance is enhanced and man sees himself as more than what he is. (p. 206).

Death Concern and Secondary Involvement in Sport

As shown in Table 4.5, there were two significant correlations regarding death concern and secondary involvement in sport for both sexes. One was the negative relationship between death thought and secondary involvement in sport for males, suggesting that frequently watching sport or reading sports magazine reduced death thought for males; another was the positive relation between death anxiety and secondary involvement in sport for females, meaning that frequently watching sport was related to higher death anxiety for females.

The reason for the negative relationship between death thought and secondary involvement in sport for males may be that compared to females, males are relatively more enthusiastic and have a better knowledge of sport. Therefore, they are apt to absorb themselves in the sport events they were watching. For example, they might mentally participate in the events, such as anticipating the outcomes, evaluating the skills, and analyzing the strategies throughout the game. Under these circumstances, some death thought was suppressed by mental or vicarious participation in sport.

On the other hand, the significant positive relationship between death anxiety and secondary involvement for females may be due to the fact that women pay less attention to skills or strategies. They are perhaps more emotionally involved when watching sports. What catches their attention may be mostly stimulating and frightening scenes such as fights, injuries, and accidents. If so, they may feel anxious about the possible dangerous outcome of sport, perhaps even the death of an athlete which in turn may be reflected in their own death anxiety.

D. Physical Activity and Attitudinal Measures

As shown in Table 4.6, the only significant result in the entire matrix was the positive correlation between exercise and belief in an afterlife for males, indicating that belief in an afterlife was related to frequent involvement in exercise for the male respondents only. As discussed previously, believing in an afterlife may be just another way for males to control the situation to their advantage. They imagine that there will be some sort of afterlife somewhere to make themselves feel comfortable about the situation after death. In a similar vein, they take actions, and exercise in particular, to make themselves feel comfortable about their health or "feel better about their bodies" to prolong life and avoid death.

Table 4.6

CORRELATIONS BETWEEN PRIMARY PHYSICAL ACTIVITY AND ATTITUDINAL MEASURES

Attitudinal Measures	*Male Exercise*	*Female Exercise*	*Male Sport*	*Female Sport*
Health Status	.073	-.038	.199	-.015
Locus of Control	.052	.034	.078	.134
Belief in Afterlife	.344*	.015	.050	.094
Attitude to P.A.	.157	.151	.064	.066

* $p < .05$

Although not statistically significant, some tendencies shown in Table 4.6 are worth mentioning. First of all, males showed a tendency to participate in sport more frequently if they were in good health. Second, internally oriented females tended to participate more in sport. Perhaps these women had more confidence in themselves to excel in sports. The final tendency was that respondents of both sexes who had a favorable attitude toward physical activity in dealing with death, participated more frequently in exercise. This means that a favorable attitude toward physical activity in dealing with death may induce participation in exercise more effectively than participation in sport.

The insignificant results for the relationship between health status and exercise (see Table 4.6) seem inconsistent with "common sense". For example, one respondent commented on his questionnaire:

> *I am puzzled by the attempt to link physical activity with views about death and an afterlife. A man jogs etc. because he wants to stay healthy as long as possible. That is all there is to it.*

These results suggest that there are other concerns related to exercise participation. Subconsciously, people may be more concerned with their death than their health when they engage in exercise. For instance, Dixon (1985) found that the "Perennials", whom he defined as regular exercisers for many years, were most likely to attribute cardiovascular endurance, strength/muscle tone, and optimal weight level (all health concerns) to the effects of exercise. However, after he had interviewed them, he discovered that they made those attributions mainly in recognition of the belief that regular involvement in exercise minimizes the effects of a number of risk factors related to morbidity and mortality.

E. Predicting Participation in Physical Activity

After examining the interrelations among all variables, multiple regression was used to investigate the explanatory power of the independent variables in predicting participation in physical activity.

Table 4.7 presents the regression coefficients (Multiple R), the adjusted R squared, and the significant levels of the F-ratio for the regressions. The relatively high multiple regression coefficients, coupled with the significant F-ratios, suggest that there was a linear relationship between dependent variables and independent variables, meaning that the dependent variables of exercise, sport, and secondary involvement in sport can be predicted by the combination of seven independent variables, i.e., age, death thought, death anxiety, health status, health locus of control, belief in afterlife, and attitude toward physical activity in dealing with death, respectively.

