

A Profile of Eating Disorder Symptomatology among Female Figure Skaters – How Effective is Education?

**A Thesis
Presented to the
School of Kinesiology
Lakehead University**

**In Partial Fulfillment
of the Requirements for the
Master of Science Degree
in
Kinesiology,
with specialization in the Psychology of Sport**

**by Tiffany Hayward
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Your file *Votre référence*
ISBN: 978-0-494-31856-0
Our file *Notre référence*
ISBN: 978-0-494-31856-0

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Abstract

To better understand the level of eating disorder risk experienced by figure skaters, a profile of eating disorder symptomatology among adolescent female figure skaters at the senior competitive level in areas of Southern and Northern Ontario was developed in the present research. Psychological and socio-cultural factors associated with eating disorder symptomatology in the sport of figure skating were examined carefully.

A preliminary investigation to explore the effectiveness of a health promotion education series involved early adolescent figure skaters from the Thunder Bay area ranging in age from 10 to 14 years. The educational component aimed to develop a model of healthy living while increasing the participants' knowledge base encompassing the topics of nutrition, regular physical activity, a healthy body image, self-esteem, and diet attitudes; in hopes that it may lead to an increased awareness in healthy living.

Of particular interest, the sample of figure skaters exhibited an elevated score in the Eating Disorder Risk Composite (EDRC), suggesting that the skaters have extreme eating/weight concerns, fear of weight gain, a desire to be thinner, binge eating tendencies, and body dissatisfaction (Garner, 2004).

The educational component illustrated an increase in knowledge base encompassing the topics of nutrition, physical activity, a healthy body image, self-esteem, and diet attitudes. In addition, the participants were successful in developing a model of healthy living.

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Introduction

In recent years, there has been a growing concern that participation in sport may encourage the onset of disordered eating which, in turn, may lead to a clinical eating disorder (Berry & Howe, 2000). In society in general, and in the athletic environment in particular, athletes are expected in certain sports to display a characteristic body size and shape. It has been proposed that athletes, especially athletes competing in judged, weight-dependent and endurance sports, may be at risk for eating pathologies because of the task and social pressures associated with their sport environment (Hausenblas & Carron, 1999). Scanlan, Stein, and Ravizza's (1999) study of the sources of stress among former elite figure skaters illustrated that weight loss was an issue of concern. Research examining the eating disorder risk of figure skaters is limited despite other researchers having suggested that female figure skaters could be an at-risk population for eating disorders (Monsma & Malina, 2003; Taylor & Ste. Marie, 2001).

Eating disorders and related symptoms are critical concerns, particularly to women's health. Although men are also diagnosed with eating disorders, women constitute 90% of those diagnosed with eating disorders (American Psychiatric Association, 2000). It is further suggested, given the propensity toward thinness that most women are affected to some degree with problems related to body image and as a result struggle with some type of disordered eating in their lifetime (Wilson & Blackhurst, 1999, Zerbe, 1995).

Disordered eating has been noted to occur primarily in adolescence and is therefore thought to be strongly related to development (Anshel, 2002; Barlow & Durand, 2002; Monsma & Malina, 2003). The transition from childhood to adolescence involves major changes in a variety of aspects of individual development and social contexts. Significant biological and cognitive changes followed by changes in social relationships present challenges among adolescents that may trigger a considerable amount of stress, making them more vulnerable to mental illness. In fact the incidence and prevalence of some disorders like depression, eating disorders, and substance use disorders typically increase substantially in adolescence (Kaltiala-Heino & Rimpela, 1999).

For some athletes, their eating problems are directly or indirectly related to their sport. For others, their disordered eating is unrelated to their sport participation (Smolak, Murnen, & Ruble, 2000). Many young Western women consider appearance to be more important than being healthy. For young women in middle- to upper-class societies, success and self-worth is determined to a large extent by body measurements and percentage of body fat (Smolak, Murnen, & Ruble, 2000). The cultural imperative for thinness directly results in dieting which in some cases may lead to unhealthy eating behaviours (Barlow & Durand, 2002).

To better understand the level of eating disorder risk experienced by figure skaters, a profile of eating disorder symptomatology among adolescent female figure skaters at the senior competitive level in areas of Southern and Northern Ontario will be developed. Psychological and socio-cultural factors associated with eating disorder symptomatology in the sport of figure skating will be

examined. It is expected that the present sample will demonstrate high eating disorder risk in accordance with research to date examining the eating disorder risk among female figure skaters (Brooks-Gunn et al., 1998; Gould, Jackson, & Finch, 1993; Zeigler et al., 1998).

Preventive measures are ideal in attempting to alleviate the eating disorder epidemic in today's society, especially when it has been confirmed that many cases of eating disorders are not reported and most are resistant to treatment (Barlow & Durand, 2002). Conducting prevention strategies with pre adolescent girls before they develop negative attitudes associated with the onset of puberty concerning their weight and shape may prove to be an effective strategy.

A preliminary investigation to explore the effectiveness of a health promotion education series will involve early adolescent figure skaters from the Thunder Bay area ranging in age from 10 to 14 years. The educational component will challenge the participants to create a model of healthy living while attempting to increase their knowledge base encompassing the topics of nutrition, regular physical activity, a healthy body image, self-esteem, and diet attitudes; in hopes that it may lead to an increased awareness of a healthy lifestyle. It is expected that the educational component will create a sense of fun, interaction, and trust, while increasing knowledge on the above health related topics.

Review of Literature

There has been an increased interest in the incidence and prevention of eating disorders among athletes during the past two decades (Anshel, 2002; Davis, 1992; Di Gioacchino Debate, Wethington, & Sargent, 2002; Petrie, 1993; Rosen & Hough, 1988; Taylor and Ste-Marie, 2001; Thomas, Keel, & Heatherton, 2005 ; Weight & Noakes, 1987; Hausenblas & McNally, 2003; Sanford-Martens et al., 2005; Wilkans & Boland, 1999). Generally speaking, athletes can optimize their performance in sport through extensive training and through paying close attention to the foods they eat. However, for some athletes this interest develops into an unhealthy obsession with food and body image (Taylor & Ste-Marie, 2001).

Eating Disorders Defined

Eating disorders have grown to epidemic proportions in western culture; however, they are by no means a new phenomenon. In fact, Dr. Richard Morton cited the first incidence of anorexia nervosa in 1689. One of his female patients, whom he described as “a skeleton only clad with skin,” was apparently suffering from what modern-day psychology calls anorexia nervosa (Murray, 2003, p. 276).

Disordered eating may be defined on a continuum from eating disorders (e.g., anorexia nervosa and bulimia nervosa) to preoccupations with weight and restrictive eating (Anshel, 2004). However, there are several differences between disordered eating and eating disorders. Disordered eating is more of a habitual reaction to life situations whereas an eating disorder is a mental illness (Barlow &

Durand, 2002). While weight preoccupation may lead to transient weight changes and nutritional problems, major complications are very rare. Eating disorders, by contrast, often lead to serious medical problems, with a mortality rate of 2 to 10% (Anshel, 2004).

