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**EXERCISE USE VS. EXERCISE ABUSE:
COMPARING THE MOTIVATION AND BODY IMAGE
OF “HEALTHY” AND “UNHEALTHY” EXERCISERS**

by

© Robin J. Farrell

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the School of Graduate Studies and Research
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For all those who said it could not be done.....

it is done.

(It is all in the “mindset.”)

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As I reflect back on my experience, I realize that my completion of this thesis would not have been possible without the support and strength of the people who helped me to survive this journey.

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Good. Done.



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ABSTRACT

The purpose of this thesis was to examine the influence of exercise motivation and body image on exercise behavior (using a multi-method approach), in order to better understand the phenomenon of unhealthy exercise. The first phase of this study was quantitative, and served to compare the exercise motivation (using Self-Determination Theory, Deci & Ryan, 1985) and perception of body image of “healthy” and “unhealthy” exercisers using a questionnaire. Specifically, 233 exercisers (102 males, 131 females) completed a questionnaire compiled of a self-reported exercise behavior scale (Salonen & Lakka, 1987), the Commitment to Exercise Scale (Davis et al., 1993), the Sport Motivation Scale (Pelletier et al., 1995), and the Body Cathexis Scale (Tucker, 1981). The self-reported exercise behavior scale and the Commitment to Exercise Scale were used to divide exercisers into “healthy” and “unhealthy” groups. With regards to exercise motivation, MANOVA results revealed that “unhealthy” exercisers in group 1 displayed higher levels of both introjected regulation, identified regulation, and intrinsic motivation than “healthy” exercisers in group 4. Analysis of gender differences indicated that female exercisers displayed higher levels of intrinsic motivation, and overall, scored higher on the self-determined motivational index than men, who displayed higher levels of external regulation and amotivation towards their exercise behavior. No significant differences were revealed between “healthy” and “unhealthy” exercisers on the quantitative body image measurement. In order to obtain a deeper, more complex, understanding of the phenomenon of unhealthy exercise specifically, a second qualitative phase (Phase 2) consisted of interviewing 4 exercisers (2 males, 2 females) identified in Phase 1 as having the most “unhealthy” exercise behaviors. For this phase, a semi-

structured interview guide was developed to assess participants' reasons for exercising, feelings about their bodies, and whether body image influenced their exercise behavior.

In support of the quantitative motivation findings, interview data revealed "guilt" as a motivating factor for "unhealthy" interviewees, supporting high scores of introjected regulation on the questionnaire. With regards to body image, despite non-significant quantitative outcomes on the body image measurement, results from the interviews suggest that body image does influence "unhealthy" forms of exercise behavior.

Findings are discussed in light of past literature, and theoretical and practical implications for the assessment of "unhealthy" exercise behavior are addressed. Recommendations for further study pertaining to the "unhealthy" exercise phenomenon are discussed.

CHAPTER I

Introduction

Society's emphasis on the benefits of adopting a healthy, active lifestyle has had a profound impact on exercise participation over the past few decades. Indeed, current statistics indicate that 54% of Canadians are moderately active at least every other day (CFLRI, 1996). Similar to Canadian statistics, the 1987 Gallup poll found that 49% of Americans claimed to follow an exercise regimen - up 20% from their totals in 1961 (Benyo, 1990).

Such statistics are promising as research indicates that regular physical activity provides many physiological and psychological health-related benefits. For instance, exercise has been found to reduce the risk of coronary artery disease, hypertension, and osteoporosis (Bouchard, Shephard, & Stephens, 1994; USDHHS, 1996; Taylor, 1995). As well, exercise has been known to enhance self-esteem, relieve stress and anxiety, and combat depression (Bouchard et al., 1994; Powers & Dodd, 1997; Scully, Kremer, Meade, Graham, & Dudgeon, 1998).

Despite these important benefits, however, it appears that society places increasing emphasis on the importance and attractiveness of a physically fit physique, boasting magazines promoting tips on the fastest route to fitness, and featuring the most ideal fitness models. With such pressures to conform, it is not unlikely that, while some individuals will remain satisfied with their regular exercise programs, others will succumb to the behavior with excessive tendencies. For these "super-adheres" their exercise regimens will encompass their lives, and for many will become the center of their self-being. Thus, for these individuals, what begins as a quest for optimal fitness

may result in a downward spiral of seemingly pathological and abusive exercise behavior. Understanding what separates such individuals from those who maintain healthy exercise routines, would therefore appear to be an area worthy of further study.

Two factors that have been found to influence healthy and unhealthy exercise behavior are motivation (Biddle, 1995) and body image (Davis & Cowles, 1991; Shaw, 1991). With regards to motivation, many of the studies that have examined the relationship between motivation and exercise behavior have been descriptive in nature, and more specifically, have studied participants' exercise motives. While these studies have been useful in understanding the different reasons for which people participate in exercise programs at various levels, they do not explain the underlying psychological processes involved in understanding exercise motivation (Biddle, 1995). Indeed then, it appears that the application of a valid theoretical motivational framework to the study of varying levels of exercise behavior is necessary if a deeper and more refined understanding of the exercise process is to be obtained.

One contemporary motivational approach which has been used to study the relationship between motivation and exercise behavior is Self-Determination Theory (Deci & Ryan, 1985). Indeed, a certain number of recent studies (e.g., Fortier & Grenier, in press; Oman & McAuley, 1993; Pelletier, Fortier, Vallerand, & Brière, 1998) found this theoretical approach to be useful in understanding the link between motivation and physical activity participation/persistence. Self-Determination Theory would appear to be particularly appropriate for understanding both healthy and unhealthy forms of exercise behavior, as it multidimensionally differentiates between various types of motivation (three types of intrinsic, three types of extrinsic, and amotivation) based on

the degree to which they are considered self-determined and self-regulating. Thus, this theory can perhaps lead to a better understanding of the differences in motivation between healthy and unhealthy exercisers in light of the way in which behavior is regulated. In addition to explaining motivational type, this theory also accounts for both the antecedents and consequences of motivation. Indeed then, it appears that Self-Determination Theory would be beneficial in furthering understanding of the psychological processes involved in determining varying levels of exercise behavior.

With regards to body image, studies attempting to explain the relationship between body image and exercise behavior indicate that while a positive perception of body image increases following initial participation in exercise programs (Koff & Bauman, 1997; Tucker & Maxwell, 1992), over time it appears that as exercise frequency and duration increase (thus leading to more unhealthy forms of exercise behavior), positive body image may actually decrease (Davis, 1990; Shaw, 1991). Incidentally, although much research has been done in this area, few previous studies have compared the body image of “healthy” and “unhealthy” exercisers within the same study.

In light of the above considerations, the purpose of the present study was to examine the influences of exercise motivation and body image on exercise behavior using a multi-method approach, in order to better understand the phenomenon of unhealthy exercise behavior. Specifically, Phase 1 of this study was quantitative (questionnaire), and provided a direct comparison of the exercise motivation (using Self-Determination Theory) and perceived body image of “healthy” and “unhealthy” exercisers. Phase 2 was qualitative (interviews), and served to obtain more in-depth perceptions on motivation

and body image with those individuals displaying the most unhealthy forms of exercise behavior, as identified from the initial phase of the study.

Organization of the Remainder of this Thesis

The remainder of this thesis is organized into five chapters. The following chapter (Chapter 2) contains a review of the literature on the phenomenon of unhealthy exercise behavior, the determinants of healthy and unhealthy exercise behavior, as well as an overview of the advantages to a multi-method approach to data collection and analysis. Chapter two also contains a revised description of the present study, along with its hypotheses and significance. As this thesis was written by article format, Chapter 3 includes the journal article, *Exercise Use vs. Exercise Abuse: Comparing the Motivation and Body Image of "Healthy" and "Unhealthy" Exercisers*, that has been prepared for submission to the academic journal of *Health Psychology*. Following the article, Chapter 4 (a supplementary results chapter) provides detailed case profiles of the information obtained during the qualitative interviews of Phase 2 of this thesis. These cases represent the initial form of analyses for the findings of Phase 2, however, in entirety, they were too extensive to discuss in the journal article, and were consequently placed in this additional chapter. Finally, in Chapter 5 a general discussion of the study, and implications of the findings are presented.

A number of appendices are also included in this thesis. Appendix A discusses the contributions of the two authors of the journal article. This is followed by Appendix B and Appendix C which respectively contain the questionnaire and interview guide used in this study. Finally, the ethics approval documentation with regards to this study is included in Appendix D.

CHAPTER II

Review of Literature

This chapter provides an overview of previous studies conducted in the area of health and exercise psychology in relation to motivation and body image. First, a brief overview of the benefits of healthy exercise are discussed, followed by a section on the concepts and characteristics related to unhealthy exercise behavior. Then, two key determinants (motivation and body image) of exercise behavior are presented. Within this section, the differences between exercise motives of “healthy” and “unhealthy” exercisers are reviewed, the application of Self-Determination Theory to the explanation of exercise behavior is examined, and a discussion of body image in relation to “healthy” and “unhealthy” exercisers is presented. This chapter concludes with a discussion of literature supporting the use of a multi-method approach to data collection and analysis, followed by a presentation of the purpose of the present study, along with its hypotheses and significance.

Benefits of Healthy Exercise

Recent studies on population levels of physical activity reveal that, on average, Canadians are moving toward more regular patterns of physical activity (CFLRI, 1996). This is likely due, in part, to the numerous advantages associated with adherence to a regular exercise program. Indeed, research suggests that a pattern of physical activity 3-4 times per week for a minimum of 30 minutes at a moderate intensity or greater is considered necessary for optimal health. Specifically, studies on health benefits show that participation in regular physical activity decreases the risk of cardiovascular disease (Bijen, Mosterd, & Caspersen, 1994; Blair et al., 1989; Young, 1995), and reduces the

risk of heart attack (Paffenbarger, Hyde, Wing, & Steinmetz, 1984; Shepard, 1986; Taylor, 1995). As well, regular physical activity has been shown to prevent or delay the development of hypertension (Kelley & Tran, 1995; Smith, MacIntosh, Vaananen, & Franken, 1995) and increase cardiorespiratory efficiency (Alpert, Field, Goldstein, & Perry, 1990; Serfass & Gerberich, 1984). Further, it is recognized in the prevention of obesity (DiPietro, 1995; Ewbank, Darga, & Lucas, 1995; Leon, 1989), Type II diabetes (Ronnemaa, Mattila, Lehtonen, & Kallio, 1986; Schneider, Amorosa, Khachadurain, & Ruderman, 1984), osteoporosis (Drinkwater, Grimston, Raab-Cullen, & Snow-Harter, 1995; Smith & Tommerup, 1995), and certain forms of cancer (Bermstein, Henderson, Hanisch, Sullivan-Halley, & Ross, 1995; Blair et al., 1989; Swain, 1995). In addition to these physical benefits, researchers have also examined the effects of exercise on mental health (see Scully et al., 1998 for a review). Results in this area indicate that exercise improves mood and well-being immediately following workouts (Plante & Rodin, 1990), is useful in combating stress (Brown, 1991; Rejeski, Thompson, Brubaker, & Miller, 1992), and appears to relieve the symptoms of depression (North, McGullagh, & Tran, 1990; Ross & Hayes, 1988; Taylor, Sallis, & Needle, 1985) and anxiety (International Society of Sport Psychology, 1992; Plante & Rodin, 1990), with the possibility of preventing the onset of these disorders (Bouchard et al., 1994; Taylor, 1995; USDHHS, 1996). Further studies indicate that regular physical activity promotes an increase in overall self-concept and self-esteem (Brown & Harrison, 1986; Caruso & Gill, 1992; Plummer & Koh, 1987; Tucker & Maxwell, 1992). Thus, regular exercise appears to have many physiological and psychological benefits.

Unhealthy Exercise - Defining the Problem

While a great body of literature exists surrounding the benefits of regular/healthy exercise, recently, researchers in the area of health and exercise psychology have expressed interest in the study of unhealthy forms of exercise behavior (Benyo, 1990; Davis, Brewer & Ratusny, 1993; Davis & Fox, 1993; Davis, Fox, Brewer & Ratusny 1995a; De Coverley Veale, 1990; Griffiths, 1997). Specifically, unhealthy forms of exercise behavior are distinguished by exercise behavior that is extreme in nature (both in frequency and duration), and which consumes the individual in so that he/she engages in the activity despite injury, illness and other responsibilities. While many studies have been conducted in this area (see Polivy, 1994, for a review), researchers do not seem to agree on neither a definition of the phenomenon, nor a term to describe it. In itself, the discrepancy in concepts used to define such behavior illustrates that gaining further insight into the understanding of unhealthy exercise behavior remains an area in need of further study. Indeed, in a recent study, Davis, Brewer and Ratusny (1993) discussed that the concept of “over-exercising” or “excessive” exercise behavior, “remains a conceptual entity whose features have been formulated, to a large extent, on speculation” (p. 612). In fact, upon review of a number of sources (e.g. Anshel, 1991; Davis et al., 1993; De Coverley Veale, 1987), it appears that several different concepts are used to describe unhealthy forms of exercise behavior. Such terms include “excessive” exercise (Davis et al., 1993; Davis, Kennedy, Ralevski, & Dionne, 1994; De Coverley Veale, 1987), “exercise dependence” (De Coverley Veale, 1987), “compulsive” exercise (Passman and Thompson, 1988), and “exercise addiction” (Anshel, 1991; Benyo, 1990; Sachs, 1982; Sachs & Pargman, 1979). Throughout the literature, all of these terms have been used, at

times interchangeably, to describe various forms of unhealthy exercise behavior. It appears, however, that each of these concepts are best categorized along a continuum of exercise behavior, with unhealthy forms of exercise behavior ranging in severity of characteristics and symptoms from “excessive exercise” to “exercise addiction” (see Figure 1). The term “excessive exercise,” has been defined as the state wherein time spent exercising exceeds one hour per day, for at least six days per week, for not less than a period of one month, coupled by a perception that the need to exercise is described by the individual as obsessive and out of control (Davis & Claridge, 1998). This criterion has been used by a number of studies to classify “excessive exercise” (Brewerton, Stelfox, Hibbs, Hodges, & Cochrane, 1995; Davis, Kennedy, Ralevski & Dionne, 1994; Davis et al., 1995b; De Coverley Veale, 1987). In our view, the concept of excessive exercise marks a logical starting point along the continuum of unhealthy forms of exercise behavior. Although such a training schedule may seem normal for many in terms of frequency, it is also coupled with the driven “need” to exercise in the excessive exerciser. It is important to note, however, that this “need” to exercise is essentially self-inflicted, whereas the individual exercises out of internal pressure, and which is different to that of an athlete who trains intensely for the purpose of competition.

Ascending the continuum towards more unhealthy forms of exercise behavior is the concept of “exercise dependence.” Exercise dependence is identified as a “stereotyped pattern of exercise with a regular schedule once or more daily” (De Coverley Veale, 1987). This concept is characterized mostly by an extreme need to attain positive, and/or avoid negative affect. Literature in this area appears contradictory, however, as according to Russell (1976), the crucial feature of dependence is “a negative

Continuum of Exercise Behavior

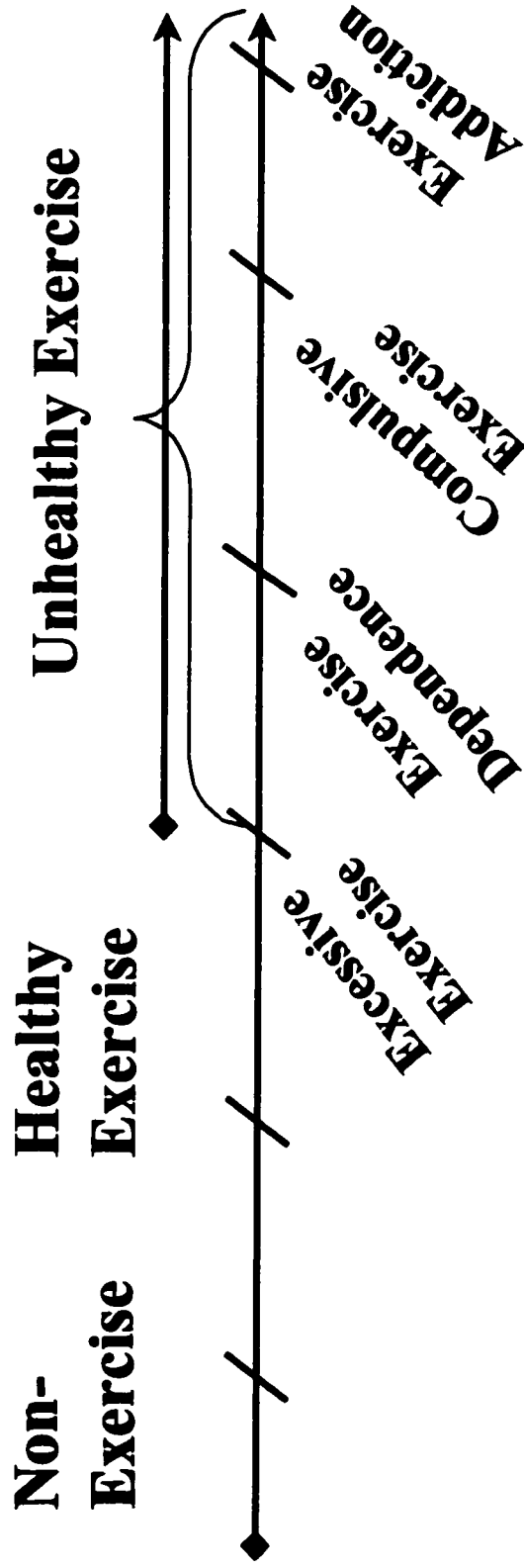


Figure 1.

affect experienced in the absence of a drug, object or activity [in this case physical activity]....which may range from mild discomfort to extreme distress” (De Coverley Veale, 1987). De Coverley Veale (1987) proposes diagnostic criteria for exercise dependency (e.g. salience, tolerance, withdrawal symptoms), however, these criteria are closely linked to those of exercise addiction, and are characteristic of addictive disorders as defined by Goodman (1990). In contrast, according to Goodman, (1990) the concept of dependency “involves an attempt to achieve a pleasurable internal state via gratification of needs....the process by which dependence gratification motivates behavior would be described as positive reinforcement” (p. 1405). Goodman (1990) notes that in comparison to the experience of positive affect in dependency, it is compulsive behavior which “involves an attempt to evade or avoid an unpleasurable/aversive internal state (e.g. anxiety, grief, guilt, shame, rage)” (p. 1405). This in turn corresponds to negative reinforcement of the behavior. It therefore appears that exercise dependency (e.g. the experience of the exercise “high,” and the positive changes in mood experienced by the exerciser) would occur first, followed shortly, and perhaps simultaneously, by exercise compulsiveness (e.g. the need to avoid the previously mentioned aversive feelings). Thus, it is a combination of these “dependent” and “compulsive” characteristics which pushes the abuser further along the continuum.