Table 4.7

MULTIPLE REGRESSIONS FOR PREDICTING PHYSICAL ACTIVITY

Physical Activity	*Multiple R*	*Adjusted R Squared*	*Sig F*
Exercise	.443	.140	$p < .002$
Sport	.369	.080	$p < .04$
Secondary Involvement	.395	.100	$p < .02$

However, the relatively low R squared for each demonstrate that a regression model with seven independent variables could explain only 14 percent of the observed variance in exercise involvement, 8 percent in sport participation, and 10 percent in secondary involvement in sport. That is to say, the combination of the seven independent variables can only explain a small portion of the variance in physical activity. This means that death concern and other related variables influence participation in physical activity only slightly.

Table 4.8

PREDICTION OF INDEPENDENT VARIABLES ON EXERCISE AND SPORT

Variable	*Exercise Beta*	*Sport Beta*
Death Anxiety	-.351*	.136
Age	-.274*	-.262*
Attitude to P.A.	.265*	.013
Locus of Control	-.149	-.004
Belief in Afterlife	.100	.007
Health Status	-.025	.042
Death Thought	-.023	-.241*

* $p < .05$

Table 4.8 presents the Beta weights for the seven independent variables for both exercise and sport. Death anxiety was the most significant variable in predicting involvement in exercise, followed by age and attitude toward physical activity in dealing with death. The low value for health status may support the earlier discussion that people are virtually more concerned with their death rather than their health when they exercise.

Age and death thought were the only two significant variables in predicting sport participation, suggesting that sport may help people to deal effectively with their death thought.

F. Summary

The results of the study revealed that there was a significant negative relationship between death thought and sport participation and between death anxiety and exercise involvement but for females only. As for males, there was an obvious trend showing that exercise involvement was negatively associated with both death thought and death anxiety. No statistically significant relationship was found regarding sport and death anxiety for either sex.

Two significant results were discovered with regard to the relationship between death concern and secondary involvement in sport. It was found that secondary involvement was negatively related to death thought in males; and secondary involvement was positively correlated with death anxiety in females.

The study pointed out a significantly negative relationship between age and death anxiety for females, meaning that the older a woman, the lower her death anxiety. The same trend also existed for males.

No statistically significant differences in death concern (death thought and death anxiety) were observed between four religious affiliation groups, between the respondents who experienced the loss of a person close to them and those who did not, and between the respondents who were affected by that loss and those who were not.

The internal health locus of control was found to be significantly related to lower death thought and death anxiety in males. A stronger belief in afterlife was also found to be significantly related to lower death anxiety but only in males.

No significant relationship was observed between primary physical activity (exercise and sport) and attitudinal measures (health status, health locus of control, and attitude toward physical activity in dealing with death), except for the significant positive relationship between a belief in afterlife and exercise involvement for males.

Based on the multiple regressions, the seven independent variables (age, death thought, death anxiety, health status, health locus of control, belief in afterlife, and attitude toward physical activity) have some power in predicting participation in exercise, sport, or

secondary involvement in sport. However, taken together these independent variables can only explain a small portion of the variance in exercise, sport, or secondary involvement in sport.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

Based on the significant findings and the major limitations of the study, the following conclusions and recommendations are made.

A. Conclusions

As evidenced by the result that frequent involvement in exercise is related to lower death anxiety, exercise is not only an effective form of "preventive medicine" to avoid illness and to improve health, e.g., feeling better physically and psychologically, improved eating and sleeping habits, weight control, reduced smoking and alcohol consumption, more energy, less tension and anxiety (Guyot et al., 1984), but it may be also an effective "tranquillizer" to reduce death anxiety. It seems that this "tranquillizer" function can be added to the growing list of benefits the participants acquire from exercising. Since death anxiety is viewed as being at the heart of all human anxieties (Becker, 1973; Graham, 1979), a reduced death anxiety through exercise may influence and lower other anxieties as well. Therefore, lowering death anxiety through exercise could be very important to human existence.

Based on the result that a higher rate of participation in sport is related to lower death thought in females only, sport may help women to keep their minds off depressing thoughts about their own death. The inevitability of death is one of the serious problems confronted by human beings. The belief that sports can keep people's minds off their serious problem may be partly substantiated to be true. Owing to the fact that an obsession with death may lead to higher anxiety, as evidenced by the significant positive relationship between death thought and death anxiety, which in turn may affect one's mental and even physical health, participants in sport may benefit from having less death thought.

However, since the present study is a correlational one, it is impossible to determine which variable is the cause, and which is the effect.

Finally, death concern (including death thought and death anxiety) and age are the most influential variables of those studied here in predicting participation in exercise or sport. Suffice it to say that physical activity plays an important role in confronting death compared with other independent variables. In fact, people may be more concerned with death than health when exercising or participating in sport. There does seem to be a role, therefore, for physical activity in confronting death.