The most common clinically defined eating disorders are anorexia nervosa and bulimia nervosa. Individuals suffering from anorexia have a constant desire to eat, but choose not to consume food due to the fear of becoming overweight (Taylor & Ste-Marie, 2001). In anorexia, the person eats nothing beyond minimal amounts of food, so body weight sometimes drops to a life-threatening low (Barlow & Durand, 2002). The current criteria for anorexia, as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) include; a refusal to maintain body weight at or above a minimal normal weight for age and height (weight loss leading to maintenance of body less than 85% of that expected or failure to make expected weight gain during a period of growth, leading to body weight less than 85% of that expected); an intense fear of gaining weight or becoming fat, even though he/she is underweight, a disturbance in the way one's body weight is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight; in postmenarcheal females, absence of at least three consecutive menstrual cycles (American Psychiatric Association, 2002).

There are two subtypes of anorexia. The individual suffering from the first type attempts to lose weight by reducing the intake of calories, exercising excessively following food intake, and frequent fasting. The individual with the second type also restricts food intake but, usually as a result of the starvation,

participates in periods of binge eating and purging. The purging may involve self-induced vomiting or the abuse of laxatives, diuretics, or enemas. Purging is sometimes used after only small amounts of food are eaten (Herrin & Matsumoto, 2002).

Bulimia is a form of anorexia which involves binge eating and purging by vomiting or by consuming large doses of laxatives or diuretics (Taylor & Ste-Marie, 2001). The current criteria for bulimia as defined in the DSM-IV include; recurrent episodes of binge eating; recurrent inappropriate compensatory behaviour to prevent weight gain, such as self-induced vomiting, misuse of laxatives, diuretics, or other medications, enemas, fasting, or excessive exercise; occurrence of these behaviours, on average, of at least twice a week for three months; self-evaluation is strongly influenced by body shape and weight; and the disturbance does not occur exclusively during episodes of anorexia (American Psychiatric Association, 1994, p.549).

There are two subtypes of bulimia; the purging type and the nonpurging type. The purging type uses self-induced vomiting or the abuse of laxatives or diuretics to control weight gain, and the nonpurging type uses fasting and excessive exercise to compensate for binge eating (Herrin & Matsumoto, 2002). Bulimia is more common than anorexia, but there is a great deal of overlap. Many individuals with bulimia have a history of anorexia; that is they once used fasting to reduce their body weight (Barlow & Durand, 2002). The distinguishing factors between anorexia and bulimia are the presence of significant weight loss and the absence of menstrual cycles as in the criteria for anorexia. In the event

that a patient meets the conditions for both anorexia and bulimia, the diagnosis for anorexia takes priority (American Psychiatric Association, 1994).

Other eating disorders do exist but may not be categorized as life threatening and therefore may not be clinically defined (DiBartolo & Shaffer, 2002). Longitudinal studies of people with anorexia nervosa have found that up to 20% of the patients die as a result of their disorder; as many as half the deaths are suicides (Barlow & Durand, 2002). The chief characteristic of these related disorders is an overwhelming, all-encompassing drive to be thin.

Females at Risk

During the past decade, female athletes have been identified as a population particularly at risk for developing eating disorders. Today, it is estimated that approximately 8 million girls and women in the United States alone are affected with either anorexia or bulimia and an incidence of 90% to 95% of anorexic and bulimic patients are female (Wilson & Blackhurst, 1999). Men and boys with eating disorders have been the subject of occasional reports (Woodside et al., 2001). In Canada it is estimated that 3% of women will be affected by eating disorders in their lifetime. In Canadian general hospitals, 93% of individuals hospitalized for eating disorders are women (Public Health Agency of Canada, 2007). Twenty years ago it was thought for every 10 to 15 women with anorexia or bulimia, there was one male. Today it is estimated that for every four females with anorexia there is one male, and for every 8 to 11 females with bulimia, there is 1 male (Woodside et al., 2001). It is evident that males account

for 5% to 10% of the eating disordered patients; however, females clearly outnumber men in relation to pathogenic eating (Murray, 2003).

Although research has consistently found gender differences in eating disorder symptomatology, differences among females is less clear. A problem with the existing research on disordered eating is that much of it has been conducted in samples of predominantly white females, with little focus on ethnic differences. However, women from different ethnic/racial backgrounds may vary in the extent to which they are dissatisfied with their bodies since body image depends largely on cultural and social group context (Crago & Shisslak, 2003). Although investigation in this area has been limited, research has received increased attention in recent years. Grabe and Hyde (2006) aimed to test the prevailing view in popular culture and the psychological literature that Caucasian women have greater body dissatisfaction than women of colour. They studied body dissatisfaction among Asian American, African American, Hispanic, and Caucasian women and found that Caucasian women were more dissatisfied, but the difference was small; therefore directly challenging the belief that there are large differences in body dissatisfaction between Caucasian and non-Caucasian women. Similarly, Shaw et al. (2004) tested whether there were ethnic differences in eating disorder symptoms and risk factors for eating pathology and whether the relations between risk factors and eating pathology differed across ethnic groups, with data from adolescent and adult females. Their findings provided little support for ethnic differences in eating disturbances and suggested that ethnic minority groups have reached parity with Caucasians in this domain.

Adolescents at Risk

An overwhelming majority of cases of disordered eating has been noted to occur in adolescence and is therefore thought to be strongly related to development (Anshel, 2002; Barlow & Durand, 2002; Monsma & Malina, 2003). Adolescence is the transition from childhood to adulthood, a period of rapid biological, emotional, and cognitive change. It is the magnitude and complexity of these changes that place the adolescent at risk for engaging in health risk behaviours (Ryan-Wenger, 2003). Herrin and Matsumoto (2002) reported that 55% of girls and 35% of boys want to be thinner than they are. They also noted that 70% of adolescents are dissatisfied with their bodies and want to lose weight and among preadolescents, 60% of all girls and 25% of all boys report having dieted recently. Moreover, in a recent study, 27% of Ontario girls 12 to 18 years of age were reported to be engaged in severely problematic food and weight behaviour (Jones, Bennett, Olmsted, Lawson, & Rodin, 2001). Many children and adolescents find themselves developing severe body image problems as a result of early yo-yo dieting habits and other disordered eating habits, thus making them more susceptible to the onset of an eating disorder (Herrin & Matsumoto, 2002).

Research investigating the prevalence of disordered eating among adolescents has included a variety of age ranges. Monsma and Malina (2003) studied adolescent female pair and dance skaters between the ages of 16 to 22; Thomas, Keel, and Heatherton (2005) examined adolescent female ballet students 13 to 18 years of age; and Anshel's (2002) final sample consisted of adolescent female dancers ranging in age from 15.3 to 17.6 years. The

chronological threshold between adolescence and adulthood varies from province to province and even between jurisdictions within a province. The Canadian Paediatric Society's health committee has characterized the beginning of adolescence with the onset of physiologically normal puberty, and the end when an adult identity and behaviour are accepted. This period of development corresponds roughly to the period between the ages of 10 and 19 years, which is consistent with the World Health Organization's definition of adolescence (Sacks, 2003). Rather than attempting to assign an exact age range in which one is considered an adolescent, Feldman (2000) very eloquently defined adolescence as the developmental stage that lies between childhood and adulthood. It begins and ends imprecisely, starting just before the teenage years and ending just after them. Adolescence is a time of considerable physical and psychological growth and change.