At the furthest level of unhealthy exercise behavior along the continuum is the concept of exercise addiction. Exercise addiction can be defined as a psychophysiological addiction to a regular regimen of exercise (Crossman, Jamieson, & Henderson, 1987). Indeed, the concept of “exercise addiction” has previously received criticism as an inappropriate term (Griffiths, 1997; Sachs, 1982). Although the term

exercise dependency has been preferred in the literature, Sachs (1982) defends that addiction is more of a process than a condition, and that an individual can become addicted to exercise, just as one can become addicted to a range of other substances and activities. The concept of addiction, summarized by Goodman (1990) may be defined “as a process whereby a behavior [in this case exercise] can function both to produce pleasure and to provide relief from internal discomfort, is employed in a pattern characterized by: (1) recurrent failure to control the behavior (powerlessness) and (2) continuation of the behavior despite significant negative consequences (unmanageability)” (Goodman, 1990, p. 1403). These disturbing symptoms must persist for a time span of no less than one month (see Goodman, 1990 for a complete list of criteria of addictive disorder). Indeed, as the many available definitions seem to blend into one another, it is important to note that “manifestations of compulsive versus addictive behaviors, although related, are mutually exclusive” (Anshel, 1991). As a result, exercise addiction represents a synthesis of exercise dependence and exercise compulsion, and accordingly while all addictions involve both dependence and compulsiveness, not all compulsions and dependencies can be classified as addictions (Goodman, 1990).

Research in the area of exercise addiction has noted specific characteristics that define the addict from lesser forms of unhealthy exercise. Literature in this area indicates that the symptoms most necessary for the distinction of an exercise addiction include: withdrawal symptoms (both physical and psychological), a build up of tolerance to the behavior over time, and an inability to control the activity, coupled with the need to exercise despite other responsibilities and/or injury.

Withdrawal symptoms are “unpleasant feeling states and/or physical effects which occur when the particular activity is discontinued or suddenly reduced” (Griffiths, 1997, p. 163). Indeed, withdrawal symptoms are a defining characteristic in a general definition of addictive disorders (Goodman, 1990). In characterizing the exercise addict specifically, Sachs (1982) notes that withdrawal symptoms are crucial in determining the presence or absence of addiction. Such symptoms have been observed in the addicted exerciser in a number of studies in the form of anxiety, depression, restlessness, irritability, and discomfort (Baekeland, 1970; Chan & Grossman, 1988; Griffiths, 1997; Sachs & Pargman, 1982), as well as somatic symptoms such as headaches and nausea (Griffiths, 1997) when the desire/need to exercise is unfulfilled for more than 24-36 hours (Griffiths, 1997; Sachs & Pargman, 1982) .

It appears that withdrawal symptoms may also explain the link to avoidance of negative affect, including feelings of guilt with having missed an exercise session (De Coverley Veale, 1987; Hauk & Blumenthal, 1992). In a study of the experience of withdrawal from exercise of 345 master runners, Robbins and Joseph (1985) indicated that “uncomfortable feeling states” including irritability, restlessness, frustration, and guilt were experienced by over half of the runners who had missed runs, and that over 10% “often” felt restless, frustrated and guilty (p. 30). Results also indicated that runners would run longer distances in order to avoid negative sensations, but that longer runs did not affect the amount of distress when subjects were unable to run (Robbins & Joseph, 1985). Findings also showed gender differences, in that although women ran less distance than men in the sample, distress was higher, and more common among females that missed scheduled runs. This result is contradictory to that of Anshel (1991) who, in

a psycho-behavioral analysis of addicted versus non-addicted male and female exercisers, discovered that male addicts reacted more strongly to missing workouts and ignoring physical discomfort than women in the sample. Thus, it would seem important that future studies examine gender differences with regards to unhealthy exercise behavior.

Aside from experiencing withdrawal symptoms, the need to attain a euphoric state and avoid negative affect of the exercise addict leads to tolerance of the activity over time (Benyo, 1990; Griffiths, 1997; Sachs, 1982). To this end, the addict must increase the frequency and/or duration of the exercise session to achieve the same effects. In Griffith's (1997) case study, this sensation of the "high," or "euphoria," was experienced when the subject (a martial artist) had trained very hard for an extended period of time. To continue to experience this "high," the frequency of her exercise behavior (reaching 6 hours per day at the time of the study, and including martial arts training, weight lifting, and running) increased slowly over a period of five years. At the point of study, she exercised every day, with an increased length in exercise sessions, suggesting tolerance to the activity. Benyo (1990) explains tolerance as a physiological response to the addiction phenomenon, whereby the more fit one becomes, the less endorphins are released with the same continuous amount of exercise. As a result, tolerance is built, and longer frequencies and durations of the exercise behavior are required to produce the same euphoric state, and avoid the negative affects characteristic of withdrawal.

A third characteristic of the exercise addict is the seemingly loss of control the individual feels towards the activity. This, in turn, is activated by a fourth characteristic, more specifically, the need to exercise despite all other responsibilities, which is also characteristic of other addictions. Morgan (1979) has indicated that negatively addicted

runners are virtually consumed by the need to run, and will revolve their schedules around workouts, despite serious injury, and regardless of work or familial responsibilities. For many negatively addicted exercisers, thoughts of running can be so disturbing that the exercise addict may experience a decrease in concentration ability, lapses in judgement, and may also experience impaired work and social experiences, including missing appointments as a result of the need to run (Morgan, 1979).

Griffith's case study (1997) also illustrates "conflict" with other areas of the subject's life. Griffith's subject underwent a relationship failure with a long-term partner as a result of her exercise addiction, and experienced difficulty maintaining contacts with friends. Griffith's subject also indicated an extreme "loss of control" in that she felt she was unable to prevent herself from exercising, claiming that she could not concentrate on other responsibilities (i.e. school lectures), without completing her daily exercise regimen. Thus, it appears that for the addicted individual, "exercise has moved from an important but considered aspect of the person's existence to a controlling factor, eliminating other choices in life [and consequently the]...addict has progressed to the point where the activity controls the person" (Sachs, 1982, p. 24).

Thus, studies in the area of psychological responses to addictive exercise indicate a consensus based on certain distinctive characteristics of the addicted exerciser, which are in keeping with characteristics of substance addicts. More specifically, such characteristics include a loss of control to the activity and the continuation of the behavior despite adverse consequences (e.g., injury). Further to this, the addict has been known to develop tolerance towards the activity, and experience both psychological and somatic withdrawal symptoms when the regular regimen remains unfulfilled. As a result,

it appears that while a variety of terms are used to attempt to define unhealthy forms of exercise behavior, previous definitions build on each other. Thus, placed on a continuum of exercise behavior (see Figure 1), ranging in severity from excessive to addiction, these unhealthy behaviors can be assessed along a continuum whereupon individuals may possess varying degrees of characteristics and symptoms. Regardless of categorization, however, all previously identified definitions incorporate various severities of “unhealthy” exercise behavior, and all are distinguished by a) exercise behavior that is extreme in nature (both in frequency and duration), and b) that the exerciser has a desire to perform despite injury, illness, and other responsibilities. To this end, all forms/concepts for the purpose of this study will be discussed under the umbrella term of “unhealthy exercise behavior.”

Understanding Unhealthy and Healthy Exercise Behavior

Based on the aforementioned review of the “unhealthy” exercising literature, it appears that in order to further understand the complexity of this phenomenon, research must address which psychological characteristics distinguish the “unhealthy” exerciser from their “healthy” counterparts. Indeed, some contemporary studies have assessed a variety of psychological characteristics that appear to be determinants of exercise participation levels (ranging from healthy to unhealthy). Recently, research has revealed two main characteristics which appear to influence individual exercise behavior, namely, motivation, and body image.

Motivation

While the majority of previous studies examining the relationship between motivation and exercise behavior have focused on healthy exercise participants, more

recently, studies have investigated the motives of “unhealthy” exercisers. Indeed, although some overlap in motives for exercise exist between “healthy” and “unhealthy” exercisers, distinct differences for participation have also been observed.

Motives for Unhealthy Exercise Behavior. Literature surrounding participant motivation for unhealthy exercise behavior has centered mainly around an emphasis on weight and diet concerns as a primary motivator for unhealthy activity (Davis et al., 1993; Davis et al., 1995a; Sachs & Pargman, 1979). In a study observing the frequency and psychological commitment of excessive exercisers, Davis et al. (1993) studied 185 male and female exercisers. Results of this study indicated that weight preoccupation was the strongest predictor of exercise behavior for both sexes, therefore postulating that weight preoccupation and body concerns are important motives for unhealthy exercisers (Davis et al., 1993).

While research indicates that body and weight concerns are principle motives for unhealthy exercise behavior, other studies indicate that the “unhealthy” exerciser also has other reasons for participating in physical activity. For example, in a study on the psycho-behavioral differences of addicted and non-addicted exercisers, Anshel (1991) found that the main motives for exercise addicts included increasing health and well-being, reducing stress, improving fitness, feeling good, improving appearance, and escaping personal problems. These motives, specifically increasing well-being, feeling good, and reducing stress seem to be related to the need to experience positive, and avoid negative affect, which has been noted as a common characteristic of unhealthy exercise behavior. Along these lines, Hauk and Blumenthal (1992) have indicated that affect regulation plays a definitive role in motivation to run. Thus, although it is apparent that

there may be many motives for unhealthy exercise behavior, it appears that the main motives for this type of exercise participation involve body and weight-related concerns, as well as the regulation of affect.

Motives for Healthy Exercise Behavior. While limited studies have attempted to examine motivation for unhealthy exercise behavior, the majority of research on motivation and exercise has been done with healthy exercisers or sport participants (e.g. Gill, Gross, & Huddleston, 1983; Gould, Feltz, & Weiss, 1985; Flood & Hellstedt, 1990; Frederick, Morrison & Manning, 1996; Frederick & Ryan, 1994; Ryckman & Hamel, 1992). With regards to sport motives, most studies have been conducted in sport settings with youth populations. For example, in a study assessing motives for participating in competitive youth swimming, Gould et al. (1985) discovered that swimmers rated fun, fitness, skill improvement, team atmosphere, and challenge as the most important motives for participation. Similarly, a study by Gill et al. (1983) which assessed motivation for participation in different youth sports, showed that subjects rated improving skills, having fun, learning new skills, challenge, and physical fitness as the most important reasons for participating in sport. Weiss and Petlichkoff (1989) summarized this literature by suggesting that the main motives for youth sport participation include competence (the learning and improvement of skills), affiliation (being part of a team), being physically active, and having fun.

While many studies have assessed motivation for competitive sport participation, more recently, literature has looked at motives for participation in exercise. Frederick and Ryan (1994), in a study on the differences in motivation for sport versus exercise activities, suggested that there are three main motives for participation in sport and

exercise: interest/enjoyment (fun, enjoyment of the activity), competence motivation (skill improvement/competition), and body-related motivation (improving appearance/physical fitness). Results of this study showed that fitness activities were associated with higher levels of body-related motivation, whereas sports were associated with higher levels of interest/enjoyment and competence motivation. Similarly, in a study by Finkenberg, DiNucci, McCune, and McCune (1994), results showed that 294 physical education students exercised primarily for appearance, weight management, and social recognition.

Aside from appearance and body-related issues, research has revealed other motives for healthy exercise participation. For example, based on the analysis of 335 exercise participant questionnaires, Mathes and Battista (1985) identified three main motives for exercise: competition, health/fitness, and social experience. Biddle and Bailey (1985) also investigated motives for participation surrounding the physical activity of male and female fitness program participants. Specifically, Biddle and Bailey identified many motives for participation in physical fitness based on prior research, including release of tension, social experience, increase in fitness, competition against others, health concerns, and the development of skills. Similarly, Markland and Hardy (1993) discovered that the top three reasons for exercising (based on responses from 100 regular exercisers) included fitness improvement or maintenance, enjoyment of physical activity, and social and affiliation needs. Thus, a synthesis of the literature on motives for physical activity and exercise indicates that the main motives for participation in healthy exercise behavior are mainly interest/enjoyment, social reasons, and the improvement of physical fitness, skills, and appearance.

Thus, in a comparison of reasons for healthy and unhealthy exercise behavior, upon review of the literature, it appears that differences do exist in motives between those who adopt healthy and unhealthy forms of exercise behavior. Mainly, it is important to note that the regulation of affect, and body-related motives play a much more significant role as determinants for unhealthy forms of exercise behavior, whereas “fun” and social reasons have not frequently been identified as motivators for unhealthy exercise (Anshel, 1991).

Incidentally, many studies assessing exercise motives also take gender differences into account. For example, results from Biddle and Bailey’s study (1985) indicated significant differences between men’s and women’s motives for participation. Whereas men indicated motives associated with health and fitness, women chose motives associated with the release of tension and social factors. It was also found that men preferred ascetic motives and tended to be more motivated by self-competition than women, whereas women preferred activities which were aesthetic-based and which fostered self-expression. These results are similar to those of Frederick and Ryan (1994) in that women were found to be motivated by tension release and social factors, while men were motivated more by health and fitness, and competitive reasons.

Further support for gender differences in motivation are offered by Mathes and Battista (1985) who found that although both men and women identified health and fitness as their primary motive, women rated social experience significantly higher in importance than men, who rated competition of highest importance, followed by health and fitness, and social experience. Similarly, other studies assessing gender differences in exercise motives show that, overall, women tend to value social aspects of exercise

participation, such as fun and friendships (Flood & Hellstedt, 1990; Gill et al., 1983; Gould et al., 1985; Ryckman & Hamel, 1992), while males emphasize achievement and competitive motives (Flood & Hellstedt, 1990; Gill et al., 1983).

In addition to these previously mentioned gender differences, research has revealed that women's motivation to exercise is more often related to weight control and body concerns than men's (Davis et al., 1995a; McDonald & Thompson, 1992; Silberstein, Streigel-Moore, Timko & Rodin, 1988). Indeed, in a study assessing eating disturbance, body image dissatisfaction, and reasons for exercising, McDonald and Thompson (1992) discovered that although both males and females indicated exercising for health reasons, overall activity level was related to greater eating disturbance for women, and less body dissatisfaction for men. Furthermore, gender differences in obsessive and compulsive traits indicate that women are more likely to exercise to alter appearance, whereas men are more likely to adopt these behaviors to improve performance (Hauk & Blumenthal, 1992).

Thus, in a discussion of motives for exercise participation, it appears that significant differences emerge when gender is taken into account. More specifically, men seem to be more inclined to participate in exercise for health and fitness, as well as competitive reasons, while women appear to be more motivated by weight-related issues, social factors, and the release of tension they experience through exercise. It appears then, that examining gender differences in exercise motives may contribute to a better understanding of healthy and unhealthy exercise participation.

Despite the numerous studies undertaken in the area of exercise motivation, a close review of this literature reveals a lack of theory-based research. Indeed, much of

the research has been based on studies that are descriptive/atheoretical in nature. While these studies are useful in understanding reasons for exercise participation, such studies do little to shed light on why people are motivated in certain ways, how such motivations are developed, and what underlying psychological processes are involved (Biddle, 1995). In addition, it has also been noted that very little theoretically-based empirical work has been done to assess the motivation behind unhealthy forms of exercise behavior, especially that of exercise addiction (Hauk & Blumenthal, 1992). Previous research in the area of motivation for unhealthy exercise participation has been explained through Pctrie's augmentation-reduction model, Freud's drive-reduction theory, and Solomon and Corbit's opponent-process theory of motivation (Pargman & Burgess, 1979). While these theories may be applicable to researching forms of unhealthy exercise behaviors, they lack empirical support. Indeed then, it appears that the application of a valid theoretical framework to study unhealthy exercise behavior would contribute to a deeper understanding of this phenomenon.

Self-Determination Theory. One theory which has contributed to the understanding of exercise motivation (e.g. Fortier & Grenier, in press; Frederick & Ryan, 1995), but which remains absent from the research on unhealthy exercise behavior, is Deci and Ryan's Self-Determination Theory (1985). Self-Determination Theory (Deci and Ryan, 1985) originated from the works of deCharms (1968), Deci (1975), Maslow (1943), and White (1959) as a comprehensive synthesis of the understanding and explanation of human behavior. According to Self-Determination Theory, motivation arises from three fundamental psychological needs, namely, the needs for competence,

autonomy, and relatedness. Thus, Deci and Ryan explain humanistic environmental interactions based on the drive to fulfill these three needs (Deci & Ryan, 1985).

There are many advantages to using Self-Determination Theory in the study of exercise behavior. One such advantage is that Self-Determination Theory accounts, multi-dimensionally, for the motivation of human behavior. Thus, as opposed to goal theory, which accounts uni-dimensionally (ego vs. task) for motivation, Self-Determination Theory covers a broader range of motivation types, ranging in the degree to which they are considered to be self-determined (see Figure 2). In addition, Self-Determination Theory stipulates that the degree of self-determination consistent with these types of motivation is dependent on the three fundamental needs of autonomy, competence and relatedness. By doing so, this theory is able to provide a motivational means of explaining different qualitative aspects of human functioning, and gives further explanation into the different forms of self-determined or non-self determined motivation. Another advantage of this theory is that it accounts for motivational consequences, or the “outcomes” of behavior. This in turn, gives a greater understanding to the human motivation process, and more specifically, the type of exercise behavior undertaken as a consequence of motivational type.

Types of Motivation. Although Deci and Ryan (1985) originally identified four types of motivation which could be differentiated in terms of self-determination, more recent work by these authors and their colleagues has identified seven types of motivation, including three types of intrinsic motivation (Vallerand, 1997), three types of extrinsic motivation, and the concept of amotivation (Deci & Ryan, 1985, 1991). Aside from explaining the types of motivation, this theory explains the regulation of human

Self-determination continuum (Deci & Ryan, 1985, 1991)

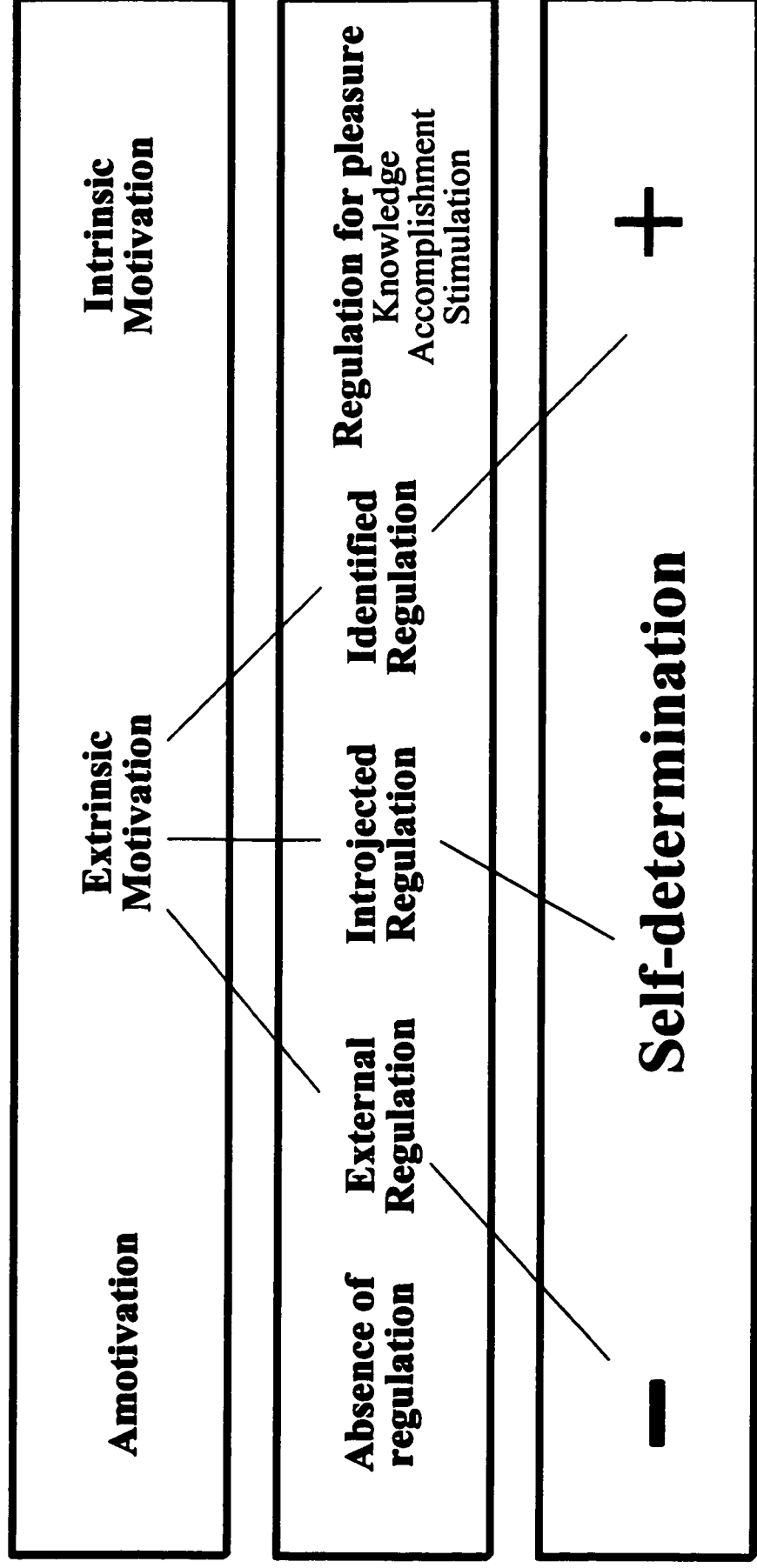


Figure 2.

behavior along a self-determination continuum (see Figure 2), ranging from the least self-determined forms of regulation (amotivated, external regulation, and introjected regulation) to more self-determined types of regulation (identified regulation and intrinsic motivation). According to Self-Determination Theory (Deci & Ryan, 1985), individuals are “inherently motivated to integrate within themselves the regulation of activities that are useful for effective functioning in the social world but are not inherently interesting” (Pelletier, Fortier, Vallerand & Brière, 1999, p. 4). This process has been deemed “internalization” (Deci and Ryan, 1985). Essentially, internalization occurs when behaviors originally accounted for through extrinsic incentives take on internal forms of self-regulation (Ryan, 1993). Thus, the different types of motivation can be seen along a continuum of self-determination reflective of the internalization process, where the individual moves from less internalized, non self-determined forms of behavior regulation (e.g., external regulation) to more internalized, self-determined forms of behavior regulation (e.g., identified regulation) (Pelletier et al., 1999).