B. Recommendations

1. An attempt should be made to determine the cause-effect relationship between death concern and participation in physical activity. For example, an experimental study could be conducted in which a pre-test is initiated at the beginning of a fitness program and later a post-test is measured at the end of the program. One would then be able to determine the death concern changes because of the participation in exercise over the period of the program. A control group should be used in the study to eliminate extraneous influences.

2. A more distinct death thought scale and a more distinct death anxiety scale should be invented to measure these two related but different constructs, since the death thought and death anxiety scales used in this study were derived from Dickstein's Death Concern Scale which was constructed to measure only one construct (i.e., death concern).

3. Sex differences should always be considered when studying death-related attitudes. As evidenced in this study, there were significant differences between the sexes.

4. Based on this study, exercise and sport should be measured separately when conducting similar studies because the combination of the two physical activities is often misleading.

5. A similar study, coupled with interviews, could be conducted employing different samples, such as high performance athletes, participants in high-risk activities, or residents in a nursing home, to investigate the role of physical activity for these individuals in confronting death.

C. Postscript

Many exercisers, especially runners, have been identified as "health nuts". It means that they are motivated to participate in exercise for health reasons. For example, one of the respondents in this study stated: "A man jogs etc., because he wants to stay healthy as long as possible. That is all there is to it." However, people may be more concerned with their death than their health when they engage in exercise, as evidenced by the findings of this study. "I think it is, at bottom, the fear of death that keeps joggers and runners jogging and running. This seems to me a reasonable enough fear, and one we all share" (Epstein, 1981:179). Owing to the taboo that people should not talk and even think about death since it is beyond solution, health concern may become a substitute for death concern. The former may be internalized by individuals in North American society.

Based on this assumption, there are two implications for practitioners who wish to make use of this study. First of all, since death concern is more fundamental than health concern in determining a person's intention of exercise, death concern may be therefore more powerful than health concern to motivate individuals to participate in exercise. What should be emphasized by health and physical educators is the benefit of exercise in prolonging life and avoiding an unnatural early death rather than the benefit in improving health alone. Secondly, for many running addicts or exercise addicts, if prevented from exercising, "such runners become irritable, restless, sleepless, and preoccupied with guilty thoughts that their body will decondition or deteriorate in some way " (Sacks, 1981:128). Besides the above mental destruction when disengaged in exercise, it could become physically detrimental when these addicts insist on running even under the circumstances of illness and injuries. In this case, a therapist could utilize the methods employed in death education to reduce their death anxiety in order to avoid the mental disorder and irrational exercise activity caused probably by death anxiety.

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Appendix

THE UNIVERSITY OF ALBERTA

Department of Physical Education and Sport Studies

A SURVEY OF ATTITUDES TOWARDS PHYSICAL ACTIVITY AND HEALTH

A NOTE ABOUT THE QUESTIONNAIRE

I am currently conducting a study about various aspects of one's health status, death concern, and involvement in physical activity. Your answer will contribute to the completion of my study and also to an understanding of the nature of human behavior and physical activity. I would be very grateful if you would participate in the study. It should take you about ten minutes to complete the questionnaire.

The information you provide will be kept strictly confidential. There are no numbers or marks on this questionnaire that will identify the person completing it. Also, it will never be possible to trace your identity from our published reports.

This questionnaire should be answered by adults who are between 18 and 70 years of age. All questions should be completed because each question meets a specific objective. It is also hoped that you will answer the questions as honestly and accurately as possible.

Your comments on any aspect of the questionnaire, or any additional points you wish to make, will be very welcome. Thank you very much for your cooperation!

Da-hai Xu
Graduate Student

PART 1

In this section, I would like to know how you feel about your own health in relation to other Canadians of your age. For each question, put a check in the appropriate bracket.

1). How would you rate your daily energy? Would you say:

Very low ( ); Low ( ); Average ( ); High ( ); Very high ( )

2). How often do you get sick? Would you say:

Very often ( ); Often ( ); Average ( ); Seldom ( ); Never ( )

3). How quickly do you recover when you get sick? Would you say:

Very slow ( ); Slow ( ); Average ( ); Quickly ( ); Very quickly ( )

4). Is there any state or condition of your health, general or specific, that you feel is painful? Do you have:

Severe pain ( ); Moderate pain ( ); Mild pain ( ); No painful condition ( )

5). To what extent, if at all, does the state or condition of your health prevent you from carrying out the activities of living that you feel it is appropriate for you to engage in?