Psychological Symptomatology of Eating Disorders

Although each individual suffering from an eating disorder is unique, there are certain characteristics that are common among most individuals suffering from anorexia or bulimia. One of the most significant features of a person suffering from anorexia or bulimia is his/her preoccupation with food, body size, and body shape (Rogers & Petrie, 1996). Many anorexics and bulimics exhibit varying degrees of perfectionism regarding body image, romantic and other interpersonal relationships, and grades (Bulik et al., 2003; Flett & Hewitt, 2005; Hopkinson & Lock, 2001). In addition to perfectionism, other factors identified as contributing to eating disorders are a distorted body image (Schwitzer,

Rodriguez, Thomas, Salimi, 2001), low shape and weight based self-esteem (Geller et al., 1998), and a diminished sense of personal control and confidence in his/her own abilities and talents (Striegel-Moore, Silberstein, & Rodin, 1993). According to Streigel-Moore and Cachelin (2001) women with low self-esteem are more vulnerable to internalizing society's thin-ideal image and generalizing their negative feelings about themselves to their bodies; thus making them more susceptible to developing anorexia or bulimia. Sanftner and Crowther (1996) found that shame-proneness (feeling like a bad person for having transgressed), but not guilt-proneness (tension and regret for having done something wrong), is associated with eating disorder symptomatology. With respect to binge eating, Sanftner and Crowther (1996) found that women who binge reported significantly greater fluctuations in state self-esteem, negative affect, shame and guilt than women who do not binge. Maxmen and Ward (1995) discovered that anorexic patients have an intense fear of being out of control and, as a result, compensate for this by restricting his/her food intake, thus creating an illusion of control. Bulimics, on the other hand, tend to exhibit higher levels of impulsivity. Furthermore bulimic patients overtly express concerns related to feeling out of control and compensate for this by virtue of the binge-purge cycle. Other common psychological characteristics of eating disorder patients include; a fragile sense of self, feelings of inadequacy, a need to be bolstered by others, and self-doubt expressed as sexual intimacy questions (Salzman, 1997; Waller & Osman, 1998). In 2004, Kaye, Bulik, Thornton, Barbarich, and Masters, found the prevalence of anxiety disorders in general and obsessive-compulsive disorder in particular to be much higher in people with anorexia and bulimia than in a non-

clinical group of women in the community. They also discovered that the anxiety disorders commonly had their onset in childhood before the onset of an eating disorder supporting the possibility that a biological vulnerability factor for developing anorexia or bulimia could be present. People suffering from disordered eating have also been noted to be extremely concerned about how they appear to others. Smolak and Levine (1996) discovered that the women with eating disorders in their study often perceived themselves as inadequate and considered themselves to be frauds. In this sense it was evident that these women felt like impostors in their social groups and experienced heightened levels of social anxiety. Williamson, Kelley, Davis, Ruggiero, and Blouin (1985) found Bulimics to be more depressed, more anxious, and generally more neurotic and impulsive than their matched controls. Eating disordered patients have also been known to possess a drive for thinness, interoceptive awareness (impairment in either recognizing or identifying hunger and satiety), interpersonal distrust (feelings of alienation and reluctance to form close relationships, maturity fears, a lack of control over his/her behaviour through self-restraint, and a likelihood of impulsive acts such as substance abuse and self-destructiveness (American Psychiatric Association, 1994).

Psychological Parallels with Substance Abuse

Psychological symptomatology of disordered eating strongly parallels that of substance abuse disorders. Depression, anxiety, obsessive-compulsiveness, interpersonal sensitivity, lack of confidence in the ability to resist drugs in different situations, and social difficulties (severe family, employment, and legal

problems) have been linked to cocaine-dependent men in a study conducted by Kasarabada, Anglin, Khalsa-Denison, and Parades (1999). Herbeck, Yih-Ing, Lu, Stark, and Paredes (2006) have also related depression to drug use, specifically among cocaine-dependent patients. Risk for developing alcohol dependence was substantially increased by a prior episode of major depression in Kuo, Gardner, Kendler, and Prescott (2006). Like disordered eating cognitions, perfectionism and self-destruction have been positively correlated with cocaine users (McCown & Carlson, 2004). Reyno, Stewart, Brown, Horwath, and Wiens (2006) discovered that women in treatment for alcohol-use problems reporting high levels of anxiety sensitivity were more likely than others to drink in negative and temptation contexts. Similar to the preoccupation with eating, food, body shape, and body size experienced by eating disordered patients (Rogers & Petrie, 1996), women with alcohol dependency problems experienced preoccupation with past drinking behaviours (e.g., failed attempts to restrain drinking) which may lead to psychological distress that promotes alcohol use in temptation context (Collins, 1993). Comparable to the eating disordered patients' diminished personal control, Wills, Walker, Mendoza, and AINETTE (2006) found that poor behavioural control had a direct effect on deviant peer affiliations, and poor emotional control had a direct effect on coping motives for substance abuse among middle and high school students.

Socio-cultural Pressure to be Thin

Socio-cultural pressure to be thin is central to the high prevalence of body dissatisfaction and disordered eating observed among women. Stice, Schupak-

Neuberg, Shaw, and Stein (1994) proposed that the relationship between media exposure and eating pathology is mediated by the internalization of the “thin-ideal”. After repeated exposure, women endorsed and valued this ideal. Those who have internalized the “thin-ideal” associate it with positive attributes such as happiness, desirability, and status (Tiggemann, 2002). This internalization of the “thin ideal” is closely related to cognitive structuring and representation of information related to body size and weight (Vitousek, & Hollon, 1990). Today’s society is constantly bombarded with ways to slim down, look better and shape-up in order to achieve what society has deemed the “ideal” body image.

Numerous magazines and movies with pictures of ultra-thin models on the cover continually put pressure on the members of our culture to achieve this “thin-ideal” no matter what the cost (Murray, 2003). A study by Paxton, Schutz, Wertheim, and Muir (1999) found that friendship cliques among adolescent girls contributed significantly to the formation of individual body image concerns and eating behaviours. Researchers have also linked family influences to eating disorders. Attie and Brooks-Gunn (1995) and Humphrey (1989) have found that the families of anorexics are usually successful, hard-driving, concerned about external goals, and eager to maintain harmony. These families will often deny any form of family conflict and point the blame at other people for their problems in order to maintain the illusion of a picture perfect family.