At the lowest level of self-determination is the concept of “amotivation” (Deci & Ryan, 1985). Amotivation is characterized by an absence of both intrinsic and extrinsic motivation. In terms of behavior regulation, it refers to circumstances where an individual believes that he or she has no control over his or her actions and the subsequential outcomes of these actions. As a result, the individual experiences a lack of competence and control. Thus, amotivated behaviors are the least self-determined because there is “no sense of purpose, no expectation of reward, and no expectation that the present course of events can be changed” (Pelletier et al., 1999, p. 4). Thus, a person

may be unsure as to the reasons that he/she is exercising, and consequently may begin to question his/her engagement in the behavior.

Next on the continuum is the concept of extrinsic motivation. In itself, extrinsic motivation refers to behaviors that are considered to be means to an end (Deci & Ryan, 1985). Originally, it was believed that behaviors which were extrinsically motivated were determined only by external sources (Vallerand, 1997), however, Self-Determination Theory postulates that various types of extrinsic motivation exist, some being self-determined, and self-regulatory, in nature.

Starting with the least self-determined form of extrinsic motivation, external regulation refers to behavior that is controlled/regulated by outside sources, such as rewards or constraints. For example, a person may participate in an exercise class because a friend urges him/her to do so. Thus, the motivation to participate is external to the activity itself, and is thus non self-determined/self-regulated because the individual feels obligated to participate, and consequently feels controlled by the external source (Deci & Ryan, 1985; Pelletier et al., 1999).

The next form of extrinsic motivation is introjected regulation. This type of motivation is characterized by the individual pressuring him/herself to participate in the activity. With regards to the regulation process, introjected regulation represents the first form of self-regulation, as at this stage, the individual begins to internalize the formerly external source of motivation, and now reinforces the behavior through internal pressures, such as anxiety. For example, a person may exercise because he/she will feel guilty if he/she does not. Through introjected regulation, the individual relies less on the original external form of control, and relies more on the new internal source of control to

monitor his/herself. It is important then, to distinguish that although introjected regulation is the first attempt at internalization, it is only partial as “the external regulatory process is taken in but not accepted as one’s own” (Pelletier et al., 1999, p. 4). Thus, the consequential element of conflict (self vs. external) indicates that the activity is not purely chosen. As a result, motivation is internal, but not self-determined, and it is observed that individuals who display this type of motivation are, in fact merely “self-controlling” their behavior (Pelletier et al., 1999, p. 4). It is our belief that this type of motivation would best describe those individuals engaging in the aforementioned unhealthy exercise behavior, as pressures of society to conform to an ideal body/health image may initialize such unhealthy behaviors. Over time, however, these reasons become internalized, in so that the individual feels compelled to exercise to avoid feeling guilty or anxious if he/she misses a workout. Thus, the individual attempts to self-regulate his/her exercise behavior. In effect, feelings of guilt and attacks at one’s self-esteem following a missed exercise bout may be prompted by a perceived lack of failure in the ability to self-regulate one’s own behavior.

Only with the third type of extrinsic motivation, namely identified regulation, is behavior self-determined. With this type of motivation, behavior, although extrinsically motivated, is identified by the individual as being valuable and important, and is therefore emitted out of choice. At this stage, the internalization process is seen to be successful, as “external regulatory processes are integrated into one’s sense of self” (Pelletier et al., 1999, p. 5). Thus, the person identifies a purpose, rather than pressure in performing the activity. For example, a person may decide to maintain an exercise program because it is important for him/her to obtain more energy on a daily basis.

Finally, intrinsic motivation is located at the furthest end of the self-determination continuum. This type of motivation is the most self-determined form, and refers to the performance of an activity in and of itself, out of personal interest, and for the fun and satisfaction derived from participation in the activity (Deci & Ryan, 1985). Recently, Vallerand et al. (1989, 1992, 1993) developed three types of intrinsic motivation, namely, intrinsic motivation to know, intrinsic motivation towards accomplishments, and intrinsic motivation to experience stimulation. Each of these forms are intrinsically rewarding, and are performed voluntarily without the need for external rewards.

Intrinsic Motivation to Know refers to engagement in an activity for the satisfaction attained from exploring, learning, or attempting to understand something new. An example of intrinsic motivation to know is illustrated by the fitness enthusiast who attempts a new spinning, or hip-hop aerobics class for the pleasure that results out of learning something new.

Intrinsic Motivation Toward Accomplishment is characterized by engagement in an activity for the pleasure and satisfaction experienced while attempting to accomplish something or trying to surpass one's previous level of achievement. Here, the focus is on the process of accomplishing something and not the end result. An example of this form of motivation would be an individual attempting to beat his/her fastest running time for personal satisfaction.

Intrinsic Motivation to Experience Stimulation is apparent when one engages in an activity in order to experience sensory stimulation (i.e., pleasure, fun, or excitement). An example of Intrinsic Motivation to Experience Stimulation is represented by the

experienced skydiver, who jumps for the exhilarating sensations experienced while floating through the air.

In sum, there are seven different types of motivation with varying degrees of self-determination. Ranging from the least to the most self-determined, these are: amotivation, external regulation, introjected regulation, identified regulation, and intrinsic motivation. To this end, the continuum (see Figure 2) also accounts for the regulation of behavior, and whether it is extrinsically or intrinsically regulated. Distinguishing between non self-determined and self-determined forms of motivation, and the subsequent regulatory processes is important when discussing the consequences of motivation.

Consequences of Motivation. In addition to explaining the various types of motivation, Self-Determination Theory also discusses the consequences of motivation. According to Deci and Ryan (1985), as self-determined forms of motivation (identified regulation, intrinsic motivation) are characterized by freedom of choice and an internal regulation process, they should lead to more positive consequences than non self-determined forms of motivation (amotivation, external regulation, introjected regulation). Many studies in the physical activity context have supported these predictions (see Brière, Vallerand, Blais, & Pelletier, 1995; Pelletier et al., 1995, for examples). Recently, researchers have taken an interest in examining persistence in an activity as a motivational consequence (see Pelletier et al., 1999, for an example). More specifically, this link has been addressed in studies in education, where it has been found that an autonomy supportive teaching style facilitates self-determined forms of regulation leading to persistence in education (Vallerand, Fortier, & Guay, 1997). As well, a

positive relationship between self-determined forms of motivation (intrinsic motivation and identified regulation) and persistence in sport (Pelletier et al., 1999) and exercise (Fortier & Grenier, in press; Frederick, Manning & Morrison, 1996) has been revealed. In contrast, non self-determined forms of sport motivation (introjected regulation and external regulation), although sufficient for short-term involvement, have been linked to sport dropout (e.g. Pelletier et al., 1999). Thus, based on the outcomes of the aforementioned studies, and predictions from Self-Determination Theory, it is suspected that more self-determined forms of exercise motivation will lead to more healthy forms of exercise behavior, and continued adherence to exercise. In contrast, although previous studies have not used Self-Determination Theory to assess unhealthy forms of exercise behavior specifically, it is suspected that more non-self-determined forms of motivation and more specifically, introjected regulation, will lead to more unhealthy forms of exercise behavior. As introjected regulation specifically is characterized by an internal regulation conflict, which results in feelings of guilt, dissatisfaction with performance, and low self-worth if the behavior is discontinued, it would appear that this form of motivation is typical of the unhealthy exerciser, as the aforementioned literature on unhealthy exercise behavior indicates.

It should also be noted that several studies using Self-Determination Theory in the physical activity/sport context have revealed gender differences in motivation (see Brière, Vallerand, Blais, & Pelletier, 1995; Fortier, Vallerand, Briere & Provencher, 1995; Pelletier et al., 1995 for examples). Such studies have noted a trend, in that females appear to exhibit more self-determined forms of motivation towards sport than males, who exhibit less self-determined forms of sport motivation. However, research outside of

the traditional sport context has revealed that women's participation in exercise is more often based on body-related motives (a non-self determined form of motivation) than men's (Davis et al., 1995b; McDonald & Thompson, 1992). Thus, there appears to be a contradiction as to whether women involved in exercise would display higher levels of self-determined motivation, such as is found in the sport studies utilizing Self-Determination Theory, or whether they would display higher levels of non-self determined forms of motivation as identified by the literature supporting the body-related motives of female exercisers. To this end, it appears that further research utilizing Self-Determination Theory is necessary in order that these gender differences in exercise motivation can be clarified.

In summary, it appears that motivation plays an important part in the understanding of various forms of exercise behavior, and that motivational type is useful in explaining the outcomes of such behavior. Studies on exercise behavior, however, have suggested that, along with motivation for participation, the relationship between perceived body image and exercise is also a necessary element in understanding both healthy, and unhealthy exercise behavior.

Body Image

The construct of body image was originally defined by Paul Schilder (1950) as "the image of the human body which we form in our mind, that is to say, the way in which the body appears to ourselves" (Cash & Pruzinsky, 1990, p. 8). Since the 1950's, research on body image has increased dramatically, and the current literature discussing body image in relation to exercise involvement is exhaustive. Recent literature surrounding body image and exercise has noted a distinct relationship between body

concept and global self-concept (Anthony, 1991; Balogun, 1986; Cash, 1991; Caruso & Gill, 1992; Stein & Motta, 1992; Tucker, 1983), thereby linking it to a more general overall level of self-worth. Consequently, it appears that because body image is so closely linked with overall image and opinions about oneself, it would be an important construct in understanding exercise behavior – a behavior that has been strongly linked to changes in body composition and overall appearance.

Research assessing the effects of exercise on perceived body image reveals a multitude of findings. Currently, a great body of literature exists which supports the idea that participation in a regular “healthy” exercise regimen fosters increases in body image satisfaction. For example, a recent study by Koff and Bauman (1997) was conducted to assess changes in body image, body-self relations and lifestyle behaviors in 140 women participating in one of three types of physical education classes (wellness, fitness, and sport skills). Following a six week period, results indicated that subjects in the wellness and fitness classes reported increases in body satisfaction and overall physical appearance. As well, those in the fitness class reported a smaller “felt” figure. Further support for enhanced perception of body image as a result of a newly initiated exercise program was observed in a study by Tucker and Maxwell (1992) conducted to determine the extent to which participation in a weight training program was associated with changes in emotional well-being and body image among females. After 15 weeks, results indicated improvements in both factors, thereby supporting other related studies using male (Dishman & Gettman, 1981; Tucker, 1982, 1983, 1987) and female populations (Brown & Harrison, 1986; Holloway, Beuter, & Duda, 1988; Trujillo, 1983) in this area.

Thus, it appears that positive body image perceptions are evident during the initial undertaking of an exercise program, and consequently, it is expected that such positive changes in body image would occur as the individual sees physical changes in his/her body as a result of the initial training. Studies in the area of unhealthy exercise behavior, however, suggest the possibility that over time, exercise participation can lead to narcissistic preoccupations with the body, and increased body dissatisfaction (Davis et al., 1993; Shaw, 1991). Incidentally, literature on body image focuses mainly on women, as based on the ideal of cultural thinness, so much of a woman's self image is dependent on the image of her body. Consequently, women have been known to be more dissatisfied with their bodies than men (Davis & Cowles, 1991; Kenen, 1987).

With respect to body image, studies have also assessed relationships between perceived body image satisfaction and exercise frequency. In a study assessing the role of exercise in the development of weight preoccupation and body dissatisfaction in 112 females, Davis et al. (1990) discovered that "the degree to which women participate in regular exercise affects the extent to which they are preoccupied with losing weight and dissatisfied with their body shape" (p. 572). These findings suggest that exercise may indeed cause the participant to exaggerate body focus, which in turn can escalate exercise frequency in an attempt to attain weight control and the ideal body image. In a study assessing the role of physically active leisure on body image in adolescent women, Shaw (1991) noted a significant negative relationship between body image and participation in individual aerobic activity for females. Based on these findings, it appears as though participation in this type of activity actually increases body dissatisfaction in women, rather than improving their body image. Further support for the link between body image

dissatisfaction and high-frequency exercise is reported in a study by Imm and Pruitt (1991). Specifically, Imm and Pruitt examined the relationship between exercise and body shape satisfaction in three groups of women (non-exercisers, moderate exercisers, and high-frequency exercisers). Results of the study indicated a preoccupation with weight over health concerns in high frequency exercisers, who were more dissatisfied with body shape, and also more concerned that they would gain weight if they did not exercise. In addition to these findings, literature surrounding exercise dependency indicates that many individuals who display this form of unhealthy exercise behavior fear physical ineffectiveness (De Coverely Veale, 1987), and that running addiction has been associated with lower self-esteem and distorted body image (Hauk & Blumenthal, 1992).

Gender comparison studies on body image indicate that males and females may differ in the dimensions underlying body image satisfaction (i.e., physical strength versus weight concern), and the direction of dissatisfaction with body size (i.e., underweight men are dissatisfied; underweight women are satisfied) (Silberstein et al., 1988). Results of a study by Silberstein et al. (1988) assessing the relationship of body satisfaction, self-esteem, dieting, and exercise in 92 men and women indicated that overall, men and women differed in their direction of body dissatisfaction, with men as likely to want to be heavier as thinner, whereas virtually no women wanted to be heavier. Further, comparison studies by Mintz and Betz (1986) and Davis and Cowles (1991) indicated that overall, women were generally more dissatisfied with their bodies than men. Indeed, research has shown that women with a strong body focus are more likely than men to exercise regularly, and at higher intensities in an attempt to lose weight and move closer to the perceived "ideal" figure (Davis, 1990; Davis & Cowles, 1991). Specifically, Mintz

and Bess (1986) found that women were likely to distort their bodies (perceive themselves as heavier) more often than men, who tended to perceive themselves as underweight. For both sexes, however, it was found that negative attitudes towards one's body were related to lower levels of overall self-esteem. Further, in relation to exercise, a study by Davis and Cowles (1991) indicated that women were more likely to exercise to lose weight, but that for young males, increases in body focus and increased participation in exercise were associated with greater body satisfaction. These results indicate that while for women, body image has remained an issue for decades, with increases in societal pressure surrounding physical activity and fitness, body image satisfaction may also be an area of increasing focus for men.

In sum, in an effort to close the perceived-ideal body image gap, participation in exercise may be one way to achieve mastery and control over one's own body. It appears then, that what begins as a healthy activity can develop into a narcissistic preoccupation with body dissatisfaction. As a result, although participation in an exercise program increases positive perceived body image initially, a negative perception of body image is more likely to be associated with more unhealthy forms of exercise behavior. Thus, it is possible that those who exercise the most, and are perhaps perceived by others to be physically fit, are themselves plagued by a distorted image which fails to match the ideal, despite the time invested in a regimented exercise program. Ultimately, for those engaged in more unhealthy forms of exercise behavior, it appears that withdrawal from such activity may have severe consequences on both satisfaction with body image, as well as global self-worth. Despite these potential issues, however, few studies have

addressed the relationship between body image and various levels of exercise behavior utilizing a direct comparison of “healthy” and “unhealthy” exercising populations.

Summary – Motivation and Perception of Body Image

In conclusion, it appears that further study is required to better understand the links between motivation, body image and exercise participation. With respect to exercise motivation, the majority of studies have been descriptive in nature, examining motives for participation in healthy and unhealthy exercise, with only a few exceptions using a theoretical framework. While atheoretical studies provide useful information on reasons for exercise participation, they lack a more in-depth analysis of the psychological processes involved in understanding motivation for different forms of exercise behavior. In addition, as the majority of research examining gender differences using Self-Determination Theory has been conducted in a sport context, further study on gender differences using self-determination in an exercise setting would provide further understanding of gender differences in exercise motivation.

With respect to perception of body image, literature indicates that although there is an increase in positive body image upon initiation of an exercise program, over time, increased exercise participation in an attempt to close the perceived-ideal gap may foster an increase in body dissatisfaction. Thus, it appears as though a negative perception of body image is more likely to be linked with unhealthy forms of exercise behavior. Despite these findings in past research, while numerous studies have addressed the body image/exercise relationship, few studies have actually compared the body image of healthy and unhealthy exercisers within the same study.

The Multi-method Approach

For the purpose of this study, a multi-method approach to data collection and analyses was implemented in order to gain more in-depth understanding into the phenomenon of unhealthy exercise behavior. The concept usually given to a multi-method approach to data collection and analysis is that of *triangulation*. The concept of “triangulation” was first used by Denzin (1978) to argue the combination of different methodologies to study the same phenomenon. Thus, this concept was “based on the assumption that any bias inherent in particular data sources, investigators, and method would be neutralized when used in conjunction with other data sources, investigators, and methods” (Creswell, 1995, p. 174). In effect, Greene, Caracelli, and Graham (1989) present five advantages in favor of combining methods within the same study, including usage of the methods as complementary in the event that different facets of a phenomenon may occur, as well as the use of multi-method approaches in the expansion of a study where a combination of methods add further breadth to the research.