Severe limitation ( ); Moderate limitation ( ); Mild limitation ( ); No limitation ( )

6). Considering the most serious medical state or condition you know of, would you say that you have:

A serious, chronic, and degenerative condition ( );
A serious, chronic, and stable condition ( );
A mild, chronic, and stable condition ( );
A mild, acute, and self-limiting condition ( );
No acute or chronic condition ( )

7. How would you rate your overall health status? Would you say:

Very poor ( ); Poor ( ); Average ( ); Good ( ); Excellent ( )

PART 2

In this section, I would like to ask you some questions about how responsible you feel for your own health. For each question, circle the number which best expresses how you feel along a continuum of strongly disagree at one end and strongly agree at the other.

1). If I take care of myself, I can avoid illness.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

2). Good health is largely a matter of good fortune.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

3). No matter what I do, if I am going to get sick I will get sick.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

4). Most people don't realize the extent to which their illnesses are controlled by accidental happenings.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

5). I can only do what my doctor tells me to do.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

6). There are so many strange diseases around that you can never know how or when you might pick one up.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

7). When I feel ill, I know it is because I have not been getting the proper exercise or eating right.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

8). People who never get sick are just plain lucky.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

9). People's ill health results from their own carelessness.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

10). I am directly responsible for my health.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

PART 3

In this section, I would like to ask you some questions about death. For each question, circle the number which best expresses how you feel along a continuum of strongly disagree at one end and strongly agree at the other.

1). I think about my own death.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

2). I think about dying young.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

3). I have fantasies of my own death.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

4). I think about death just before I go to sleep.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

5). I think of how I would act if I knew I were to die within a given period of time.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

6). I think about how my relatives would act and feel upon my death.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

7). When I am sick I think about death.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

8). I am much more concerned about death than those around me.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

9). The prospect of my own death arouses anxiety in me.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

10). I am afraid of being dead.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

11). The prospect of my own death depresses me.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

12). I envision my own death as a painful, nightmarish experience.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

13). I am afraid of dying.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

14). I am disturbed when I think about the shortness of life.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

PART 4

Now I would like to know whether you believe in an afterlife or not. For each question, circle the number which best expresses how you feel along a contiuum of strongly disagree at one end and strongly agree at the other.

1). In the premature death of someone close, some comfort may be found in knowing that in some way the deceased is still existing.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

2). Humans die in the sense of "ceasing to exist".

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

3). The idea of there existing somewhere some sort of afterlife is beyond my comprehension.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

4). I will never be united with those deceased whom I knew and loved.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

5). There must be an afterlife of some sort.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

6). The following statement is true: "There is no such thing as a life after death."

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

7). Millions of people believe in a life after death: they are correct in so believing.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

8). Enjoy yourself on earth, for death signals the end of all existence.

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

PART 5

In this section, I would like to know what you think of the contribution of physical activity to health. For each question, circle the number which best expresses how you feel along a continuum of strongly disagree at one end and strongly agree at the other.

1). Physical activity can prolong life. Would you say:

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

2). I seldom think about death after I have just finished physical activity. Would you say:

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

3). Participation in physical activity can cure some diseases which cannot be treated medically. Would you say:

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

4). Engaging in physical activity can help me forget what is feared in everyday life. Would you say:

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

5). Physical activity can help me deal with death. Would you say:

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

6). Physical activity can help slow down the aging process. Would you say:

strongly disagree 1 .....2 .....3 .....4 .....5 strongly agree

PART 6

In this section, I would like to know a little more about you.

1. How old are you?_____

2. What is your sex? Male ( ); Female ( )

3. What is your religious preference or affiliation?

None ( ); Protestant ( ); Catholic ( ); Other ( );

Now I would like to ask you some questions about your physical activity habits. For each question, circle the number which best fits your situation. Remember that the numbers denote:
1 = never; 2 = approximately once a month; 3 = approximately twice a month; 4 = approximately once a week; 5 = approximately 3 days a week; 6 = approximately 5 days a week; 7 = everyday.

1). How often do you participate in sports, e.g. basketball, tennis, track and field, etc.?

never 1 .....2 .....3 .....4 .....5 .....6 .....7 everyday

2). How often are you involved in exercise, e.g. jogging, aerobics, swimming, etc.?

never 1 .....2 .....3 .....4 .....5 .....6 .....7 everyday

3). How often do you attend a sports event?

never 1 .....2 .....3 .....4 .....5 .....6 .....7 everyday

4). How often do you watch sports on T.V.?

never 1 .....2 .....3 .....4 .....5 .....6 .....7 everyday

5). How often do you read the sports page or a sports magazine?

never 1 .....2 .....3 .....4 .....5 .....6 .....7 everyday

Finally, I would like to ask you two more questions about your experience with grief.

1. Have you lost anyone who was close to you in the past year? Yes ( ); No ( )
2. If the answer is yes, how is this loss affecting your life: _____

_____ _____

_____ _____

_____ _____

*** Do you have any comments about the questionnaire or any other comments you would like to make?**