Other Contributing Factors

Like most psychological disorders, eating disorders may run in families. Although completed studies are only preliminary, they illustrate that relatives of

patients with eating disorders are four to five times more likely than the general population to develop eating disorders themselves, with the risk for female relatives of patients with anorexia a bit higher (Hudson, Pope, Jonas, & Yurgelun-Todd, 1983). Investigators have presently come to a consensus that some neuro-biological abnormalities do exist in people with eating disorders, but they may be a result of semi-starvation or a binge-purge cycle rather than a cause, although they may well contribute to the maintenance of the disorder once it is established (Barlow & Durand, 2002). Data from Kendler, Kessler, Walters, & Eaves (1995) suggests that a person might inherit a tendency to be emotionally responsive to stressful life events and as a result may be more apt to starve themselves or eat impulsively as a reaction to the stress. This type of vulnerability might then interact with social and psychological factors to produce an eating disorder.

Athletes and Disordered Eating

Although theorists have provided explanations as to why athletes may be more at-risk for developing eating disorders than non-athletes, empirical research examining the differences between athletes and non-athletes has been equivocal. Some research indicates that participation in athletics is associated with an increased incidence of eating disorders and/or subclinical eating problems (Anshel, 2002; Davis, 1992; Di Gioacchino Debate, Wethington, & Sargent, 2002; Petrie, 1993; Rosen & Hough, 1988; Taylor and Ste-Marie, 2001; Thomas, Keel, & Heatherton, 2005 ; Weight & Noakes, 1987), while other research suggests that athletes may be buffered from such eating disorder

symptomatology (Hausenblas & McNally, 2003; Sanford-Martens et al., 2005; Wilkins & Boland, 1999). Thus, it is unclear whether athletes represent a subgroup that is truly “at-risk” for experiencing an eating disorder.

Most of the studies that have reported athletes to be buffered from disordered eating, however, involve a comparison of athletes involved in sports of a non-aesthetic nature (sports which are not characterized by beauty and elegance) and/or non-athletes (Hausenblas & McNally, 2003; Sanford-Martens et al., 2005; Wilkins & Boland, 1999). In addition, a number of studies have reported that female athletes in aesthetic sports show higher incidences of eating disorder symptomatology than female athletes in other sport groups (Anshel, 2002; Davis 1992; Petrie, 1993; Rosen & Hough, 1988; Taylor and Ste-Marie, 2001; Thomas et al., 2005).

While athletes in some aesthetic sports are well studied in terms of the prevalence of eating disorder symptoms, such as gymnasts (Davis 1992; Petrie, 1993) and dancers (Anshel, 2002; Brooks-Gunn, Burrow, & Warren, 1988; Brooks-Gunn, Warren, & Hamilton, 1987; Thomas et al., 2005), others are not. A noted understudied population is that of figure skaters, despite other researchers having suggested that female figure skaters could be an at-risk population for eating disorders (Monsma & Malina, 2003; Taylor & Ste. Marie, 2001).

Research on skaters to date suggests a combination of environmental and individual factors may be involved in the etiology of eating disorders in this population. Casual comments from sport officials, coaches and/or peers within the competitive and/or practice environments can lead to negative self-perceptions associated with eating disorders. Pressure to maintain or attain low

body weight, and lack of improvement in athletic performance related to bodily changes of puberty are documented sources of stress among figure skaters (Gould, Jackson, & Finch, 1993). Skaters are often concerned about body weight and appearance and have a lower than recommended daily caloric (energy) intake (Rucinski, 1989; Zeigler et al., 1998). Moreover, figure skaters have been found to employ a high number of oral control behaviours to lose weight, such as vomiting or laxative abuse (Brooks-Gunn et al., 1988).

Female Athlete Triad

The female athlete triad is a syndrome that can affect female athletes in any sport. It is a combination of three interrelated conditions: disordered eating, amenorrhea, and osteoporosis. With an increase in female participation in sports, the incidence of triad disorders particular to women has also increased although the prevalence is unknown.

Though first described at the 40th Annual American College of Sport Medicine Meeting in 1993, observations about bone mineral densities, stress fractures, eating disorders, and female athletics have been described for decades before the syndrome was named. Often difficult to recognize, the female athlete triad can have a significant impact on morbidity and even mortality in a relatively young segment of the population (Hobart & Smucker, 2000).

Eating Disorder Inventory

The most common measure of eating disorder symptoms, which has also been used frequently in the athlete and eating disorder literature, is the Eating Disorder Inventory. The EDI series are standardized measures that are useful in

case conceptualization and treatment planning for individuals with a confirmed or suspected eating disorder. The EDI is also a valuable research tool for assessing areas of psychopathology, identifying meaningful patient subgroups, and assessing treatment outcome (Garner, 2004).

The EDI has been used to determine eating disorder prevalence and eating disorder symptomatology in track and field athletes and non-athletes (Hausenblas et al., 2004), ballet dancers and non-dancers (Anshel, 2002; Brooks-Gunn et al., 1988; Thomas et al., 2005), exercisers and non exercisers (Matheson & Crawford-Wright, 2002), collegiate athletes and non-athletes (Reinking & Alexander, 2005), gymnasts (Davis, 1992; Petrie, 1993; Petrie & Stoever, 1993), and figure skaters (Monsma & Malina, 2002; Taylor & Ste. Marie, 2001).

Studies also suggest that there are optimal times in which to collect data depending on the sport in question. Hausenblas and Carron (1999) have implied that the best time to collect data for figure skaters is during January to March, the peak figure skating training season.

Prevention

Evidence suggests that an effective way to deal with eating disorders may lie within preventive approaches, especially when it has been confirmed that many cases of eating disorders are not reported and most are resistant to treatment (Barlow & Durand, 2002). Killen (1996) concluded that the most cost-effective preventive approach would be to carefully screen adolescent girls who are at high risk for developing eating disorders and to apply an educational

program concerning the prevention of eating disorders selectively to them. Killen (1996) evaluated a prevention program applied to 967 sixth and seventh-grade girls from 11 to 13 years of age. Half the girls participated in the educational program and the other half did not. The program emphasized the normality of female weight gain after puberty and that excessive caloric restriction could actually cause increased gain. Interestingly enough the results revealed that the educational program had little effect on the treatment group as a whole compared to the control group. But for those girls at high risk for developing eating disorders, the program significantly reduced weight concerns. Killen (1996) concluded from this preliminary study that the most effective approach would be to screen 11 and 12 year old girls carefully who are at high risk for developing eating disorders and to apply the program selectively to them.