Thus, when observing different methods of data collection and analysis closely, it appears that both quantitative and qualitative studies have different strengths. More specifically, quantitative studies can assess the “magnitude of relationships” more precisely (Firestone, 1987, p. 19). A further advantage of quantitative study is that it has the ability to show patterns of situations, thereby increasing generalizability of results based on both random, and representative sampling procedures (Firestone, 1987). In contrast, the strengths of qualitative methods are found in their description of detail, and the attention given to the perspectives of those studied (Firestone, 1987).

Yet despite obvious differences between these two approaches to data collection and analysis, it is suggested that “it is advantageous to a researcher to combine methods to better understand a concept being tested or explored” (Creswell, 1995, p. 177). Denzin (1978) points out that the main rationale for this strategy is that “the flaws of one method are often the strengths of another: and by combining methods, observers can achieve the best of each while overcoming their unique deficiencies” (p. 302). Along these lines, Firestone (1987) suggests that when studies using different methods have similar results, researchers can be more certain that results were not influenced by the methodology, whereas when results differ, specific areas worth further study are revealed. Similarly, Mathison (1988) suggests that “triangulation as a strategy provides a rich and complex picture of some social phenomenon being studied” (p. 15.) Based on this previous literature on multi-method approaches, it appears as though a greater understanding of the phenomenon of unhealthy exercise behavior may be better attained through use of a multi-method approach to data collection and analysis. Incidentally, the majority of research assessing various forms of unhealthy exercise behavior has used mainly quantitative methods, although a few case studies in the area (e.g. Griffiths, 1997; Sachs & Pargman, 1979) have contributed to a deeper understanding of the initial quantitative results. Thus, based on the findings of studies in the area of unhealthy exercise behavior, perhaps a multi-method approach would provide greater knowledge of the complexity of such behavior, while allowing for a more in-depth conceptualization of the perceptions that unhealthy exercisers have towards their own behavior. Despite these advantages, however, to date, virtually no studies in the areas of healthy or unhealthy exercise behavior have utilized a multi-methodological design.

The Present Study

Based on relevant gaps in past literature, the general purpose of this study was to examine the influences of exercise motivation and body image on exercise behavior in order to better understand the unhealthy exercising phenomenon. More specifically, this study was divided into two phases, and a multi-method approach to data collection and analyses was used. Phase 1 was quantitative (questionnaire), and served to compare the exercise motivation and perception of body image of “healthy” and “unhealthy” exercisers. The first sub-purpose of this phase was to compare the exercise motivation of “healthy” and “unhealthy” exercisers, using Self-Determination Theory (Deci & Ryan, 1985) as the framework to investigate motivation. This was undertaken in an attempt to test the hypothesis that “unhealthy” exercisers would exhibit less self-determined exercise motivation (and more specifically would report high levels of introjected regulation), than “healthy” exercisers, who would exhibit more self-determined reasons for exercise (and more specifically, would have higher levels of identified regulation and intrinsic motivation).

This hypothesis was based on Self-Determination Theory’s predictions that self-determined forms of motivation will lead to positive outcomes (in this case, persistence in healthy forms of exercise behavior). In addition, this hypothesis was also based on past research in the area, which has shown that self-determined exercise motivation leads to healthy exercise (Fortier & Grenier, in press), and that body-related motivation (a non self-determined type of motivation) brings about forms of unhealthy exercise behavior (e.g. Davis, 1990; Davis et al., 1995a).

Second, based on the body image literature which suggests that preoccupation with body focus and image dissatisfaction may lead to attempts at body change through unhealthy forms of exercise behavior, as well as the fact that few studies compare the perceived body image of “healthy” and “unhealthy” exercisers within the same study, a second sub-purpose of Phase 1 was to assess similarities and differences in perceptions of body image in “healthy” and “unhealthy” exercisers. Based on the previously mentioned literature (e.g. Davis, 1990; Shaw 1991), it was predicted that “unhealthy” exercisers would have a less positive perceived body image than “healthy” exercisers.

Phase 2 of this study was qualitative (interviews) and served to obtain more in-depth perceptions into the exercise motives and perceived body image of “unhealthy” exercises specifically. For the purpose of this phase, a small number of interviews were conducted with those participants, from Phase 1, identified as having the most potentially unhealthy forms of exercise behavior.

In addition to the aforementioned purposes, another sub-purpose of this study was to examine gender differences in motivation and body image. With respect to motivation, because previous literature assessing gender differences using Self-Determination Theory has focussed mainly on sport contexts (e.g. Fortier et al., 1995; Pelletier et al., 1995), the present study aimed to explore gender differences in motivation in an exercise setting. With respect to body image, we hypothesized that women would have a less positive perceived body image than men, based on literature in the field which has indicated that, based on societal ideals and the consequent pressures for women to conform to the “perfect” body type (Davis & Cowles, 1991; Kenen, 1987), women are less likely to perceive their bodies favorably.

Finally, in support for the multi-method strategy utilized in this research, although previous studies have assessed relationships between both motivation and exercise behavior (Frederick & Ryan, 1994; Biddle & Bailey, 1985), and perceived body image and exercise frequency (Davis, 1990; Shaw, 1991), few studies have attempted to observe these relationships using a multi-method approach to data collection and analyses. Indeed, such an approach proved useful in obtaining a broader understanding of the differences between “healthy” and “unhealthy” exercisers in relation to motivation and body image, while gaining more individualistic, in-depth perceptions into unhealthy exercise behavior specifically. Thus, a more thorough look at reasons for exercise and perception of body image may offer more conclusive insights into why some individuals adopt, and maintain, unhealthy forms of exercise behavior while others do not.

Significance of the Study

The present study has both theoretical and practical implications. First, the study serves to contribute theoretically to the current field of knowledge surrounding exercise motivation. As much of the research in exercise motivation has been atheoretical (see Biddle, 1995 for a discussion), the current study utilizes a valid theoretical framework to understand motivation in both “healthy” and “unhealthy” exercisers. Indeed, this approach provides greater knowledge of the differences in psychological processes involved in both forms of exercise behavior. In addition, it is the first study to use Self-Determination Theory in an attempt to understand unhealthy exercise behavior, therefore providing more in-depth insight into the reasons behind extreme levels of exercise specifically. Second, as Hauk and Blumenthal (1992) suggest that more theoretically based research on unhealthy exercise behavior is much needed, this study will contribute

to the understanding of unhealthy exercise behavior through the use of a valid theoretical framework. This, in turn, will allow us to gain further understanding into the psychological makeup behind the phenomenon of unhealthy exercise behavior.

Third, unlike previous studies on body image which have addressed this issue from either a “healthy” or “unhealthy” exercising standpoint, this study will serve as an example of a direct comparison of the differences in perceived body image of “healthy” and “unhealthy” exercisers. In addition, it will also provide further insight into gender differences in both exercise motivation, and perception of body image.

Further, through the use of a multi-method approach to design and analysis, this study will provide a greater understanding of both healthy and unhealthy exercise behavior, while also obtaining more in-depth information on the perception profiles of potential “unhealthy” exercisers (i.e., by providing qualitative insight into motivation and perceived body image). Thus, the study will allow for a comparison of these two groups, while exploring in-depth, the psychological characteristics of the “unhealthy” exerciser - an area which has been identified as one in need of considerable study.

Finally, in terms of practical implications, the current investigation will provide further understanding into the increasing phenomenon of unhealthy exercise, which may allow fitness, and sports medicine professionals to gain a greater understanding of the reasons behind the adherence of many individuals to an overly-structured exercise regime. Accordingly, the present study has the potential to assist health professionals in developing awareness and heightened sensitivity towards the specific psychological characteristics of men and women who are prone to extreme levels of exercise behavior.

CHAPTER III

Presentation of the Journal Article

The journal article, *Exercise Use vs. Exercise Abuse: Comparing the Motivation and Body Image of "Healthy" and "Unhealthy" Exercisers*, presented in this chapter has been prepared for submission to the academic journal of *Health Psychology*.

Running Head: EXERCISE ABUSE

**Exercise Use vs. Exercise Abuse: Comparing the Motivation and
Body Image of “Healthy” and “Unhealthy” Exercisers**

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Abstract

The general purpose of the present study was to examine the influence of motivation and body image on exercise behavior using a multi-method approach. Phase 1 of this study consisted of administering a questionnaire to 233 male and female exercisers in order to compare the exercise motivation and perceived body image of “healthy” and “unhealthy” exercisers. Phase 2 consisted of interviewing those exercisers identified as having the most “unhealthy” exercise behaviors from Phase 1 ($N=4$). This was done in order to gain more in-depth insight into the exercise motives and perceived body image of “unhealthy” exercisers specifically. MANOVA results from Phase 1 revealed that “unhealthy” exercisers in group 1 displayed higher levels of introjected regulation and self-determined forms of motivation than “healthy” exercisers in group 4. Qualitative findings revealed health/fitness, and appearance related motives for “unhealthy” exercisers, and all interviewees discussed guilt as a motivating factor for exercise behavior. No significant group differences were revealed on the quantitative body image measurement, however, results from the interviews suggest that body image does influence “unhealthy” exercise behavior. Findings are discussed in light of past literature, and theoretical and practical implications are addressed.

Key Words: “unhealthy” exercise behavior, “healthy” exercise behavior, motivation, body image, multi-method

Exercise Use vs. Exercise Abuse: Comparing the Motivation and Body Image of “Healthy” and “Unhealthy” Exercisers

There is much to be said for the benefits of regular exercise. Indeed, research has shown that individuals who maintain a pattern of physical activity 3-4 times per week for at least 30 minutes at a moderate intensity reap many physiological and psychological advantages from doing so (Bouchard, Shephard, & Stephens, 1994; Taylor, 1995, Powers & Dodd, 1997). Despite these important benefits, however, society places increasing emphasis on the importance and attractiveness of a physically fit physique, boasting magazine and television ads featuring tips on the fastest route to the ideal body. With such pressures to conform, it does not seem unusual that, while some exercisers will remain within healthy guidelines, others may take their activity to an extreme, resulting in a downward spiral of seemingly pathological and potentially abusive exercise behavior. Indeed, research indicates that outside of clinical populations, a subset of regular exercisers develop unhealthy behaviors towards exercise despite its interference with physical and mental health, social functioning, and job performance (Polivy, 1994). Although researchers have used different terms to describe this type of behavior, such as “excessive” exercise, and “exercise addiction,” the common characteristics of all types of unhealthy exercise behavior are (a) that the exercise behavior is extreme in nature (both in frequency and duration), and (b) that the exerciser has a desire to perform despite injury, illness, and other responsibilities. While coming to terms with categories for unhealthy exercise is complicated and confusing at best, what would lead to a better understanding of the psychological makeup behind unhealthy exercise behavior would be to examine what separates the “healthy” from the “unhealthy” exerciser.

Past research indicates that two factors found to influence healthy and unhealthy exercise behavior are motivation and body image. In general, results of studies examining the relationship between motivation and exercise behavior have revealed that the main motives for healthy exercise participation include interest and enjoyment, social reasons, increases in fitness, and increases in skill levels (Anshel, 1991; Biddle & Bailey, 1985; Frederick & Ryan, 1994). In contrast, a review of the unhealthy exercise literature reveals that although some overlap in motives is identified for both healthy and unhealthy exercisers, motives for unhealthy exercise behavior have mainly centered around weight and diet issues, and narcissistic body concerns (Davis & Fox, 1993; Davis & Cowles, 1991; Davis, Fox, Brewer, & Ratusny, 1995; Sachs & Pargman, 1979).

While much has been discovered about the reasons for why people exercise, very little theoretically based empirical work has been done to assess the motivation behind exercise behavior. Indeed, in general, the majority of studies on motives for exercise have been descriptive in nature, and more specifically, have studied participants motives for exercising without looking at the underlying psychological processes that come into play. While these studies are useful in understanding the different reasons for which people participate in exercise programs at various levels, they do little to shed light on why people are motivated in certain ways, how such motivations are developed, and what underlying psychological processes are involved (Biddle, 1995). It appears then, that the application of a valid theoretical framework to study motivation in individuals with varying levels of exercise behavior is essential so that a deeper and more refined understanding of the exercise process may be obtained.

One contemporary motivational framework which has recently been used to study the relationship between motivation and exercise behavior is Deci and Ryan's (1985) Self-Determination Theory (SDT). Indeed, a number of studies (e.g., Fortier & Grenier, in press; Frederick & Ryan, 1994; Oman & McAuley, 1993; Pelletier, Fortier, Vallerand, & Brière, 1999) have used this theoretical approach to examine the link between motivation and physical activity participation/persistence. SDT seems particularly appropriate to examine this relationship as it accounts for a broad range of motivation types, ranging in the degree to which they are considered to be self-determined, and it makes predictions about the consequences of motivation, therefore allowing for a greater understanding of the exercise phenomenon.

According to SDT, there are 3 main types of motivation: amotivation, extrinsic motivation, and intrinsic motivation. At the lowest level of self-determination is the concept of "amotivation." At this stage, there is an absence of both intrinsic and extrinsic motivation. Thus, an amotivated individual would not derive any benefits from training, and would not be sure why he/she was exercising.

Next along the continuum is the concept of extrinsic motivation. Within this category, SDT postulates that there are three types of extrinsic motivation ranging from lower to higher levels of self-determination, they are: external regulation, introjected regulation, and identified regulation. External regulation refers to behavior that is controlled/regulated by outside sources, such as rewards and/or constraints. For example, a person may exercise because others around them feel it is important to do so. Introjected regulation represents the first attempt at self-regulation, because at this stage the individual begins to internalize the formerly external source of motivation. Here, the

individual reinforces the behavior through internal pressures, such as anxiety or feelings of guilt. It is important here to distinguish that although introjected regulation is the first attempt at internalization, it is only partial, as the external regulatory process is taken in, but not accepted as the individuals'. Thus, the activity is not purely chosen, and as a result, motivation is internal, but not self-regulated. Indeed, it has been observed that individuals who display this type of motivation are merely self-controlling their behavior (Pelletier et al., 1999). This is perhaps the type of motivation which we are most likely to observe in the unhealthy exerciser. Pressures of society to conform to an ideal body/health image may initiate such unhealthy behaviors (i.e. external regulation). Over time, however, these reasons are internalized, and the individual feels compelled to exercise to avoid feelings of guilt or anxiety.

Only with identified regulation – the third type of extrinsic motivation – is behavior self-determined. Here, the behavior (i.e. exercise) is recognized by the individual as being important, and is therefore emitted out of choice. In this case, the internalization process is considered successful as the individual will now choose to do the behavior of their own free will, as they will view it as valuable and beneficial to their everyday lives.

Finally, at the highest level of self-determination is the concept of intrinsic motivation. Intrinsic motivation refers to the performance of an activity in and of itself, out of personal interest, and for the fun and satisfaction derived from participation in the activity (Deci & Ryan, 1985). For example, a person that exercises because he/she enjoys the activity displays intrinsic motivation. Vallerand et al. (1989, 1992, 1993) developed three types of intrinsic motivation, namely: intrinsic motivation to know,

intrinsic motivation towards accomplishment, and intrinsic motivation to experience stimulation (see Pelletier et al., 1995 for further elaboration on the 3 types of intrinsic motivation in the physical activity context).

As mentioned previously, in addition to explaining the various types of motivation, SDT also makes predictions concerning the consequences of motivation. According to SDT, more self-determined forms of motivation (i.e. intrinsic motivation, identified regulation) should lead to positive consequences (i.e. persistence in a behavior), whereas non-self determined types of motivation, such as amotivation, external regulation, and introjected regulation should lead to negative outcomes (i.e. drop-out, dissatisfaction with performance). Many studies in the physical activity context have supported these predictions (see Vallerand & Fortier, 1998 for a review). Recently, researchers have taken a keen interest in the relationship between the different forms of motivation and physical activity participation/persistence (e.g., Fortier & Grenier, in press; Frederick & Ryan, 1994; Pelletier et al., 1999). For example, Fortier and Grenier (in press) studied the relationship between exercise motivation and exercise adherence using SDT. Specifically, they followed 40 health club participants for two months. Results of this study revealed that those exercisers who were more self-determined adopted and maintained a more healthy exercise regimen, as opposed to non-self determined exercisers, who failed to regularly adhere to their exercise programs. While studies such as this one have proven to be insightful, what has not yet been ascertained to our knowledge, is the relationship between different types of motivation and unhealthy exercise behavior.

Another factor, in addition to motivation, that has been found to influence exercise behavior is body image (e.g. Davis, 1990; Shaw, 1991; Tucker & Maxwell, 1992). Studies to date on the link between body image and healthy exercise behavior have shown that positive perceived body image increases following initial participation in exercise programs (Koff & Bauman, 1997; Tucker & Maxwell, 1992). Thus, these studies suggest that positive changes in body image will occur as the individual sees physical changes in his/her body as a result of initial training. In contrast, studies in the area of unhealthy exercise behavior suggest that, over time, increasing exercise participation may lead to narcissistic preoccupations with the body, causing a decrease in positive body image (Davis, Fox, Cowles, Hastings & Schwass, 1990; Shaw, 1991). Results of a study by Imm and Pruitt (1991) examining non-exercisers, moderate exercisers, and high frequency female exercisers showed that high frequency exercisers were more dissatisfied with body shape than the other two groups. Thus, it appears that as exercise frequency and duration increase (leading to more unhealthy forms of exercise behavior), positive perceived body image may actually decrease (Davis, 1990; Shaw, 1991). While such studies seem to indicate a relationship between exercise behavior levels and body image satisfaction, few studies have actually compared the body image of healthy and unhealthy exercisers within the same study.

Thus, as previous literature has identified motivation for participation and issues surrounding body image as central to understanding a variety of exercise behaviors, the general purpose of the present study was to examine the influences of exercise motivation and body image on exercise behavior in order to better understand the phenomenon of unhealthy exercise. To obtain greater knowledge of the differences between “healthy”

and “unhealthy” exercisers, while allowing for a more in-depth conceptualization of the motives behind unhealthy exercise behavior, and the perceptions that potentially “unhealthy” exercisers have towards themselves, the present study utilized a two-phase multi-method approach to data collection and analysis.

Specifically, Phase 1 was quantitative (questionnaire) and served to compare the exercise motivation and body image of “healthy” and “unhealthy” exercisers. In addition, this phase also served to gather a wide range of exercisers so that those with more “unhealthy” behaviors could be identified from a generalized exercising pool. This phase had two sub-purposes. First, since few previous studies have used the support of a theoretical framework to investigate motivation for exercise participation, and specifically for unhealthy exercise participation, the first sub-purpose of Phase 1 was to compare the exercise motivation of “healthy” and “unhealthy” exercisers using Self-Determination Theory (Deci & Ryan, 1985) as a conceptual approach. This was undertaken in an attempt to verify if “unhealthy” exercisers would exhibit less self-determined exercise motivation (and more specifically higher levels of introjected regulation) than “healthy” exercisers, who were expected to display more self-determined exercise motivation. This hypothesis was based on SDT’s predictions and past research (Fortier & Grenier, in press; Pelletier et al., 1999). In addition, as few studies have previously examined the similarities and differences in the body image of “healthy” and “unhealthy” exercisers within the same study, a second sub-purpose of this initial phase was to compare perceptions of body image in “healthy” and “unhealthy” exercisers. Here, based on the results of previous studies using non-clinical exercising populations

(i.e. Davis et al., 1990; Imm & Pruitt, 1991), it was predicted that “unhealthy” exercisers would have a less positive perceived body image than “healthy” exercisers.

Phase 2 of this study was qualitative (interviews) and consisted of interviewing a few select individuals whose responses on the initial questionnaire indicated more extreme levels of exercise, and potential “unhealthy” exercise behaviors as identified by the literature. This was done in order to obtain more in-depth perceptions into the exercise motives and perceived body image of “unhealthy” exercisers specifically.