Winzelberg et al. (2000) developed the "student bodies program"; a structured, interactive health education program designed to improve body image satisfaction delivered through the Internet. Winzelberg et al. (2000) studied a group of university women who did not have eating disorders at the time of the study, but were concerned about their body image and the possibility of being overweight. The interactive software featured text, audio, and video components, as well as online self-monitoring journals and behaviour change assignments. The results indicated that this program was markedly successful, because weight preoccupied participants compared to controls, reported a significant improvement in body image and a decrease in drive for thinness. Stice et al. (2006) studied the effectiveness of an eating disorder prevention program involving dissonance-inducing activities that reduce the thin-ideal internalization

and a prevention program promoting healthy weight management for adolescent girls with body dissatisfaction. Adolescent girls with body dissatisfaction (mean age = 17 years) were randomly assigned to the dissonance intervention, healthy weight intervention, expressive writing control intervention, or assessment-only control condition. The dissonance intervention consisted of three sessions in which the topics open for discussion were the thin ideal, the impact of messages about the thin ideal from family, peers, dating partners, and the media, self-esteem, and coping skills. The healthy weight intervention also included three sessions which discussed healthy body image, benefits of maintaining a healthy weight, and healthy eating. Participants in the expressive writing control intervention were told that research has found that body image concerns are linked to emotional issues and that expressive writing helps to resolve these issues. They were asked to write about an emotionally important topic. Participants in the assessment-only control condition received no intervention. At pre and post intervention, Stice et al. (2006) administered a series of existing questionnaires to measure differences in thin-ideal internalization, body dissatisfaction, dieting, and negative affect, as well as a semistructured investigator-based interview to measure changes in bulimic symptoms. They found that the dissonance-induced activity and healthy weight participants showed significantly greater reductions in eating disorder risk factors and bulimic symptoms than the control group. Although these effects faded over 6 month and 12 month follow-ups, dissonance and healthy weight participants showed significantly lower binge eating and obesity onset and reduced support service utilization, suggesting that both interventions had public health potential. Franko

et al. (2005) tested a Food, Mood, and Attitude (FMA) CD-ROM prevention program developed to decrease risk for eating disorders in college women. The FMA program consists of three hypothetical disordered eating role-playing scenarios, which elicited discussions on the topic of the thin idea, media influences, healthy eating and weight control, and possible treatment suggestions (via a multiple-choice format). By administering the Questionnaire for Eating Disorder Diagnoses (Q-EDD: Mintz et al., 1997) pre and post prevention program and a satisfaction survey following the prevention program, Franko et al. (2005) determined that participants in the FMA condition improved in all measures including; internalization of socio-cultural attitudes about thinness, and shape and weight concerns, indicating that the at-risk participants in the intervention group improved to a greater extent than did the low-risk participants. At follow-up, significantly fewer women in the FMA group reported overeating and excessive exercise relative to controls. Becker, Smith, and Ciao (2006) investigated the effectiveness of two interventions (cognitive dissonance and media advocacy) in reducing eating disorder risk factors under naturalistic conditions in sororities. The campus sororities chose to implement a semi-mandatory, two-session eating disorder prevention program to all new sorority members during sorority orientation. The cognitive dissonance intervention consisted of members individually writing the costs of pursuing the thin ideal and personal affirmation lists to increase self-esteem, and disordered eating role-playing activities. The media advocacy intervention consisted of members watching a video of the portrayal of women in advertisements followed by a discussion on techniques to resist media messages regarding the thin ideal and the costs of pursuing the thin

ideal. Becker et al. (2006) used a series of existing questionnaires to measure restraint, eating pathology, body dissatisfaction, and thin-ideal internalization at baseline and at post intervention. Both interventions resulted in eight-month reductions in restraint, eating pathology, thin-ideal internalization, and body dissatisfaction. Results further supported the utility of cognitive dissonance in reducing eating disorder risk factors and suggested that nondoctoral-level leaders can deliver the program. In view of the severity of eating disorders, preventing these disorders through widespread educational and intervention efforts would be clearly preferable than waiting until the disorders develop.

Most of the published studies on eating disorder prevention programs have been conducted with junior high and/or high school girls (Becker et al., 2006; Franko et al., 2005; Killen, 1996; Stice et al. 2006; Winzelberg et al., 2002). As noted earlier, adolescence has been identified as a vulnerable time for girls to develop disordered eating or eating disorders because of the normative challenges associated with that period of development (e.g., physical changes associated with puberty, increased desire for peer acceptance, onset of dating) (Attie & Brooks-Gunn, 1995; Smolak et al., 1996), as well as negative life events in general (McVey, Pepler, Davis, Flett, & Abdolell, 2002). Conducting prevention strategies with girls before they develop negative attitudes about their weight and shape might be a more effective strategy than waiting until girls reach junior high or high school. Brug and Oenema (2006) labelled children and early adolescents as a target group for health promotion strategies. They believe that if food preferences are influenced and healthful dietary habits are established at a young age it may help to promote a balanced diet and healthy living during the

entire life course. Smolak, Levine, and Schermer (1998) conducted a preliminary study to examine the effectiveness of a controlled prevention study with children as young as 9 and 10 years of age. The prevention educational curriculum in this study encouraged healthy eating, exercise, and body image, while discouraging calorie restrictive dieting, exercising for weight loss, and the development of body image dissatisfaction. The girls in this study were taught how to evaluate critically the unrealistic images of women portrayed in the media and about the genetic influences on body shape and the need to appreciate and accept individual differences on body shape and size. Furthermore, they were encouraged to adopt a nondieting approach to eating and exercise. Smolak et al. (1998) found that the curriculum helped to improve the students' knowledge about nutrition, effects of dieting, and causes of body fat. However, behaviour, including eating patterns, exercise patterns, weight reduction attempts, and teasing of overweight children was not changed through participation in that curriculum. An encouraging finding from this study was that the curriculum did affect the students' attitudes about overweight people in a positive way. A recent study illustrated that a self-esteem education program was successful in improving body image satisfaction and preventing dieting and weight loss methods among girls between the ages of 11 and 14 years following the program and after 12 months (O'Dea & Abraham, 2000). Other eating disorder prevention studies have found that helping adolescent girls to place less importance on physical appearance while emphasizing the importance of exploring personality traits and characteristics that are unique to the individual to serve as effective eating disorder prevention strategies (McVey et al., 2002). McVey & Davis (2002)

evaluated the effectiveness of a program designed to promote body image satisfaction and prevent eating problems in young adolescent girls over a one year period. A total of 263 girls in grade 6, one half of whom were in the control group, completed questionnaires that assessed body image satisfaction and eating problems prior to and one week following the prevention program, and six and twelve months later. The six session prevention program was developed around two principal components; media literacy about the dangers associated with the idealization of thinness and the promotion of life skills, including self-esteem enhancement strategies, stress management techniques, and peer relations skills. The findings revealed significant increases in body image satisfaction and decreases in eating problem scores over time for participants in both the prevention and control groups. The “©BodySense” initiative was created in 1999 after an Eastern Ontario needs assessment indicated that there was a gap in services available with regards to positive body image and disordered eating in the sports environment. The initiative included two comprehensive primary prevention school-based program sites in Toronto and Peel County and a secondary prevention site in Ottawa. “BodySense©” is the secondary prevention website that deals with settings and people who are already at risk of developing disordered eating. This provincially funded outreach initiative is dedicated to fostering positive body image in male and female athletes in order to proactively prevent disordered eating. “BodySense©” uses ten BodySense basics to promote positive body image and prevent disordered eating in sport. According to the “Bodysense©” initiative, “athletes should not be taught the signs

and symptoms of disordered eating as they may provide tools to experiment with, rather than discourage disordered eating (BodySense©, 1999).”