In addition to the main purposes of this study, gender differences in both exercise motivation and perception of body image among “healthy” and “unhealthy” exercisers were examined, as past research has indicated gender differences in motivation for physical activity (Fortier, Vallerand, Brière & Provencher, 1995; Pelletier et al., 1995) and perception of body image in relation to exercise behavior (Davis & Cowles, 1991; Silberstein, Streigel-Moore, Timko & Rodin, 1988).

Method

Procedures

Data collection for Phase 1 of the study took place between the months of June and August, 1998. Co-ordinators of various fitness and running clubs in the Ottawa area were contacted, and times were selected for data collection. Questionnaires were filled out by participants at fitness/running club facilities following scheduled workouts/training, and took approximately 20 minutes to complete. At this time, participants were made aware that those wishing to volunteer for Phase 2 (interviews) of the study could leave their name and phone number on the questionnaire in the space provided.

For Phase 2, only participants from the most “unhealthy” category were selected, in order that a greater understanding of the psychological makeup of these exercisers could be examined at a more in-depth level. More specifically, the 4 subjects (potentially “unhealthy” exercisers) who were chosen were among those with the highest exercise behavior and *Commitment to Exercise* scores from Phase 1 of the study, and who had agreed to participate in an interview. Prior to Phase 2, a pilot interview was conducted with a randomly selected participant from the initial questionnaire sample, after which the 4 interviewees were contacted by telephone to arrange for an appropriate time and location. Before the actual interviews took place, participants were required to give written consent of their participation. All interviews lasted approximately 1 hour in length, and were audiotaped and transcribed verbatim. Following transcription, each interviewee received a copy of his/her own transcript to read over, as a validity check.

Phase 1 – Quantitative (Questionnaire)

Participants

233 participants (102 males and 131 females) aged 18 to 70 inclusive ($M=36.2$ years) were recruited for Phase 1 of the study from health and running clubs in the Ottawa area. Participants were individuals from aerobics classes (21%), weight training programs (30%), and running clubs (49%). All had varied exercise involvement, as well as various cultural and ethnic backgrounds (predominantly Canadian). Participants were eligible to participate in the study provided they were active for at least 30 minutes at a moderate intensity, no less than 3 times per week.

Measures

A questionnaire designed to assess the elements of type of exerciser (“healthy” or “unhealthy”), exercise motivation, and body image was used. Specifically, the questionnaire was compiled from a series of previously validated scales. All items were rated by participants on Likert-scales, excluding a section on socio-demographic information which was completed by participants at the end of the questionnaire (i.e. age, gender).

Type of Exerciser. Two scales were used to categorize participants into “healthy” and “unhealthy” exercise groups. Current exercise behavior was determined by a self-reported exercise measure adapted from the *KIHD 12-Month Leisure-Time Physical Activity History* (Salonen & Lakka, 1987), whereupon participants were given a list of physical activities, and asked to indicate their frequency, duration, and intensity of exercise over the past month. Total exercise scores were quantified by multiplying the frequency (over one month) by duration (in minutes) by intensity rating (1,2,3) for each activity, and summing across all activities. Total scores for this variable ranged from 960 to 24,300 ($M=5817.45$). Following this, participants filled out a version of the *Commitment to Exercise Scale (CES)* (Davis, Brewer & Ratusny, 1993). This scale assesses an individual’s psychological commitment to exercising, by targeting the obligatory and pathological aspects of the “overexercising syndrome” as identified by the literature (Davis et al., 1993). For the purpose of this study, a total of 5 items from this scale were used. Participants ranked on a 7-point Likert Scale as to how much statements “never” or “always” described their exercise behavior. An example of an item from this

scale was: “Do you continue to exercise even when you have sustained an exercise-related injury?” For the global 5 items used in this study, an alpha of .69 was obtained.

Based on these two scales, participants were divided, using two median splits, into one of four groups of exercisers based on their total exercise behavior score, and their total commitment to exercise score: (group 1) “high exercise behavior/high exercise commitment” ($n=70$), (group 2) “high exercise behavior/low exercise commitment” ($n=48$), (group 3) “low exercise behavior/high exercise commitment” ($n=56$), and (group 4) “low exercise behavior/low exercise commitment” ($n=59$). Participants in the “high exercise behavior/high exercise commitment” group (group 1) potentially classify as “unhealthy” exercisers as defined by the literature. Exercisers in groups 2 and 4 classify as “healthy” exercisers, while participants in group 3 would classify as “borderline unhealthy” exercisers. More specifically, participants in group 3 possessed components of the “unhealthy” exerciser mindset based on their attitudes towards exercise, (reflected in their higher commitment to exercise scores), however, they did not possess the high levels of exercise behavior typically characteristic of “unhealthy” exercisers.

Exercise Motivation. To assess exercise motivation, an adapted version of the *Sport Motivation Scale (SMS)* developed by Pelletier et al. (1995) was used. This instrument was utilized because it contains seven subscales designed to measure the three types of Intrinsic Motivation, three types of Extrinsic Motivation, and Amotivation specific to Deci and Ryan’s Self-Determination Theory (Deci & Ryan, 1985). Further, the SMS has proven to be a valid and reliable measurement of motivation (Brière, Vallerand, Blais, & Pelletier, 1995; Pelletier et al., 1995). Specifically, participants were asked to respond to the general question, “When you exercise, why do you do it?” This

question was followed by a list of 30 items, where participants were to rank, on a 7-point Likert scale, as to whether they agreed or disagreed with each statement depending on how much, or how little it described a reason why they exercise. Four items were used to assess each of the Intrinsic Motivation subscales (Intrinsic Motivation towards Knowledge, Intrinsic Motivation towards Accomplishment, and Intrinsic Motivation to experience Stimulation). An example of an item from the Intrinsic Motivation towards Accomplishment subscale is “For the satisfaction I feel while trying to achieve my exercise goal.” Similarly, 4 items were used to assess Identified Regulation and External Regulation respectively, while 6 items were used to assess Introjected Regulation. An example from the Introjected Regulation subscale is “Because I would feel guilty if I wasn’t doing it.” Finally, an example from the Amotivation subscale (4 items) was “I used to have good reasons for exercising, but now I am asking myself if I should continue” (see Pelletier et al., 1999 for a list of examples from all SMS subscales). Internal consistency for all subscales was acceptable, with alphas ranging from .61 to .89.

In order to assess overall levels of self-determination towards exercise, a global motivation index was also computed using the following equation: $[2 \times \text{intrinsic motivation (intrinsic motivation towards knowledge + intrinsic motivation towards accomplishment + intrinsic motivation to experience stimulation)} + 1 \times \text{identified regulation} - 1 \times \text{external regulation} - 2 \times \text{amotivation}]$. The global index measures the level of self-determination subjects have, in this case towards their exercise behavior, with scores ranging from -18 (non-self-determined) to +18 (very self-determined) (Guay & Vallerand, 1995; Vallerand & O’Connor, 1989).

Body Image. An adapted version of the Body Cathexis Scale (Tucker, 1981) was used to assess participants' satisfaction/dissatisfaction with their body image. The Body Cathexis Scale was chosen because it is considered to be one of the best instruments for assessing body image (Tucker & Maxwell, 1992). As well, the scale has proven to be both reliable and valid in a range of empirical studies (Tucker, 1981; 1983; 1985; 1992). The scale measures the degree of feelings of satisfaction or dissatisfaction individuals have with various body parts and processes. Participants were asked to rate a total of 14 various body parts (i.e. waist, legs) as well as items such as body build, overall appearance, and muscle tone on a 5-point Likert Scale ranging in responses from feeling very negative about, to feeling very positive about each item. Internal consistency for the 14 items used yielded an alpha of .86.

Phase 2 – Qualitative (Interviews)

Participants

Following the categorization of exercisers in Phase 1, 2 females (Subjects 1 and 2) and 2 males (Subjects 3 and 4) from group 1 [the “unhealthy” exercising group (high exercise behavior/high exercise commitment)] were selected to participate in an individual interview. Selected interviewees were between 25 and 38 years of age, and had a wide range of total exercise behavior scores (7810 to 21,840 inclusive). All interviewees, with the exception of Subject 1, were above the overall mean ($M=5817.45$), and above the mean for group 1 ($M=9214.21$) for exercise behavior (see Tables 1 and 2), and all trained for an average time of 1.5 hours, 6 days per week. They also had among the highest scores on the CES (ranging from 5 to 6.6. out of a possible 7), falling above the overall mean ($M=4.02$), and either above or on the mean for group 1 ($M=5.0$) (see

Tables 1 and 2). Out of the four interviewees, three focused the majority of their activities around weight training, with one focusing mainly on cardiovascular training (i.e. running). All subjects discussed training despite injury and illness, and all noted that they would try to avoid missing workouts for social activities whenever possible.

Insert Tables 1 and 2 about here

Measures

Interview Guide. The interview guide for Phase 2 consisted of semi-structured questions developed to compliment the initial questionnaire topics. Specifically, questions were geared towards gaining further insight into the motives and perceptions of body image in those participants who were chosen from amongst the most extreme exercisers in the sample. Interviewees were asked questions regarding what motivates them to exercise, how they feel about their bodies (i.e. satisfaction/comfort levels), and how much of a role body image plays in their exercise participation. Probes from the initial questions were determined a priori in an attempt to minimize interviewer bias by ensuring that all follow-up questions would be similar. A semi-structured format was selected to facilitate comparison across participants while still allowing for flexibility of responses.

Data Analysis

Quantitative data from Phase 1 was analyzed using the SPSS software package. More specifically, a factorial 4 (group) x 2 (sex) MANOVA was performed on the 7 types of motivation, the motivation index, and the body image variable in order to verify

the hypotheses. For Phase 2, distinct categories emerged during analysis of the interviews following minor clarifications made by the interviewees to their individual transcripts, and based on the structure of the interview questions and a review of information provided by the participants. Specifically, categories surrounding: exercising profile (including potential “unhealthy” behaviors/attitudes); reasons for exercise participation (motivation); and the relationship between body image and exercise behavior were prominent. Information collected from the interviews was then compared to results on significant motivation and body image variables from the quantitative phase of the study.

Results

Results of analyses of both Phase 1 and Phase 2 are discussed in the following two sections in light of the main concepts: motivation and body image. Within each section, quantitative results are reported, followed by a section on qualitative results used to compliment the Phase 1 findings.

With regards to Phase 1 specifically, MANOVA analyses indicated that there was an overall significant main effect of groups [$F(3, 225) = 2.94, (p < .05)$], and sex [$F(1, 225) = 6.34, (p < .05)$] on the combined dependent variables, but not on their interaction [$F(3, 225) = 1.06, (p > .05)$]. Based on these initial results, univariate ANOVA's were conducted on the different dependent variables.

Motivation

Quantitative Results

With regards to group effects, univariate ANOVA analyses revealed significant differences ($p < .05$) between the 4 groups on 6 of the motivation subscales, including the

global motivation index (see Table 2). Post hoc tests (using Tukey's HSD criterion) were conducted in order to determine between which groups there were significant differences for the various types of motivation. Specifically, "unhealthy" exercisers from group 1 (high exercise behavior/high exercise commitment) displayed significantly higher levels of intrinsic motivation towards knowledge [$F(3, 225) = 3.44, p < .05$], intrinsic motivation towards accomplishment [$F(3, 225) = 4.40, p < .05$], and identified regulation [$F(3, 225) = 4.50, p < .05$] than exercisers in group 3 (low exercise behavior/high exercise commitment), and exercisers in group 4 (low exercise behavior/low exercise commitment). These results indicate that the most "unhealthy" exercisers in the sample were more motivated by these self-determined forms of motivation than "borderline unhealthy" exercisers in group 3 and "healthy" exercisers in group 4 with lower exercise behavior levels (see Table 2 for a complete list of means).

With regards to intrinsic motivation towards stimulation, [$F(3, 225) = 4.10, p < .05$], significant differences were found between "unhealthy" exercisers in group 1 (high/high) ($M=5.73$), and "healthy" exercisers in groups 2 (high/low) ($M=5.10$), as well as between "unhealthy" exercisers in group 1 (high/high) and "healthy" exercisers in group 4 (low/low) ($M=5.04$). In addition, significant differences were also found between "unhealthy" exercisers in group 1 (high/high) and "borderline unhealthy" exercisers in group 3 (low/high) ($M=5.15$). These results seem to indicate that "unhealthy" exercisers in group 1 were more motivated by intrinsic motivation to experience stimulation than those exercisers in all other groups. Further to these significant differences on the individual types of self-determined motivation, "unhealthy" exercisers in group 1 also had significantly higher scores on the global motivation index

than “healthy” exercisers in group 4 [$F(3, 225) = 3.48, p < .05$]. Thus, results seem to indicate that the most “unhealthy” exercisers in the sample ($M = 9.94$) were more self-determined overall towards exercise than those “healthy” exercisers with lower exercise behavior and commitment levels ($M = 7.88$).

In addition to the aforementioned results on the self-determined types of motivation, significant differences were also found with introjected regulation [$F(3, 225) = 16.39, p < .05$] between groups 1 (high/high) and 4 (low/low), and between groups 1 (high/high) and 2 (high/low), as well as between groups 3 (low/high), and 2 (high/low), and between groups 3 (low/high) and 4 (low/low). These results show that “unhealthy” exercisers, and “borderline unhealthy” exercisers in group 3 (with higher commitment levels) were more likely to exercise because of internal pressures ($M = 4.46$ for group 1; $M = 3.95$ for group 3) than exercisers with low exercise commitment levels ($M = 3.17$ for group 2; $M = 3.05$ for group 4). No significant group differences were revealed for the remaining 2 types of motivation: amotivation, and external regulation, (F 's < 2.31 ; p 's $> .08$).

With regards to sex effects, univariate tests ($p < .05$) yielded significantly different results on 6 of the motivation variables (see Table 3). More specifically, it was found that women were significantly more intrinsically motivated towards both knowledge ($M = 4.73$) and stimulation ($M = 5.46$), and displayed higher levels of identified regulation ($M = 4.56$) than men in the sample ($M = 4.01$, $M = 5.06$, $M = 4.25$ respectively). Further, men were significantly more externally regulated ($M = 2.78$) and amotivated ($M = 1.69$) than women towards exercise ($M = 2.28$; $M = 1.37$ respectively). Results with regards to the global motivation index were also in line with these findings.

Specifically, it was found that women ($M=9.91$) exhibited a more self-determined motivational profile towards exercise than men ($M=7.51$) in the sample. Sex effects on intrinsic motivation towards accomplishment and introjected regulation were found to be non-significant ($F's < 2.53$; $p's > .11$).

Insert Table 3 about here

Qualitative Results

All interviewees, with the exception of Subject 2, were below the overall mean ($M=8.86$) and the mean for group 1 ($M=9.94$) on the global motivation index (see Tables 1 and 2), indicating that those interviewed were less self-determined towards exercise than other participants in the study. Further, only female subjects (Subjects 1 and 2) discussed that part of their reasons for exercising are because they enjoy it, or love to do it. All interviewees mentioned health and fitness reasons, and body image or appearance and weight control reasons for exercising, and all interviewees, with the exception of Subject_3, discussed the intense feelings of guilt and/or pressure they felt when they missed training sessions. An example of such feelings are displayed in the following quote from Subject 1:

“I feel that I have to [exercise] otherwise I sit there with guilt, and whatever it is that I’m doing, because I didn’t go, I think, my god, I could have gone, why am I doing this?”

The subject described this as a “fight” within herself where realistically, she is aware that she should be able to take time off, but physically, she cannot bring herself to do it.

Similar feelings are discussed in an example from Subject 4 when he misses training:

“...Monday night something came up, couldn’t make it, didn’t feel very well after because I made a choice, and it was choosing to do something else...basically to go out, and I felt guilty afterwards”

Subject 2 discussed that the fear that she will lose any “gains” she has made has, in the past, led to negative psychological reactions when she has had to miss training sessions:

“If I was not to go I would feel that I wasn’t training enough. Last Christmas I remember I was just baked, and I called [my friend] and said ‘I’m taking today off.’ I started to cry, and I felt so guilty about it...”

These types of thoughts and feelings are characteristic of introjected regulation. Indeed, higher scores of subjects on the introjected regulation subscale (see Table 1) indicate that this is a prominent type of motivation for these participants.

Body Image

Quantitative Results

Quantitative analysis revealed no significant differences on the body image variable for, group [$F(3, 225) = 2.35, p > .05$], sex [$F(1, 225) = .03, p > .05$], or their interaction [$F(3, 225) = 2.02, p > .05$].

Qualitative Results

Despite non-significant quantitative results, all interviewees, with the exception of subject 2, scored below the overall mean ($M=3.48$) and the mean for group 1 ($M=3.49$) on the body image scale (see Tables 1 and 2), indicating a general dissatisfaction with body image. Indeed, interviews reflected that body image (and dissatisfaction with certain body parts) does influence the exercise behavior of all 4 subjects. Specifically, male subjects wanted specific parts of their bodies to be “bigger,” “stronger,” or more

defined, whereas women preferred “tone” and “definition.” All subjects indicated that they felt better about their bodies after high intensity workouts, and could actually see physical changes based on their training. Subjects discussed feeling “tighter,” “harder,” and “larger” overall, with some subjects noticing specific changes in body parts:

“...I don’t know if I’m imagining this or not, but I do think it looks, like I can see the lines in my stomach more...” (Subject 2).

Similarly, all subjects noted that their body image fluctuates erratically depending on how intensely/how often they have been training. An example of this extreme fluctuation is discussed by Subject 4, who mentioned that his body image changes daily, and sometimes even hourly:

“Yeah...I’ll see flab...I’ll look in the mirror – it can be an hour’s difference... Yeah, it’s almost schizophrenic, you know, like it’s up and down. I’m trying to control it and I feel that it is a control. It’s mind – it’s the mind playing with me, cause I have to realize that there can’t be that much change in an hour...”

Female subjects (Subjects 1 and 2) discussed practicing “mirror avoidance” when they had not been training as often, or to avoid general body image dissatisfaction. All subjects mentioned that they perceived negative physical changes (e.g. decreases in muscle definition), and experienced negative feelings towards their bodies when they missed regularly scheduled workouts. This, in turn, had negative psychological effects. For example, Subject 3 admitted to feeling less confident and secure about himself, based on specific changes in his body image when he missed workouts:

“...when I’ve missed training in the past I’ve become less outgoing because I don’t feel like I can back myself up, and then I’m not so critical of other people because I can’t be – because I’m shrinking.”

Thus, despite non-significant differences on the quantitative body image measurement, interview findings suggest that body image does indeed influence the exercise behavior of interviewee subjects.

Discussion

The purpose of Phase 1 (quantitative) of the present study was to compare the exercise motivation (using SDT as the investigative framework) and body image of “healthy” and “unhealthy” exercisers. With regards to motivation, findings partially supported our hypothesis, in that “unhealthy” exercisers (high exercise behavior/high exercise commitment) displayed higher levels of introjected regulation than “healthy” exercisers. What is of further interest, was that quantitative results showed that whether or not exercisers displayed high levels of introjected regulation was mostly dependent on higher “exercise commitment” levels rather than actual exercise behavior. Indeed, the two groups (“unhealthy” and “borderline unhealthy”) with the highest CES scores attained the highest levels of introjected regulation. This is likely because those exercisers with higher “commitment” scores may have more pathological tendencies towards exercise, or feel more of an obligation towards exercise than those with lower “commitment” levels. These findings suggest that SDT, and the concept of introjected regulation specifically, could be useful in furthering our ability to understand, and detect, unhealthy forms of exercise behavior.

Contrary to expectations, however, “unhealthy” exercisers in group 1 also displayed higher levels of all 3 types of intrinsic motivation and identified regulation, as well as higher overall self-determined exercise motivation (based on the motivation index) than “healthy” exercisers in group 4. In addition, “unhealthy” exercisers in group

I also scored significantly higher than “borderline unhealthy” exercisers in group 3 on the majority of these self-determined forms of motivation, indicating that these higher scores on the self-determined motivation variables were dependent on the combination of high exercise behavior and high exercise commitment levels characteristic of a more “unhealthy” exercising group. Based on SDT and literature on unhealthy exercise behavior, these results are somewhat surprising as higher levels of introjected regulation motivation should suggest more non-self determined exercise motivation. Indeed, we expected that “unhealthy” exercisers would display lower levels of all self-determined types of motivation. These findings, however, may have been due to the fact that the sample used in this study was obtained from a broad, general exercising population, and as a result, our “unhealthy” group in this study may not have actually been as “unhealthy” as a selective sample using previously identified “unhealthy” exercisers. It is possible then, that different results related to self-determined motivation levels would have been obtained with a sample of previously determined excessive exercisers. It is suggested however, that these results are more likely due to the current calculations of the SDT subscales and the predictions of SDT itself. Indeed, “unhealthy” exercisers may have had higher levels of self-determined forms of exercise motivation because scores on the SMS items are not mutually exclusive. As a result, a participant can attain a high score on both a self-determined subscale (e.g. intrinsic motivation towards knowledge), and a non-self determined subscale (e.g. introjected regulation). This may explain why “unhealthy” exercisers displayed higher levels of both intrinsic motivation, and introjected regulation. Further, and perhaps most important to determining the cause of these findings, are the current predictions of SDT. Presently SDT postulates that more self-determined forms of

motivation should lead to more positive consequences (i.e. persistence in exercise), while non self-determined forms of motivation should lead to more negative consequences (i.e. ceasing exercise participation). Thus, it is quite possible that “unhealthy” exercisers would have higher levels of self-determined forms of motivation, as they are in fact persisting in their exercise behavior. It appears, however, that due to their additional high levels of introjected regulation, they are in fact placing pressure on themselves to exercise at extremely excessive levels, which would be viewed as an “unhealthy” or “negative” persistence as defined by the health and exercise literature. These conclusions lead to the speculation that perhaps it is necessary for SDT to broaden its definitions of what constitutes a “positive” and “negative” consequence when assessing “unhealthy” forms of exercise behavior specifically.

To this end, results from the present study suggest that “unhealthy” exercisers were more motivated overall, (by a variety of different factors), than “healthy” exercisers. Such findings cast doubt on previous non self-determined motives suggested as characteristic of the “unhealthy” exerciser, and imply that self-determined forms of motivation may indeed also lead to “unhealthy” forms of exercise behavior. Further, these results challenge the current predictions of Self-Determination Theory, and it is therefore suggested that future studies continue to test SDT’s predictions utilizing selective “healthy” and “unhealthy” exercising populations.

With regards to body image, results from Phase 1 of the study disproved our hypothesis that “unhealthy” exercisers would have a less positive perceived body image than “healthy” exercisers. Indeed, no significant differences were found between the different groups of exercisers on the body image measurement. These findings are not in

line with recent literature, which has indicated links between body image dissatisfaction and higher-frequency exercise behavior (Imm & Pruitt, 1991; Shaw, 1991). These non-significant results on the body image measurement suggest, however, that perhaps the construct of body image is not as important as the study of other factors (e.g. personality, previous exercising profile) in obtaining a more complete picture of the psychological characteristics behind unhealthy forms of exercise behavior.

The purpose of Phase 2 of this study (qualitative) was to obtain more in-depth understanding into the exercise motives and perceived body image of a few “unhealthy” exercisers identified from Phase 1. Indeed, findings from this phase provided a more complex understanding of the reasons these “unhealthy” exercisers train at such extreme levels, and how their perceptions of their bodies influence their exercise behavior. With respect to motivation, interviewees discussed health and fitness, and appearance motives for exercise. In addition, findings from the interviews supported introjected regulation results of Phase 1, as three of the four interviewees mentioned “guilt” as a motivating factor for exercising, and described feeling dissatisfied with themselves in some way when they missed exercise sessions.

With regards to body image, despite non-significant quantitative results, interview data suggested that body image does influence “unhealthy” exercise behavior. Specifically, all interviewees were dissatisfied with some area(s) of their bodies at the time of interview, and all interview subjects, with the exception of subject 2, scored below the overall mean and the mean for group 1 on the body image scale. Such scores indicate a general dissatisfaction with body image. Further, while all interviewees proposed that body image does influence their exercise behavior, they also discussed

feeling better about their bodies during more intense workouts, and reported negative fluctuations in body and self-image when they had missed workouts. These findings seem to indicate that perhaps the relationship between body image and exercise behavior is in fact bi-directional (i.e. body image influences exercise behavior; exercise behavior influences body image), and further study into the causality of this relationship is required, as suggested by Shaw (1991).

Thus, while results from Phase 1 of this study revealed no significant differences between “healthy” and “unhealthy” exercisers on the body image measurement, findings from Phase 2 suggest that body image does influence the “unhealthy” exercise behavior of all four interviewees. Perhaps future study should address the possibility that “unhealthy” exercisers do not necessarily have higher levels of body image dissatisfaction, but rather higher levels of “body focus” than “healthy” exercisers. Indeed, results of a study by Davis & Fox (1993) suggested that while excessive exercisers were more satisfied with their body image, they placed more importance on their appearance, and associated the way they felt about their bodies to their global self-image more often than regular exercisers, therefore indicating higher levels of “body focus.”

Another purpose of the present study was to provide further insight into gender differences in both exercise motivation and perception of body image. With regards to exercise motivation, results revealed that women had higher scores on the majority of intrinsic motivation subscales, the identified regulation subscale, and the motivational index, therefore indicating a more self-determined profile towards their exercise behavior than men, who displayed higher levels of external regulation and amotivation towards

exercise. These results are in agreement with the findings of past research on sport motivation, which has indicated that female athletes are more self-determined in their sport participation than male athletes (Brière, Vallerand, Blais, & Pelletier, 1995; Fortier, Vallerand, Brière & Provencher, 1995; Pelletier et al., 1995). They are not in keeping, however, with exercise motivation literature which indicates that women's motives for exercise are more often related to appearance and body-related concerns, which are more extrinsic, non self-determined motives for participation (Davis & Cowles, 1991; McDonald & Thompson, 1992; Silberstein, Streigel-Moore, Timko & Rodin, 1988). Results from the present study suggest that women may have a more self-determined motivational profile overall, towards various forms of physical activity. In addition, interviews revealed that only the two female interviewees mentioned "enjoyment" and "fun" as reasons for their exercise participation. Based on these quantitative and qualitative findings, future study should aim to investigate reasons why women may develop more self-determined motivation than men towards exercise and sport.

With regards to gender differences in body image, quantitative results of the study revealed no significant differences between males and females. These results are not in line with the body image literature which suggests that, overall, women are less satisfied with their bodies than men (Davis & Cowles, 1991; Mintz & Betz, 1986). Despite non-significant quantitative results, however, interview data revealed that male subjects wanted specific areas of their bodies to be "bigger" and "stronger" while women wanted parts to be more "defined" or "toned." As well, both of the female interviewees mentioned practicing "mirror avoidance" when they felt dissatisfied with their appearance. While a small qualitative sample size makes it difficult to generalize

interview findings, these results suggest that perhaps while men and women do not necessarily differ in their overall levels of body dissatisfaction, they do in fact differ in the way in which they are dissatisfied with their bodies. Indeed, these results support the findings of a study by Silberstein et al. (1988) which revealed that while 92 exercising men and women did not differ in the degree to which they were dissatisfied with their bodies, they did differ in their direction of body dissatisfaction. These results, combined with the findings from the present study, propose that perhaps future research on body image should address “how” men and women are dissatisfied with their bodies, and in what ways it effects their overall image, rather than simply comparing overall satisfaction/dissatisfaction.

Based on results of both quantitative and qualitative analyses, the use of a multi-method strategy for data collection and analysis proved to be useful in providing more thorough, in-depth insights into understanding the complexity of the psychological characteristics behind the “unhealthy” exercising phenomenon. Indeed, the breadth of findings obtained have both theoretical and practical implications. Theoretically, the study contributes to an understanding of the unhealthy exercise phenomenon through the use of SDT as a framework for exercise motivation. However, results of the study challenge the predictions of SDT with regards to non self-determined motivation for exercise behavior, and it is therefore suggested that further research using this theory with specific “unhealthy” populations is required. On a practical level, findings from the present study may assist health and fitness professionals in acknowledging some specific psychological characteristics associated with “unhealthy” forms of exercise behavior. More specifically, results may provide increased awareness and heightened sensitivity

into recognizing the motivation profile, and body issues characteristic of potentially “unhealthy” exercisers in order that practitioners can better address the physical and psychological consequences of this phenomenon with their clients.

In closing, while the findings of a study pertaining to the psychological characteristics behind “unhealthy” exercise behavior are both insightful and helpful in understanding the phenomenon, such results should be implemented with caution. Indeed, the issue behind exploring such a complex problem becomes one of labeling individuals as being “unhealthy” in a behavior which is known to the masses as beneficial to their overall health and well-being. The question then becomes not only “what is unhealthy behavior when it comes to exercise?” but also, who decides when a healthy behavior suddenly slips into one of pathological indulgence? Certainly, it was not the intent of this study to address these issues, however, for the purposes of this research, “healthy” and “unhealthy” labels were assigned, despite drawbacks in the classification methods. Future studies, perhaps using more selective sampling techniques, may provide the opportunity to assess a more representative sample of “unhealthy” exercisers specifically through both quantitative and qualitative methods. Consequently, the reader is cautioned when applying these results to the practical study of unhealthy forms of exercise behavior. Future research should aim to clarify the distinction between “healthy” and “unhealthy” forms of exercise behavior to avoid the complications of “mislabelling.”

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Table 1

Interviewee Scores on Selected Motivation, Body Image, and Exercise Behavior Variables

	Subject 1	Subject 2	Subject 3	Subject 4
Exercise Behavior	7810.00	9900.00	9450.00	21840.00
Exercise Commitment	6.60	6.20	5.00	6.60
Motivational Index	5.67	14.58	7.33	8.25
Introjected Regulation	4.33	4.50	6.17	5.67
Body Image	2.50	4.64	2.43	2.79

Note. All items are raw scores. Exercise commitment and introjected regulation subscale scores are out of a possible 7.

Body image scores are out of a possible 5. Motivation index scores range from -18 to +18. Exercise behavior scores range from 960 to 24,300 inclusive.

Table 2

Means and Standard Deviations for Groups of Exercisers on Motivation, Body Image and Exercise Behavior Variables

Scales	Total		Group 1		Group 2		Group 3	
	M	SD	M	SD	M	SD	M	SD
Amotivation	1.51	0.72	1.52	0.73	1.37	0.60	1.50	0.72
External Regulation	2.50	1.22	2.81	1.47	2.40	1.05	2.38	1.08
Introjected Regulation*	3.71	1.38	4.46	1.37	3.17	1.29	3.95	1.24
Identified Regulation*	4.42	1.26	4.90	1.28	4.34	1.20	4.24	1.18
IM-to know*	4.41	1.52	4.87	1.51	4.44	1.66	4.12	1.25
IM-accomplishment*	5.24	1.36	5.74	1.26	5.19	1.35	5.04	1.12
IM-stimulation*	5.29	1.26	5.73	1.25	5.10	1.31	5.15	1.03
Motivation Index *	8.86	3.90	9.94	3.76	9.02	4.01	8.40	2.95
Body Image	3.48	0.66	3.49	0.70	3.68	0.64	3.32	0.64
Exercise Behavior	5817.45	4279.28	9214.21	4146.29	8449.40	3345.51	2544.00	1335.76
Exercise Commitment	4.02	1.10	5.0	0.66	3.10	0.68	4.63	0.54

*p <.05

Note. Total scores represent overall means for all subjects. Mean scores on motivation subscales and commitment scale are out of a possible 7. Mean scores on body image scale are out of a possible 5. Motivation index scores range from -18 to +18. Exercise behavior scores range from 960 and 24,300 inclusive.

Table 2
Means and Standard Deviations for Groups of Exercisers
on Motivation, Body Image and Exercise Behavior Variables
con't.

Group 4		
Scales	M	SD
Amotivation	1.62	0.78
External Regulation	2.32	1.09
Introjected Regulation*	3.05	1.06
Identified Regulation*	4.09	1.24
IM-to know*	4.13	1.53
IM-accomplishment*	4.89	1.53
IM-stimulation*	5.04	1.34
Motivation Index *	7.88	4.50
Body Image	3.45	0.63
Exercise Behavior	2712.46	1415.64
Exercise Commitment	3.04	0.65

Table 3

Means and Standard Deviations for Male and Female Exercisers on Motivation, Body Image, and Exercise Behavior Variables

Scales	<u>Males</u>		<u>Females</u>	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Amotivation*	1.69	0.85	1.37	0.56
External Regulation*	2.78	1.26	2.28	1.13
Introjected Regulation	3.76	1.30	3.68	1.44
Identified Regulation*	4.25	1.18	4.56	1.31
IM-to know*	4.01	1.42	4.73	1.51
IM-accomplishment	5.09	1.22	5.36	1.45
IM-stimulation*	5.06	1.32	5.46	1.20
Motivation Index*	7.51	3.46	9.91	3.92
Body Image	3.48	0.63	3.48	0.69
Exercise Behavior	6181.33	4953.28	5534.11	3665.20
Exercise Commitment	4.03	1.03	4.03	1.15

*p <.05

Note. Mean scores on motivation subscales and commitment scale are out of a possible 7. Mean scores on body image scale are out of a possible 5. Motivation index scores range from -18 to +18. Exercise behavior scores range from 960 to 24,300 inclusive.

CHAPTER IV

Supplementary Results

Interviewee Profiles

This chapter contains detailed case descriptions of the four individual interviewees who participated in Phase 2 of the present study. Initially, it was intended to present the results of the interview analyses in the following case format, however, the information generated in this manner was too extensive to report these findings fully in the journal article. Thus, the cases are presented in this chapter under the headings of individual interview subjects.

Subject 1

Subject 1 was a 25-year old female non-athlete. She had been training for 4 years, 5-6 days per week for 1-2 hours per day at the time of the interview. Her workouts included cardiovascular training (i.e. running) with some weight training. In relation to the overall mean ($M=5817.45$), and the mean for group 1 ($M=9214.21$), Subject 1 had a relatively high overall exercise behavior score of 7810. In addition, she also had a very high commitment score of 6.6 out of a possible 7 ($M=4.02$ overall; $M=5.0$ for group 1). With regards to her own behavior, Subject 1 mentioned that she trains “regardless of a pain, regardless of a cold.” While she felt that her exercise schedule has not caused conflict with previous other responsibilities, she did note that she has passed up social activities in the past to train, and that exercising is on her mind constantly when she is on vacation. She also mentioned that she has had periods where she felt she was not exercising enough, described her training as “addictive” and “obsessive” at times, and

recognized that she often gets symptoms of overtraining (i.e. fatigue). She added that if she did not “overexercise” so much, she might benefit a bit more from her training.

With regards to motivation, during the interview Subject 1 discussed that she mainly exercises because she enjoys it, it gives her energy, it makes her feel better about herself, and because of negative feelings she has towards her body. Weight control was also mentioned as a reason for her behavior, as well as stress relief and relaxation.

Despite some self-determined reasons for her exercise participation (i.e. enjoyment), Subject 1 scored 5.67 on the overall motivation index, indicating that she was less self-determined towards exercise than the majority of exercisers in the overall sample and group 1 ($M=8.86$ overall; $M=9.94$ for group 1). Reflective of this, she mentioned that she had originally started training 4 years ago for health reasons, but realized that “once you start dropping some weight it sort of becomes addictive and almost to the point of obsessive...” Now, as suggested by her high score on the introjected regulation subscale (4.33 out of 7; $M=3.71$ overall; $M=4.46$ for subjects in group 1) she feels that she must exercise in order to avoid the feelings of guilt that occur if she misses her training:

“I feel that I have to [exercise] otherwise I sit there with guilt, and whatever it is that I’m doing, because I didn’t go, I think, my god, I could have gone, why am I doing this?”

The subject described this as a “fight” within herself where realistically, she is aware that she should be able to take time off, but physically, she cannot bring herself to do it.

With regards to body image, Subject 1 obtained a score of 2.5 on the body image scale in Phase 1 of the study ($M=3.48$ overall; $M=3.49$ for group 1). This score was significantly lower than those of other exercisers in the study, and indicates a general dissatisfaction with body image. Her dissatisfaction with her body was also apparent

during her interview. Specifically, she mentioned that she feels as though her body always needs more toning. She was particularly dissatisfied with her hips, and mentioned that she avoids looking in the mirror so that she will not feel dissatisfied. In relation to her exercise behavior, she mentioned that when she has good, high-intensity workouts, she feels better about her body, and noted that if she had to miss training sessions, she would start to feel “flabby.” She mentioned, however, that she will try to avoid increasing the intensity of her workouts based on body changes, as she feels that she is at a point where she should not be losing any more weight.

Subject 2

Subject 2 was a 28 year-old female competitive Olympic Weightlifter. At the time of the interview, she had been training at this level for 2 years, 6 days per week, for 1.5-2 hours per day. Subject 2 had a high overall exercise score of 9900 (compared to $M=5817.45$ overall, and $M=9214.21$ for group 1). She also had a high commitment score of 6.2 out of 7 (compared to $M= 4.02$ for total sample; $M=5.0$ for group 1). With respect to her behavior, Subject 2 had trained with a serious illiotibial band injury, and despite illness in the past. As well, she also bases how heavily she is training by how light her menstrual cycle is. Whenever she misses an attempt at one of her lifts, Subject 2 feels as though she is not training enough, but did not feel that she has overtrained in the past.

With respect to motivation, Subject 2 scored 14.58 on the motivation index (compared to $M=8.86$ overall; $M=9.94$ for group 1). Her score on this index indicates a high level of self-determined motivation towards her training. Indeed, she mentioned that she first began training for “fun,” and continues because she feels her sport contributes to a part of her “identity.” Despite these more self-determined reasons, however, Subject 2

also scored slightly above the group 1 mean for introjected regulation (4.5; $M=3.71$ overall; $M=4.46$ for group 1). Indeed, her interview discussion did not always reflect self-determined behavior, as she discussed that although she was training because she loved the sport, to stay in shape, and to learn, she also mentioned that at the time of the interview she was feeling internal pressure to perform, and that she was going through a phase where she did not feel like she was training for herself. She mentioned:

“My first thought is, okay, I don’t want anybody to think I’ve given up lifting, I don’t want anybody to be disappointed in me, I don’t want to be disappointed in myself.”

Further, she discussed that she feels guilty when she misses her training sessions to the point that she fears that her training will suffer, and that any gains that she made will be lost. She also dreads having to explain to her coach and training partner why she would need time off. Such fears have led her to develop negative psychological reactions to missing workouts:

“If I was not to go I would feel that I wasn’t training enough. Last Christmas I remember I was just baked, and I called [my friend] and said ‘I’m taking today off.’ I started to cry, and I felt so guilty about it...”