Though research to date has found prevention strategies to be an effective way to deal with today’s eating disorder epidemic, details with regard to the content of educational interventions in the existing literature are inconsistent. However, an increasingly popular trend seems to be emerging which involves the promotion of healthy body image, attitudes and values (BodySense©, 1999; O’Dea & Abraham, 2000), in comparison to the traditional approach of instructing students about the dangers associated with eating disorders (Becker et al., 2006; Franko et al. 2005, Killen et al., 1993; Killen, 1996; Shisslak, Crago, Renger, & Clark-Wagner, 1998; Stice et al. 2006; Winzelberg et al. 2000). Further investigation into effective preventive strategies would prove to be of much benefit for researchers, health professionals, and potential eating disordered patients.

Relevance of Research

The purpose of the present research is to develop a profile of eating disorder symptomatology among adolescent female figure skaters at the senior competitive level in areas of Southern and Northern Ontario in order to better understand the level of eating disorder risk experienced by figure skaters. It is expected that the findings of the current research will add strength to the theory that figure skaters are an at risk population for developing disordered eating while expanding society’s understanding of the eating disorder symptom onset in the figure skating environment.

Another purpose is to explore the effectiveness of a health promotion education series which will involve early adolescent figure skaters from the Thunder Bay area ranging in age from 10 to 14 years. The educational component will challenge the participants to create a model of healthy living while attempting to increase their knowledge base encompassing the topics of nutrition, regular physical activity, a healthy body image, self-esteem, and diet attitudes; in hopes that it may lead to an increased awareness of a healthy lifestyle. It is hypothesized that the educational component will create a sense of fun, interaction, and trust, while increasing knowledge on the above health related topics. It is the researcher's hope that the health promotion education series will help to further understand the effectiveness of such eating disorder prevention efforts while providing insight into the details of content of educational interventions.

Method

Participants

Profile

Twenty-five female adolescent figure skaters (M age = 17.08) at the senior competitive level were involved in determining the profile of eating disorder symptomatology. The figure skaters were recruited from the Minto Figure Skating (Ottawa) Club, the University of Ottawa Figure Skating Team, the Rideau Figure Skating Club (Ottawa), the Shamrock Figure Skating Club (Sudbury), the North Bay Figure Skating Club, the Lake Superior Figure Skating Club (Sault Ste.

Marie), the Wawa Figure Skating Club, and the Fort William Figure Skating Club (Thunder Bay).

Health Promotion Education

The educational component involved 6 early adolescent figure skaters ranging in age from 10 to 14 years at the junior/intermediate competitive level from the Fort William Figure Skating Club.

Instrumentation

The questionnaire package consisted of the Demographic questionnaire, the Eating Disorder Inventory-3 (EDI-3), and the Environmental Influences Questionnaire (EIQ) (see Appendix A for questionnaire package, not including EDI-3).

Demographic Questionnaire

The Demographic questionnaire was designed to assess the participants' age, race, socioeconomic status, and ethnicity.

Eating Disorder Inventory-3

The Eating Disorder Inventory-3 (EDI-3) is a revision of the most widely used self-report measure of psychological traits illustrated to be clinically relevant in individuals with eating disorders. The frequency of EDI citations has grown substantially since its original 1983 publication. The EDI-3 is a revision of the original version that has been used for more than 20 years (Garner, Olmsted, & Polivy, 1983). The original item set as well as items from the 1991 revision (Garner, 1991), have been accurately preserved so that clinicians and

researchers can continue to compare data collected previously with data from the revised EDI-3. The EDI-3 is intended primarily for use with older adolescent (ages 13 years and older) and adult females; however, the item set also has been used with younger adolescents (ages 11 to 12 years). The EDI-3 uses a 7-point Likert scale and consists of 91 items from the EDI-2, organized onto 12 primary scales. These consist of three eating disorder specific scales and nine general psychological scales that are highly relevant to, but not specific to, eating disorders. The EDI-3 yields six composites: one that is eating disorder specific (i.e., Eating Disorder Risk) and five that are general integrative psychological constructs (i.e., Ineffectiveness, Interpersonal Problems, Affective Problems, Overcontrol, General Psychological Maladjustment). The 12 primary scales in the EDI-3 which make up the six composites include; Drive for Thinness, Bulimia, Body Dissatisfaction, Low Self-Esteem, Personal Alienation, Interpersonal Insecurity, Interpersonal Alienation, Interoceptive Deficits, Emotional Dysregulation, Perfectionism, Asceticism, and Maturity Fears (Garner, 2004). The six EDI-3 composites are illustrated in Table 1, along with the EDI-3 scales that are used to form each composite.

The EDI-3 revision is based on a large sample of patients with eating disorders from a number of treatment facilities in the United States, Canada, Europe, and Australia. New norms have been created from a clinical sample from the United States and the nonclinical comparison samples have come from the United States and Europe. The EDI-3 is an independent and structured self-report symptom checklist. This easily administered, comprehensive tool provides data regarding the frequency of symptoms (i.e. binge eating, self-induced

vomiting, exercise patterns, use of laxatives, diet pills, and diuretics) as well as data regarding weight, weight history, and menstrual history. The EDI-3 is not intended to yield a diagnosis of an eating disorder. Rather, it is aimed at the measurement of psychological traits or symptom clusters relevant to the development and maintenance of eating disorders (Garner, 2004).

The EDI-3 has high internal and test-retest reliability and its subscales show appropriate content, convergent, and discriminant validity (Garner, 2004).

Table 1. EDI-3 Composites and Scales

Composite	Scale
Eating Disorder Risk Composite (EDRC)	Drive for Thinness (DT) Bulimia (BU) Body Dissatisfaction (BD)
Ineffectiveness Composite (IC)	Low Self-Esteem (LSE) Personal Alienation (PA)
Interpersonal Problems Composite (IPC)	Interpersonal Insecurity (II) Interpersonal Alienation (IA)
Overcontrol Composite (OC)	Perfectionism (P) Asceticism (ASC)
General Psychological Maladjustment Composite (GPMC)	Low Self-Esteem (LSE) Personal Alienation (PA) Interpersonal Insecurity (II) Interpersonal Alienation (IA) Interoceptive Dysregulation (ID) Perfectionism (P) Asceticism (ASC) Maturity Fears (MF)

Note. Adapted from "Eating Disorder Inventory-3 Professional Manual," by D.M Garner, 2004, p. 2. Copyright 2004 by the Psychological Assessment Resources.

Environmental Influences Questionnaire

The Environmental Influences Questionnaire (EIQ) was designed for this study to uncover some of the most influential factors that predispose athletes to develop eating disorder symptomatology in the aesthetic sport of figure skating. Examples of such factors are the potential pressures exerted on the figure skaters by her family members, coaches, peers, judges, and sport politics. The EIQ follows a 7 point Likert scale, self-report format that ranges from disagree very much to agree very much.

Procedure

Profile

The Presidents of the Kitchener Waterloo Skating Club, the Nepean Figure Skating Club, the Rideau Figure Skating Club, the Sudbury Figure Skating Club, the Lake Superior Figure Skating Club, the Thunder Bay Figure Skating Club, and the Fort William Figure Skating Club were contacted by phone to request permission for participation in this study. A letter of request was also made available via e-mail to the presidents of the figure skating clubs in order to provide them with an outline of the study. The letter of request also contained information regarding the educational component for the Fort William Figure Skating Club.