Unlike other subjects, Subject 2 attained a high overall score of 4.64 out of 5 on the body image scale ($M=3.48$ overall; $M=3.49$ for group 1), indicating a general satisfaction with body image. Overall, she said she is satisfied with her body when she is training. Similar to subject 1, however, she will avoid looking in the mirror if she has been training less than usual. She indicated that she was pleased with her accomplishments strength-wise, but that she did not like her stomach. Here, she discussed that it was more the way her stomach felt (i.e. expanded after eating) than the way it looked, and that she will change her style of dress on the days when she feels more

uncomfortable about this area of her body. With regards to the relationship of body image to her exercise behavior, Subject 2 felt better about her body during stronger training programs, and more intense workouts. She discussed that when she is working out heavily, her stomach feels flatter and the rest of her body feels “harder” and “tighter.” Subject 2 felt more confident about herself because of these positive changes during heavy workouts, and felt that she could actually see physical changes (i.e. the “lines” in her stomach were more visible) during heavier training. She also notices that she doesn’t feel as tight and strong when she misses training for a few days, and although she realizes that it is not the case, feels as though she is going to gain weight. She noted that although positive changes in her body do motivate her to train harder, she is still mainly motivated by the sport, again highlighting a more self-determined profile towards exercise.

Subject 3

Subject 3 was a 38 year-old male bodybuilder/Olympic Weightlifter who had been strength training for 21 years at the time of interview. His training program included weightlifting, 6 days per week for 1.5 hours per time. Subject 3 had relatively high overall exercise (9450), and commitment scores (5) in comparison to overall subjects and subjects in group 1 specifically ($M=5817.45$ overall, and $M=9214.21$ for group 1 for exercise behavior; $M= 4.02$ for total sample, and $M=5.0$ for group 1 for exercise commitment). During the interview, Subject 3 discussed that he has trained through tendonitis in his knee, and a recent nerve entrapment in his shoulder. He has also trained with both major and minor illnesses, stating “when I get sick, I gotta punish myself for being sick by training harder.” In the past, Subject 3 had not observed any conflict between his training schedule and other responsibilities, but said that he would

not miss training for social activities. He had never experienced times where he felt he was not training enough, and did not feel as though he had been excessive about his training in the past. Further to this, he felt that he could cut back on his training schedule if required.

With respect to motivation, Subject 3 scored below the overall and group 1 means ($M=8.86$ overall; $M=9.94$ for group 1) on the overall motivation index (7.33), indicating lower levels of self-determined motivation than the majority of exercisers in both the overall sample, and those in group 1. Based on these findings, it was not surprising that Subject 3 had high scores on the introjected regulation scale (6.17). In fact, this score was considerably higher than the overall and group 1 means on the introjected regulation subscale ($M=3.71$ overall; $M=4.46$ for group 1;). In support of these high introjected scores, Subject 3 discussed that if he missed a few days of training, he would feel as though he was physically “shrinking” in size and strength. Indeed, Subject 3 was strongly motivated by internal pressures related to appearance factors, as he discussed that he has always wanted to be “bigger” and “stronger.” Currently, this is still his main reason for training, as he now tries to maintain his size and strength so that he can keep up with his other friends. As well, reinforcement from women, in the form of compliments on his appearance motivate him further.

Subject 3 obtained a score of 2.43 on the body image scale. His score on this scale fell well below both the overall mean, and the mean for group 1 ($M=3.48$ overall; $M=3.49$ for group 1), and indicates an overall dissatisfaction with body image. Overall, he said that he was satisfied and comfortable with his strength, and the way he looks, however, he would still like to be “bigger.” Specifically, he noted he would like to have

bigger legs and arms. Subject 3 discussed that working out gave him a feeling of “control” that he could still make changes in his body, which in turn reinforces his training behavior. As with the previous two subjects, subject 3 also felt that higher intensity workouts (as well as variations in his training schedule) facilitated more changes, and consequently, a more positive body image. Subject 3 felt that changes in body image do encourage him to train at a higher intensity, and admitted to feeling less confident and secure about himself, based on specific changes in his body image:

“...when I’ve missed training in the past I’ve become less outgoing because I don’t feel like I can back myself up, and then I’m not so critical of other people because I can’t be – because I’m shrinking.”

Subject 4

Subject 4 was a 35 year-old male with 13 years of strength and cardiovascular training. At the time of the interview, he was strength training 6 times per week, running or cycling (3 times/week) for 2-2.5 hours per time, and was a competitive athlete in softball, football, curling, and basketball at the time of interview. Subject 4 had the second highest total exercise score (21,840) of the overall sample (compared to $M=5817.45$ overall, and $M=9214.21$ for group 1). In addition to his high exercise behavior score, he also scored very high (6.6) on the commitment scale in comparison to the overall mean ($M=4.02$), and the mean for group 1 ($M=5.0$). Currently, subject 4 places his workouts as a top priority before family and friends. He is presently training despite a separated shoulder, and claimed that he will train regardless of injury or illness. As subject 4 bases the majority of his social relationships around others with high levels of exercise behavior, he has experienced conflict in a relationship previously when the other person no longer participated in a shared physical activity.

With regards to motivation, Subject 4 scored only slightly below the overall mean ($M=8.86$), and the mean for group 1 ($M=9.94$) on the motivation index (8.25).

Specifically, his score on the index indicates a more non self-determined profile in comparison to other participants in the quantitative sample. Subject 4 discussed that he initially began training to improve his self-esteem and body image. Currently, his reasons for exercising are a combination of maintaining self-esteem, body image, health, and social reasons. Subject 4 also scored above the overall mean, and the mean for group 1 ($M=3.71$ overall; $M=4.46$ for group 1) on the introjected regulation subscale (5.67), which was reflected in his interview:

“...Monday night something came up, couldn’t make it, didn’t feel very well after because I made a choice, and it was choosing to do something else...basically to go out, and I felt guilty afterwards”

As illustrated in the aforementioned quotation, Subject 4 discussed that when he misses training sessions he feels guilty. Further to this, he also mentioned that when he misses workouts, he feels that he is not in the same shape he was just a few days previous. This has, for him, led to various compensatory behaviors when he feels he has not done enough:

“...if I miss a week, I’ll go in every day for two weeks straight, or three weeks until I feel that I am now back to where I should have been, and then maintaining...I’ll have to make it up...”

With respect to body image, subject 4 scored 2.79 on the body image scale. His score on this scale was considerably below the overall mean ($M=3.48$), and the mean for group 1 ($M=3.49$), and indicates an overall dissatisfaction with body image. During the interview, however, subject 4 discussed that he was in fact satisfied with his current image, but has only recently become comfortable with the way he looks. Further to this,

he mentioned that while he feels that his legs are too thin, and his chest lacks definition, his feelings vary day to day, and, similar to Subject 3, he compares himself to his friends and others his age. Similar to the other subjects, Subject 4 feels more positive towards his body on days when he has more intense workouts. Specifically, he notices changes in his biceps, triceps and chest, feeling that they appear bigger, and that his veins become more visible. He also noted however, that his body image can change daily, and sometimes even hourly:

“Yeah...I’ll see flab...I’ll look in the mirror – it can be an hour’s difference...Yeah, it’s almost schizophrenic, you know, like it’s up and down. I’m trying to control it and I feel that it is a control. It’s mind – it’s the mind playing with me, cause I have to realize that there can’t be that much change in an hour...”

Subject 4 felt that the physical changes he observes as a result of his workouts do motivate him to continue training at higher intensities, and that he will continue to push his workouts until he can attain his ideal image. When discussing his feelings towards his body if he missed exercise sessions, Subject 4 mentioned that he becomes frustrated when he misses a workout, and discussed that he would feel as though he was generally getting out of shape, and that “fat would be entering my body.” More specifically, he observes himself to be “smaller,” to the point where he feels as though his muscles are “deteriorating” after missing just a day or two. Subject 4 also felt that having to miss too many sessions would leave him depressed. Such fears appear to strongly influence the rigidity of his actions, as he refuses to take extended vacation time in the event that workout facilities will be unavailable.

CHAPTER V

General Discussion

Overall Summary

The general purpose of this study was to examine the influences of exercise motivation and body image on exercise behavior (using a multi-method approach) in order to better understand the unhealthy exercising phenomenon. Phase 1 was quantitative (questionnaire) and served to compare the exercise motivation (using Self-Determination Theory as the investigative framework) and perception of body image of “healthy” and “unhealthy” exercisers. With regards to motivation, based on predictions of SDT and past research examining the relationship between self-determined forms of motivation and exercise (Fortier & Grenier, in press; Pelletier et al., 1999), we hypothesized that “unhealthy” exercisers would display higher levels of non self-determined exercise motivation, and specifically, higher levels of introjected regulation than “healthy” exercisers, who would display more self-determined forms of exercise motivation. In partial support of this hypothesis, results revealed that “unhealthy” exercisers did indeed display higher levels of introjected regulation than “healthy” exercisers. Contrary to our expectations, however, “unhealthy” exercisers also displayed higher levels of self-determined forms of motivation (i.e. intrinsic motivation and identified regulation), and attained higher scores on the global motivation index, therefore indicating a more self-determined exercising profile overall.

With regards to body image, based on past literature which suggests that higher levels of body dissatisfaction are linked to higher frequency exercise behavior (Imm & Pruitt, 1991; Shaw, 1991), we predicted that “unhealthy” exercisers in the study would

have a less positive body image than “healthy” exercisers. Surprisingly, quantitative data from Phase 1 disproved our hypothesis, as no significant differences were found between the different groups of exercisers on the Body Cathexis Scale.

The second phase of the present study was qualitative (interviews) and served to obtain more in-depth perceptions into the exercise motives and perceived body image of a few “unhealthy” exercisers identified from the Phase 1 sample. Indeed, this phase provided us with more in-depth understanding into the reasons these “unhealthy” exercisers train at such extreme levels, as well as how their own perceptions of their bodies influence their exercise behavior. With respect to motivation, interviewees discussed health and fitness, and appearance motives for exercise. In addition, findings from the interviews supported the results of Phase 1 surrounding introjected regulation motivation. Specifically, interview findings suggested “guilt” as a strong motivating factor for unhealthy exercise behavior among the interviewees.

With regards to body image, despite the non-significant findings of Phase 1, results from the interviews suggested that body image does play a predominant role in “unhealthy” forms of exercise behavior. Further, all interviewees scored below the overall and group 1 means on the Body Cathexis Scale, and all discussed being dissatisfied with some area(s) of their bodies at the time of interview. In addition, interviewees discussed that they felt better about their bodies after high intensity workouts, and were able to report specific visual changes in their bodies after training. As well, all interviewees reported erratic, negative fluctuations in both body and self-image when they had missed workouts.

Another purpose of this study was to assess gender differences in motivation and perception of body image. With regards to exercise motivation, results from Phase 1 revealed that women displayed higher levels of intrinsic motivation and identified regulation, and scored significantly higher on the global motivation index than men, who displayed higher levels of amotivation and external regulation (non self-determined forms of motivation). These findings indicate that women in the sample had a more self-determined exercise profile. In addition, in Phase 2 only female interviewees mentioned that they exercised for “fun” or for the “enjoyment” they received from participating in exercise. These results are in agreement with past research on gender differences in sport motivation (Brière et al., 1995; Fortier et al., 1995; Pelletier et al., 1995), but not in line with studies on exercise motives, which have revealed that women’s participation in exercise is more often based on body-related (i.e. non self-determined) motives (Davis et al., 1995a; McDonald & Thompson, 1992).

Finally, with respect to body image, results from Phase 1 of the study revealed no significant differences in body image between women and men in the sample. These findings were contrary to our hypothesis that women would have a less positive perceived body image than men in the sample, and were also not in keeping with the majority of body image literature which suggests that women are less satisfied with their bodies than men (Davis & Cowles, 1991; Kenen, 1987; Mintz & Betz, 1986). However, while a small qualitative sample size makes it difficult to generalize the results from Phase 2, it should be noted that only female interviewees discussed avoiding their reflections in the mirror when they had missed training, in an attempt to evade feeling dissatisfied with their bodies.

Implications of the Findings

Motivation -Theoretical Implications for SDT

Based on the findings of the present study with regards to motivation, it appears that Self-Determination Theory proved to be useful in furthering understanding of the unhealthy exercising phenomenon. Specifically, introjected regulation surfaced as a significant type of motivation behind more unhealthy forms of exercise behavior. Further to this, however, results indicating that “unhealthy” exercisers also displayed higher levels of self-determined motivation towards exercise than “healthy” exercisers challenge non self-determined forms of motivation previously viewed as characteristic of unhealthy forms of exercise behavior. Indeed, findings from the present study suggest that more self-determined types of motivation may also lead to unhealthy forms of exercise behavior, and suggest that in fact, “unhealthy” exercisers may be more motivated overall, by a number of different factors. These results also challenge the predictions of SDT, which suggest that self-determined forms of motivation should lead to more positive consequences (i.e. persistence), while non self-determined forms of motivation should lead to negative consequences (i.e. drop-out). Implicitly, our findings suggest that self-determined types of motivation combined with non self-determined forms of motivation may lead to persistence in extreme “unhealthy” levels of exercise behavior, which should be viewed as a negative outcome. To this end, we speculate that perhaps SDT should broaden its definitions of what constitutes a “negative” and “positive” consequence in the assessment of “unhealthy” forms of exercise behavior. In order to validate these suggestions for potential theoretical adaptations, future study should aim to further test

SDT's predictions with similar exercising groups, and unhealthy exercising populations specifically.

Body Image – Dissatisfaction or “Body Focus”?

While no significant differences were found between “healthy” and “unhealthy” exercisers in Phase 1 (quantitative), qualitative findings with “unhealthy” exercisers from the sample revealed little doubt that body image does influence exercise participation. This discrepancy in findings suggests that further exploration, using various methods to assess the feelings individuals have towards their bodies in direct relationship to their exercise behavior, is necessary. Indeed, while no quantitative differences on “satisfaction/dissatisfaction” in image were found, appearance issues, and their effects on overall self-image were prominent among interviewees’ discussions. Thus, it seems important that future research address the possibility that while “unhealthy” exercisers do not necessarily display higher levels of body image dissatisfaction than “healthy” exercisers, they may, in fact, display a definite concerned investment, or “preoccupation” with their bodies which is directly related to their exercise behavior, and to their overall self-image. These speculations are similar to what Davis and Fox (1993) discussed as a higher level of “body focus” among excessive exercisers than among their non-excessive counterparts. In this study “body focus” was defined as “the importance of the way [exercisers] feel about their bodies to the way they feel about themselves in general” (Davis and Fox, 1993, p. 204). A study by Davis and Cowles (1991) further indicates that “body focus” is associated with increased levels of exercise. Based on these implications, it appears that instruments which include some form of assessment of “body

focus,” rather than simply a measurement of body image dissatisfaction, may be more applicable to the study of comparing “healthy” and “unhealthy” exercising populations.

Further to these implications, results from the interviews suggest that while body image does influence exercise behavior, exercise behavior also influences body image. Indeed, interviewees discussed that they felt better about their bodies, and noticed positive physical changes when they had been working out more often at higher intensities. These findings speculate that the relationship between body image and exercise behavior is in fact bi-directional (i.e. body image influences exercise behavior; exercise behavior influences body image). Indeed, such considerations are in support of the “chicken or egg” body image/exercise relationship suggestions of Shaw (1991) in a study assessing body image in physically active female youth. Whether or not this relationship is causal in its direction, however, cannot be determined by the results of the present study, and is an area considered worthy of future investigation.

Gender Differences – Motivation and Body Image

With regards to motivation, results from the present study suggest that women have a more self-determined profile towards their exercise behavior than men. Combined with previous studies assessing gender differences in sport (Fortier et al., 1995; Pelletier et al., 1995), findings indicate that perhaps women have a more self-determined profile towards all forms of physical activity. Based on these findings, future study should aim to investigate the reasons behind why women may develop more self-determined motivation than men towards sport and exercise. With respect to body image, as no gender differences were found in the present study, such results suggest that perhaps body image is becoming a lesser focus for exercising women, or a more prominent focus

for exercising men. Despite non-significant quantitative results, however, interview data revealed that male and female subjects differed in the way in which they were dissatisfied with certain parts of their bodies. Specifically, male subjects wanted specific areas of their bodies to be “bigger” and “stronger” while women wanted parts to be more “defined” or “toned.” These observations support the results of a study by Silberstein et al. (1988), which revealed that while 92 exercising men and women did not differ in the degree to which they were dissatisfied with their bodies, they did differ in their direction of body dissatisfaction. Thus, results from the present study, combined with the findings from past research, suggest that perhaps future research using gender-sensitive body image measurements should address “how” men and women are dissatisfied with their bodies, and in what ways it effects their overall image, rather than simply comparing overall satisfaction/dissatisfaction.

Summary of the Interview Profiles

Findings from the interviews reported in the supplementary results chapter of this thesis were presented as individual cases for the four “unhealthy” interviewees. It was decided initially to present these results in case format, as the small sample size for the qualitative portion of this study made it difficult to generalize the findings amongst interviewees. The complete cases, however, were too extensive to discuss in the journal article, and were consequently placed in this document as a supplementary results chapter. A cross-comparison of the cases revealed that despite the limitations of this small sample, both similarities and differences in exercise motives and body image satisfaction/dissatisfaction were expressed across subjects.

Specifically, all interviewees trained for an average time of 1.5 hours, 6 days per week. Further, all subjects discussed training despite injury and illness, and all noted that they would try to avoid missing workouts for social activities whenever possible. All subjects, with the exception of Subject 2, were below the overall mean ($M=8.86$) and the mean for group 1 ($M=9.94$) on the overall motivation index, indicating lower levels of self-determined exercise motivation. Further, only the two female subjects (Subjects 1 and 2) discussed that part of their reasons for exercising are because they enjoy it, or love to do it. All interviewees mentioned body image or appearance and weight control as reasons for exercising, and all interviewees, with the exception of Subject 3, displayed high levels of introjected regulation motivation through the intense feelings of guilt and/or pressure they felt surrounding their exercise behavior. Further, all subjects, with the exception of subject 2, scored below the overall mean ($M=3.48$), and the mean for group 1 ($M=3.49$) on the body image scale, indicating overall levels of dissatisfaction with body image. Interviews reflect that body image does play a large part in the exercise behavior of all 4 subjects. Indeed, male subjects wanted specific parts of their bodies to be “bigger,” “stronger,” or more defined, whereas women preferred “tone” and “definition.” All subjects indicated that they felt better about their bodies after high intensity workouts, and could actually see physical changes based on their training. Similarly, all subjects noted that their body image fluctuates erratically depending on how intensely/how often they have been training. In addition, female subjects discussed practicing “mirror avoidance” when they had not been training as often, or to avoid general body image dissatisfaction. For all subjects, negative perceived physical

changes, and negative feelings towards their bodies, arose when they missed regularly scheduled workouts.

Thus, based on the findings of the individual cases, and their collaborative summarized results, the qualitative portion of this study proved to be both important and beneficial in providing a deeper understanding of the issues surrounding motivation and body image for “unhealthy” exercisers. Indeed, the presentation of individual cases proved to be both insightful and valuable by offering potential examples of unhealthy exercising profiles, and provides a more humanistic and subjective approach to the study of the unhealthy exercise phenomenon.