The questionnaire packages were administered in person to adolescent figure skaters at the senior competitive level. Once permission was granted contact was made with the president to arrange a time to administer the questionnaires prior to practice. The questionnaire package contained a cover letter, a participation consent form, a parental consent form (for participants under the age of 18), the Demographic questionnaire, the EDI-3, the EIQ, and an envelope for each participant. In addition to the information provided in the participation consent form, skaters were instructed verbally by the researcher/research assistant to complete the questionnaires in an open and honest fashion, without conferring with any other individual. They were also informed that if at any time they wished to stop, they could do so without any reprisal from the researcher. The participants were asked to place completed

questionnaires in a sealed envelope and hand it into the researcher/research assistant to ensure confidentiality.

Health Promotion Education

Six early adolescent figure skaters ranging in age from 10 to 14 years at the junior/intermediate competitive level in the community of Thunder Bay participated in the education component. The material was presented in four 2 hour sessions, which were designed to elicit group interaction in addition to instruction and discussion on the topics of healthy eating, regular physical activity, genetic influences on body shape and size, positive body image, self-esteem, critical thinking, coping strategies, media messages, and the thin ideal (see Appendix B for lesson plans). The educational sessions took place on Saturday mornings from 10:00 am to 12:00 pm during the month of April at the convenience of the participants. The objective was to develop a model of healthy living while increasing the participants' knowledge base encompassing the topics of nutrition, regular physical activity, a healthy body image, self-esteem, and diet attitudes; in hopes that it may lead to a healthy lifestyle. The model of healthy living was based entirely on the participants' ideas of what constitutes healthy living. The effectiveness of the educational component was determined using a series of qualitative questions in which the participants were asked to answer prior to and upon completion of the educational component. The participants were also given a feedback questionnaire at the completion of the educational sessions.

Data Analysis

Profile

Demographics

After the data were collected, frequency and descriptive analyses were used to determine trends in the demographic variables for the total sample.

EDI-3: Computation of Scale Scores

Descriptive analyses were used to determine the mean raw scores for the each of the 12 subscales of the EDI-3. The mean raw scores were then converted to T scores for the Eating Disorder Risk scales and the Psychological scales. The raw scores were then converted to percentile conversions for the Eating Disorder Risk scales and the Psychological scales respectively. Using this data the figure skaters were classified into an elevated, typical, or low clinical range for each scale.

EDI-3: Computation of Composite Scores

To compute the composite scores, the sum of the T scores for the eating disorder risk scales and the psychological scales was used to arrive at the Eating Disorder Risk Composite (EDRC) and the psychological composites. After the sum of T scores was computed for each composite it was converted into a T score and a percentile, at which time the appropriate clinical diagnostic group (elevated, typical, low) could be located.

EIQ analysis

For the analysis of the EIQ, parametric procedures were used after the data was rank ordered.

Health Promotion Education

The effectiveness of the educational component was measured using qualitative analysis (see Appendix C for qualitative questions).

Results

Profile

Demographics

The sample consisted of 25 female figure skaters ranging in age from 13 to 24 ($M = 17.08$). The majority of the figure skating sample was Caucasian ($n=20$) while 1 of the figure skaters was African American and the remaining 4 did not indicate ethnicity. English was the first language for the majority of the figure skaters ($n=22$) while French was the first language for 2 of the figure skaters. The majority of the figure skaters were from Sault Ste. Marie ($n=6$) and Ottawa ($n=7$) while the remainder of the figure skaters were from Thunder Bay, Sudbury, Wawa, Blind River, and North Bay. Of the 40 questionnaire packages that were distributed to figure skaters, 25 were willing to participate in the completion of the questionnaire package.

EDI-3 Profile Interpretations

The EDI-3 interpretive guidelines are presented using raw scores, T scores, and percentiles to illustrate descriptive scale interpretation, which are provided for each of the EDI-3 scales and composites. Clinical ranges (i.e., Elevated Clinical, Typical Clinical, Low Clinical) are provided using a United States Adult Combined Clinical sample as a reference group. This group is composed of patients ranging in age from 13 to 17 years from the United States Adult Clinical sample with diagnostic groups combined (Anorexia Nervosa-Restricting type [AN-R]; Anorexia Nervosa-Binge Eating/Purging type [AN-B/P];

Bulimia Nervosa [BN], Eating Disorders Not Otherwise Specified [EDNOS]). The clinical ranges are based on percentile ranges from the United States Adult Combined Clinical sample as follows:

Elevated Clinical = 67th to 99th percentile

Typical Clinical = 25th to 66th Percentile

Low Clinical = 1st to 24th Percentile

For some scales, the raw scores used to define the clinical ranges may deviate slightly from the percentile ranges in order to address ceiling or floor effects that would result in a very narrow raw score bandwidth defining a particular clinical range (Garner, 2004).

The EDI-3 is also designed to assess eating disorder risk based on dieting concerns, body weight, height, weight history, menstrual history, and behavioural symptoms indicative of eating disorders (Garner, 2004). For the purposes of this study, only the behavioural symptoms indicative of eating disorders will be discussed.

Eating Disorder Risk Composite (EDRC)

The EDRC is composed of the summed T scores on the DT, B, and BD scales. It provides a global measure of eating and weight concerns with equal weighting for each of the contributing scales. Table 2 shows a summed T score of 189 which falls within the 97th percentile, indicating that the figure skating sample is in the Elevated Clinical Range. A score in this range suggests that the figure skaters in this sample have extreme eating and weight concerns that consist of fear of weight gain, desire to be thinner, binge eating tendencies, and

body dissatisfaction. An EDRC score in this range is uncommon among those with clinical eating disorders and an estimate of this level of eating and weight in the nonclinical samples suggests it is rare, occurring in about 5% of the adult sample and 1% of the adolescent sample. Thus a score in this range should raise serious concerns about the presence of a clinical eating disorder or serious eating problems indicative of eating disorder symptomatology. The female figure skaters in this sample from a nonclinical setting should be evaluated by a specialist familiar with eating disorders. The EDRC is positively correlated with body weight; therefore, a higher score could be expected in someone who is at the heavier end of the weight spectrum. A score of this magnitude may be more portentous when the individual is at a normal or low body weight (Garner, 2004).