Broadening Horizons – The Importance of a Multimethod Strategy

In the present study, the use of a multi-method approach provided a more thorough and in-depth understanding into the psychological characteristics and perspectives of the “unhealthy” exerciser. Thus, the strength, and advantages of both quantitative and qualitative methods, as discussed by Firestone (1987) were combined in this research. Specifically, it was the intent of the present study to combine both quantitative and qualitative methods to provide a more composite picture of the phenomenon of unhealthy exercise behavior. To this end, a discrepancy in the quantitative and qualitative findings with regards to body image indicate that this particular area is in need of further study. Indeed, results prove that the unhealthy exercise phenomenon is one of great complexity, worthy of a combination of research approaches. Thus, while methodological limitations (i.e. median splits and a small qualitative sample size) in the current study imply that conclusions utilizing this information should be drawn with caution, the use of the multi-method strategy has

provided an interesting and informative outlet for new insight into unhealthy forms of exercise behavior. Future study, using a variety of research strategies, should aim to provide further insight into unhealthy exercise behavior using a more selective population of “unhealthy” exercisers specifically.

The Complications of “Mis-Labeling”

In closing, it is important to note that in the current study, exercisers were divided into “healthy” and “unhealthy” groups for the purposes of research. While this was necessary, it is suggested that future study on “unhealthy” forms of exercise specifically should attempt to come to terms with a concrete and specific definition which will separate “unhealthy” exercisers from their “healthy” counterparts. While this task seems near impossible, it is necessary in order that individuals participating in such studies are not at risk of being “mis-labelled” as “unhealthy” in their exercise behavior. Further, it is suggested that perhaps the “unhealthy” label itself is detrimental, and should not be used at all in classification. Indeed, the complications of “mis-labelling” may lead to negative psychological consequences for an individual who sees his/her behavior as one that is contributing to his/her overall health and longevity. Thus, it is questionable as to when a behavior that is viewed as the precursor to good health, becomes both physically and psychologically detrimental, and further, who should make this final decision? While providing answers to these questions is certainly both a difficult and trying task, inevitably, it is essential in order that research on “unhealthy” exercise behavior can advance.

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APPENDIX A
CONTRIBUTIONS OF THE COLLABORATORS

The relative contributions of the two authors (Robin Farrell and Michelle Fortier, Ph.D.) listed on the journal article comprising this thesis are outlined in this appendix.

The names of the two authors cited in the journal article, specifically Robin J. Farrell, and Michelle S. Fortier, Ph.D., denote that both persons played an intricate part in all major stages of both this research project and the article preparation.

With regards to the overall research project, both Dr. Fortier and myself were involved in collaboratively conceptualizing this study. Essentially, my interest in “unhealthy” forms of exercise behavior and the influence of body image was combined with Dr. Fortier’s expertise in the area of motivation for “healthy” forms of exercise behavior. Throughout the entire process I met regularly with Dr. Fortier to conceptualize, plan, and evaluate the study at its various stages.

Both Dr. Fortier and myself developed the questionnaire and interview guide used in this study. I was responsible for adapting previously used scales for the questionnaire, and preparing the initial interview guide, while Dr. Fortier provided me with structure, feedback and revisions for the final instruments. I was responsible for contacting the various health and running clubs, arranging times for data collection, and collecting data for Phase 1 of this study. I was also fortunate to have the assistance of Karine Henrie for my on-site data collections during this phase. Further, I was primarily responsible for the data analysis of Phase 1, which was carried out under the supervision of Dr. Fortier.

For phase 2 of this study, I was responsible for contacting interviewee participants and arranging times for the interviews. I conducted all four of the interviews (including the pilot study), and executed the main analyses and interpretations of this phase, again under the guidance and supervision of Dr. Fortier.

In terms of writing the article, I was responsible for producing numerous drafts of the final product, each of which was read by Dr. Fortier, and returned to me with suggestions for revision. The final article contained in this thesis document is the product of our efforts, and has been prepared for submission in *Health Psychology*.

APPENDIX B
QUESTIONNAIRE –PHASE 1

THE ROLE OF MOTIVATION AND PERCEPTIONS IN EXERCISE USE

We are presently conducting an important study which aims to better understand the role of motivation and perceptions in exercise behavior. The following pages consist of questions regarding your involvement and perceptions associated with exercise related activities. Please read each question carefully and indicate the extent to which the question corresponds to YOUR personal experience. It is important to answer, i.e., circle a number/choose an option for EVERY question.

This is neither a test nor an evaluation. Therefore, there are no correct or incorrect answers. We are simply interested in your HONEST responses to the questions and ask that you respond as SERIOUSLY and TRUTHFULLY as possible. It is important to carefully read all of the instructions. If you do not understand a question, we will be pleased to help you.

You do not have to write your name on the questionnaire, therefore we will not be able to identify you. **The information that you provide us with is strictly confidential (private) and will be used for research purposes only.** That is, no one except us will see your answers and we will not be able to identify you.

***PLEASE NOTE:** This study has been divided into two phases. The first phase consists of this questionnaire. The second phase involves participation in a brief interview (approximately 1 hour) on topics similar to those identified in this questionnaire. **If you would be willing to participate in the second phase of this study, please leave your name and telephone number on the last page of this questionnaire in the space provided, so that we may contact you in the near future.** **Participation in the second phase is completely voluntary, and all information provided will remain strictly confidential.** **ALL THOSE WHO PARTICIPATE IN AN INTERVIEW WILL RECEIVE A GIFT FOR THEIR TIME AND CO-OPERATION.** Please note that not all those who volunteer for the second phase will be selected/contacted.

Thank you for your participation.
Robin Farrell & Michelle Fortier, Ph.D.
School of Human Kinetics
University of Ottawa
Summer, 1998

1. CURRENT EXERCISE BEHAVIOR

Please answer the following questions regarding the kinds of exercise you have done in your free time over the past month.

Strenuous: heart beats rapidly, work up a sweat

Moderate: gets the heart going but no exhaustion

Mild: minimal effort

Type of Activity	# of times per month	How long at a time	At what intensity
Aerobics	_____	_____ minutes	Strenuous/Moderate/Mild
Badminton	_____	_____ minutes	Strenuous/Moderate/Mild
Baseball/softball	_____	_____ minutes	Strenuous/Moderate/Mild
Basketball	_____	_____ minutes	Strenuous/Moderate/Mild
Bicycling (indoor, outdoor)	_____	_____ minutes	Strenuous/Moderate/Mild
Bowling	_____	_____ minutes	Strenuous/Moderate/Mild
Boxing/kickboxing	_____	_____ minutes	Strenuous/Moderate/Mild
Canoeing/kayaking/rowing	_____	_____ minutes	Strenuous/Moderate/Mild
Dancing	_____	_____ minutes	Strenuous/Moderate/Mild
Fishing	_____	_____ minutes	Strenuous/Moderate/Mild
Football	_____	_____ minutes	Strenuous/Moderate/Mild
Golf	_____	_____ minutes	Strenuous/Moderate/Mild
Hiking/backpacking	_____	_____ minutes	Strenuous/Moderate/Mild
Hockey	_____	_____ minutes	Strenuous/Moderate/Mild
Indoor household activities	_____	_____ minutes	Strenuous/Moderate/Mild
Martial Arts (karate, judo etc.)	_____	_____ minutes	Strenuous/Moderate/Mild
Mountain/rock climbing	_____	_____ minutes	Strenuous/Moderate/Mild
Rope jumping	_____	_____ minutes	Strenuous/Moderate/Mild
Running/jogging	_____	_____ minutes	Strenuous/Moderate/Mild
Skating (roller, ice)	_____	_____ minutes	Strenuous/Moderate/Mild
Soccer	_____	_____ minutes	Strenuous/Moderate/Mild
Squash/racquetball	_____	_____ minutes	Strenuous/Moderate/Mild
Stair climbing	_____	_____ minutes	Strenuous/Moderate/Mild
Swimming	_____	_____ minutes	Strenuous/Moderate/Mild
Tai chi/yoga	_____	_____ minutes	Strenuous/Moderate/Mild
Tennis	_____	_____ minutes	Strenuous/Moderate/Mild
Volleyball	_____	_____ minutes	Strenuous/Moderate/Mild
Walking for exercise	_____	_____ minutes	Strenuous/Moderate/Mild
Water skiing	_____	_____ minutes	Strenuous/Moderate/Mild
Weight/strength/toning training	_____	_____ minutes	Strenuous/Moderate/Mild
Working outside/gardening	_____	_____ minutes	Strenuous/Moderate/Mild
Other: _____	_____	_____ minutes	Strenuous/Moderate/Mild
Other: _____	_____	_____ minutes	Strenuous/Moderate/Mild
Other: _____	_____	_____ minutes	Strenuous/Moderate/Mild

Is this a typical training schedule for you?

_____ yes

_____ no

If "yes," for how many months/years?

If "no," does the past month represent: (check one)

_____ more activity than usual

_____ less activity than usual

Note: Items used in the analyses are in bold.

2. COMMITMENT TO EXERCISE

Using the scales below, please indicate to what extent you are in agreement with the following items concerning your current commitment to exercising

	Not at all important				Very important		
	1	2	3	4	5	6	7
1. How important do you think it is to your general well-being not to miss your exercise sessions?							
	Never upset				Very Upset		
	1	2	3	4	5	6	7
2. Does it upset you if, for one reason or another you are unable to exercise?							
	Never				Always		
	1	2	3	4	5	6	7
3. If you miss an exercise session, or several sessions, do you try to make them up by putting in more time when you get back?							
	No routine				Strict Routine		
	1	2	3	4	5	6	7
4. Do you have a set routine for your exercise sessions, (e.g. the same time of day, the same location, the same number of laps, particular exercises, and so on)?							
	Never				Always		
	1	2	3	4	5	6	7
5. Do you continue to exercise at times when you feel tired or unwell?							
	Never				Always		
	1	2	3	4	5	6	7
6. Do you continue to exercise even when you have sustained an exercise-related injury?							

	Not at all					A great deal	
7. Do you feel "guilty" that you have somehow "let yourself down" when you miss your exercise session?	1	2	3	4	5	6	7
	Never					Always	
8. Are there times when you have turned down an invitation to an interesting social event because it interferes with your exercise schedule?	1	2	3	4	5	6	7

3. MOTIVATION TOWARDS EXERCISE

Using the scale below, please indicate to what extent you are in agreement with the following items concerning your REASONS FOR EXERCISING.

Strongly Disagree			Moderately Agree			Strongly Agree	
1	2	3	4	5	6	7	

In general, when you exercise, WHY DO you do it?

1. For the pleasure it gives me to experience positive sensations from this activity.	1	2	3	4	5	6	7
2. Because people around me think it is important to exercise.	1	2	3	4	5	6	7
3. Because I would feel guilty if I wasn't doing it.	1	2	3	4	5	6	7
4. For the pleasure I experience while learning new things.	1	2	3	4	5	6	7
5. I used to have good reasons for exercising, but now I am asking myself if I should continue.	1	2	3	4	5	6	7
6. Because it allows me to be well regarded by people that I know.	1	2	3	4	5	6	7
7. For the intense emotions I feel while I am doing something that I enjoy.	1	2	3	4	5	6	7
8. Because, in my opinion, it is one of the best ways to meet people.	1	2	3	4	5	6	7
9. Because I feel a lot of personal satisfaction while trying to master certain skills.	1	2	3	4	5	6	7
10. For the pleasure it gives me to know more about exercise.	1	2	3	4	5	6	7
11. I don't know, lately I feel unmotivated.	1	2	3	4	5	6	7
12. Because it is one of the best ways I have chosen to develop other aspects of myself.	1	2	3	4	5	6	7

13. Because I enjoy the feeling of improving through practicing this activity.	1	2	3	4	5	6	7
14. Because I feel urged to do so by others.	1	2	3	4	5	6	7
15. I can't understand why I do it.	1	2	3	4	5	6	7
16. Because I must exercise to feel good about myself.	1	2	3	4	5	6	7
17. Because I enjoy trying movements that I have never done before.	1	2	3	4	5	6	7
18. Because it is a good way to learn things which could be useful to me in other areas of my life.	1	2	3	4	5	6	7
19. It is not clear to me anymore; I don't really think exercise is for me.	1	2	3	4	5	6	7
20. For the positive emotions that I feel when I am exercising.	1	2	3	4	5	6	7
21. For the satisfaction I experience while I am improving my abilities.	1	2	3	4	5	6	7
22. Because I would feel bad if I was not taking time to exercise.	1	2	3	4	5	6	7
23. For the pleasure of mastering this activity.	1	2	3	4	5	6	7
24. To show others how physically fit I am.	1	2	3	4	5	6	7
25. Because I think it is good for my personal growth.	1	2	3	4	5	6	7
26. Because I like the feeling of being totally immersed in the activity.	1	2	3	4	5	6	7
27. Because I feel I must exercise regularly.	1	2	3	4	5	6	7
28. For the pleasure of learning new skills.	1	2	3	4	5	6	7
29. Because I would feel ashamed if I did not exercise	1	2	3	4	5	6	7
30. Because I feel I have to exercise	1	2	3	4	5	6	7

Note: Items used in the analyses are in bold.

4. PERCEPTION OF BODY IMAGE

According to the list of items below, indicate which body parts/processes you are satisfied with exactly as they are, which items you worry about and would like to change if it were possible, and which items you have no feelings about one way or the other. Consider each item listed below and circle the number which best represents your feelings according to the following scale:

- 1. Have strong feelings and wish change could somehow be made.**
- 2. Don't like, but can put up with.**
- 3. Have no particular feelings one way or the other.**
- 4. Am satisfied with.**
- 5. Consider myself fortunate.**

1. Hair	1	2	3	4	5
2. Facial Complexion	1	2	3	4	5
3. Appetite	1	2	3	4	5
4. Hands	1	2	3	4	5
5. Nose	1	2	3	4	5
6. Physical Stamina	1	2	3	4	5
7. Muscular Strength	1	2	3	4	5
8. Waist	1	2	3	4	5
9. Energy level	1	2	3	4	5
10. Back	1	2	3	4	5
11. Chin	1	2	3	4	5
12. Body build	1	2	3	4	5
13. Profile	1	2	3	4	5
14. Height	1	2	3	4	5
15. Pain tolerance	1	2	3	4	5
16. Shoulder width	1	2	3	4	5
17. Arms	1	2	3	4	5
18. Chest	1	2	3	4	5
19. Eyes	1	2	3	4	5

20. Co-ordination	1	2	3	4	5
21. Hips	1	2	3	4	5
22. Resistance to illness	1	2	3	4	5
23. Legs	1	2	3	4	5
24. Teeth	1	2	3	4	5
25. Overall appearance	1	2	3	4	5
26. Muscle tone	1	2	3	4	5
27. Sleep	1	2	3	4	5
28. Health	1	2	3	4	5
29. Physical skills	1	2	3	4	5
30. Knees	1	2	3	4	5
31. Flexibility	1	2	3	4	5
32. Face	1	2	3	4	5
33. Weight	1	2	3	4	5

Does the way you feel about your body influence you to: (Circle one).

a) exercise more

b) exercise less

c) does not influence

5. Background

Age : _____ Height: _____ Weight: _____

Gender : Female _____ Male _____

Name of your health center/club: _____

Are you a competitive athlete?
(e.g. Do you participate in an organized, competitive event/league) Yes _____ No _____

If **yes**, in which sports? (please list) _____ For how long? _____
_____ For how long? _____
_____ For how long? _____

What is your cultural background? : Canadian ____ Other ____ (Specify): _____

We thank you very much for your participation!

****WE REALLY NEED YOUR HELP FOR PHASE 2 OF THIS STUDY!
IF YOU ARE INTERESTED IN PARTICIPATING IN A FOLLOW-UP
INTERVIEW, PLEASE WRITE YOUR NAME AND TELEPHONE
NUMBER. ALL THOSE WHO PARTICIPATE IN AN INTERVIEW
WILL RECEIVE A GIFT FOR THEIR TIME AND CO-OPERATION.**

Name: _____ Telephone number: _____

APPENDIX C
INTERVIEW GUIDE – PHASE 2

INTERVIEW GUIDE

Intro:

How long have you been exercising/working out/training?

What types of activities do you do?

How important is exercise/training in your life?

-in relation to other things?

1. Why do you exercise?

2. Are there certain things, more than others, that motivate you to exercise?

(Expand).

3. Are there times when you feel you don't exercise enough?

a) How do you feel if you skip/miss an exercise session?

4. Are there times when you feel you exercise too much?

Probe: a) exercise when injured

b) exercise when ill

3. Does (has) your exercise routine ever cause conflict in other areas of your life?

(i.e. school/work/family/friends) (Expand – i.e. how?)

6. How do you feel about your body?

Probe: a) parts you like

b) parts you do not like

c) ideal image vs current perceived image

7. Does the way you feel about your body influence your exercise behavior?

a) how? (Expand – i.e. exercise more/less)

- b) does how you feel about your body change depending how many times a week, or how long you work out? Are there specific changes in your body that you notice after working out regularly?
- c) Do these changes motivate you to exercise more/harder/higher intensity?
- d) How would you feel about your body if you missed exercise sessions or stopped exercising completely?

APPENDIX D
ETHICS APPROVAL FORMS



Université d'Ottawa • University of Ottawa

Faculté des sciences de la santé
Cabinet de la doyenne

Faculty of Health Sciences
Office of the Dean

CERTIFICATION OF INSTITUTIONAL HUMAN RESEARCH ETHICS COMMITTEE FACULTY OF HEALTH SCIENCES

This is to certify that the Institutional Human Research Ethics Review Committee of the Faculty of Health Sciences has examined the research proposal from **Robin Farrell and Michelle Fortier** from the **School of Human Kinetics** for the project *"The role of Motivation and Perceptions in Exercise Use"* and concludes that, in all respects, the proposed research protocol meets the appropriate standards of ethical acceptability, at a **Category 1A** level.

MEMBERS OF THE COMMITTEE

<u>Name (Optional)</u>	<u>Position held</u>	<u>Department of discipline</u>
Victor Boucher	Professor	Audiology and Speech-Pathology Program
François Tremblay	Professor	Physiotherapy Program
Claire-Jehanne Dubouloz	Professor	Occupational Therapy Program
Jocelyne Tourigny	Professor	School of Nursing
Julian Roberts	Professor	Department of Criminology
Roch Paquin	Member-at-Large	
Mark Grenier	Student	School of Human Kinetics
J. Roger Proulx	Chair	Human Research Ethics Committee School of Human Kinetics

SIGNATURE

24/06/98

Date

Committee Chairperson - J. Roger Proulx, Ph.D.

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Faculté des sciences de la santé
Cabinet de la doyenne

Faculty of Health Sciences
Office of the Dean



June 25, 1998

Robin Farrell
Michelle Fortier
School of Human Kinetics
Faculty of Health Sciences
125 Université
INTRA

Subject: Your project entitled --
"The role of Motivation and Perceptions in Exercise Use"

Dear Professor,

It is my pleasure to inform you that the Faculty of Health Sciences, Human Research Ethics Committee, after study of the documentation provided, concluded that your project met the appropriate standards of ethical acceptability and falls within **CATEGORY 1A**.

I hereby attach a copy of the certificate of clearance granted by the University Human Research Ethics Committee.

This certificate is valid for a period of one year from the time of issuance. I would also like to remind you that, in accordance with the policies of the UHREC, it is your responsibility to notify the Committee of any major changes in this project.

On behalf of the Committee, I wish you success in your project.

Sincerely,

J. Roger Proulx, Ph.D.
Chair, Human Research Ethics Committee