Table 2. EDI-3 Psychological Composites and Scales

	Sum of T	M raw scores	T score	%ile	Clinical Range
Eating Disorder Risk Composite (EDRC)	189		66	97	Elevated
Drive for thinness (DT)		13.64	45	32	Low
Bulimia (BU)		22.68	100	99	Elevated
Body Dissatisfaction (BD)		17.16	44	31	Low
Ineffectiveness Composite (IC)	111		55	68	Elevated
Low Self-Esteem (LSE)		15.62	54	65	Typical
Personal Alienation (PA)		18.28	57	74	Elevated
Interpersonal Problems Composite (IPC)	120		61	85	Elevated
Interpersonal Insecurity (II)		16.92	59	80	Elevated
Interpersonal Alienation (IA)		16.4	61	84	Elevated
Affective Problems Composite (APC)	133		68	96	Elevated
Interoceptive Deficits (ID)		23.16	57	75	Elevated
Emotional Dysregulation (ED)		23.42	76	99	Elevated
Overcontrol Composite (OC)	99		49	45	Typical
Perfectionism (P)		8.64	42	23	Low
Asceticism (ASC)		17.46	57	77	Elevated
Maturity Fears (MF)		17.58	60	84	Elevated

Drive for Thinness (DT) Scale. The “drive for thinness” construct has been described as one of the central features associated with the onset and maintenance of eating disorder symptomatology in clinical samples. The seven items on this scale assess a preoccupation with restrictive dieting, concern about dieting, and fears associated with weight gain (Garner, 2004). Table 2 lists the mean raw scores, T scores and percentile ranges corresponding to the clinical qualitative ranges for the DT scale. A mean raw score of 13.64 is within the 32nd percentile and classifies the figure skating sample in the Low Clinical Range. This occurs in a significant minority of patients with anorexia nervosa-restrictive type (AN-R) (38%), but only 16% of those diagnosed with bulimia nervosa (BN).

A score in this range suggests that the figure skaters in this sample do not have significant problems with eating and weight concerns; which include fear of gaining weight and a desire to be thinner relative to other patients diagnosed with clinical eating disorders. A DT scale raw score in this range is quite common among the nonclinical respondents (90% of adolescents and 79% of adults). The DT scale is positively correlated with body weight; therefore, a lower score could be expected for someone who is at the thinner end of the weight spectrum. Younger respondents from the nonclinical samples have a lower body weight; thus, it may help to explain the greater percentage of respondents classified in the Low Clinical Range (Garner, 2004).

Bulimia (BU) Scale. The BU scale assesses the tendency to think about, and engage in, bouts of uncontrollable overeating (i.e., binge eating). The eight items on this scale assess the self-reported presence of thoughts and behaviours that are consistent with binge eating, including eating large amounts of food in secrecy and in response to being emotionally upset. One item assesses the thought of vomiting to lose weight. Research has indicated that binge eating is common in individuals who do not meet all the criteria to qualify for a formal diagnosis of an eating disorder; however, in most cases, severe binge eating is associated with psychological distress (Garner, 2004). Table 2 illustrates a mean raw score of 22.68 which falls within the 99th percentile, indicating that the figure skating sample is classified in the Elevated Clinical Range. Respondents that fall in this range report engaging very frequently in thoughts and behaviour consistent with binge eating. This behaviour is associated with secrecy,

emotional distress, and thoughts of vomiting to lose weight. Sixty-one percent of adults and 42% of adolescents with a diagnosis of bulimia nervosa (BN), as well as a minority of adults with a diagnosis of anorexia nervosa-binge eating/purging type (AN-B/P) (24%) score greater than or equal to 19 on the BU scale.

However, a score greater than or equal to 19 is rarely seen in patients diagnosed with anorexia nervosa-restrictive type and most likely reflects an incorrect diagnosis. A BU raw score in this range is also extremely rare among the nonclinical samples (1% of adolescents and 2% of adults). Therefore a score in this range indicates a high level of psychopathology and most likely reflects the presence of a clinical eating disorder. Those scoring in this range should be evaluated by a specialist familiar with eating disorders (Garner, 2004).

Body Dissatisfaction (BD) Scale. The BD scale consists of 10 items that assess discontentment with overall shape and with the size of particular regions of the body of specific concern to those with eating disorders (i.e., stomach, hips, thighs, buttocks). Table 2 shows a mean raw score of 17.16 which falls within the 31st percentile, indicating that the figure skaters in this sample are in the Low Clinical Range. A score in this range occurred in about 44% of the adult patients with anorexia nervosa-restrictive type (AN-R) from the clinical standardization sample, suggesting that a significant proportion of patients with anorexia nervosa (AN) do not show marked dissatisfaction with body weight and shape. Thirty percent of adolescent clinical patients scored in this range. However, a BD scale raw score in this range is less common for the other diagnostic groups (18% to 25%), suggesting that low level of body dissatisfaction are uncommon among

most patients with eating disorders except those with anorexia nervosa-restrictive type (AN-R). A low BD scale raw score could also reflect denial of the current clinical state or a response bias on the part of the patient. A BD scale raw score of less than or equal to 21 was common among adolescents in the nonclinical samples (70%), but it occurred in only about half of the adults (54%). The BD scale is positively correlated with body weight; therefore, a lower score could be expected for someone who is at the thinner end of the weight spectrum (Garner, 2004).

Ineffectiveness Composite (IC)

The IC consists of the summed T scores for the LSE and PA scales. These scales are highly correlated ($\geq .80$) for both clinical and nonclinical samples and their combination generally improves reliability. Table 2, shows a qualitative range within the 68th percentile which indicates that the figure skaters exhibit an extreme deficit in self-concept that involves extreme and pervasive feelings of emotional emptiness and aloneness and a poor sense of self-understanding. A T score in this range is relatively uncommon among those diagnosed with eating disorders, and a patient scoring in this range should be interviewed to rule out severe depression and possible suicidal thinking. An IC score in this range is rare among adolescent and adult respondents from the nonclinical samples (2% to 3%, respectively) (Garner, 2004).

Low Self-Esteem (LSE) Scale. The LSE scale assesses negative self-evaluation with questions tapping into feelings of insecurity, inadequacy, ineffectiveness, a

lack of self worth, and the self-perception of being unable to achieve personal standards. Low self-esteem plays a major role in the development and maintenance of eating disorders. Table 2 lists the means raw scores, T scores, and percentile ranges corresponding to the clinical qualitative ranges for each scale and composite. The mean raw score of the LSE scale is 15.62, which falls within the 65th percentile. This is indicative of the Typical Clinical Range, which suggests that the figure skaters in this sample are experiencing feelings of personal insecurity, inadequacy, ineffectiveness, and a lack of personal worth that are typical of individuals diagnosed with eating disorders. A LSE scale raw score in this range is common among those with clinical eating disorders; however, it is relatively uncommon among adolescent and adult respondents from the nonclinical samples. Thus, a score in this range indicates concerns in the area of self-esteem (Garner, 2004).

Personal Alienation (PA) Scale. The PA scale overlaps conceptually with low self-esteem; however, it measures a broader domain of feelings pertaining to a pervasive sense of emotional emptiness, feeling alone, and having a poor sense of self-understanding. The PA scale includes items that measure the participant's report of feeling separated from, losing out on, or not being given due credit from others. PA items also measure the desire to be someone else and a general feeling of being out of control. Table 2 illustrates a mean raw score of 18.28, which falls within the 74th percentile, classifying the figure skating sample in the Elevated Clinical Range. This classification indicates extreme feelings of emotional emptiness and aloneness, and a poor sense of self-understanding. A

PA scale raw score in this range also reflects a persistent feeling of being out of control, as well as a strong desire to be somebody else. A score greater than or equal to 17 is relatively uncommon among those diagnosed with clinical eating disorders and rare among adolescents and adults from the nonclinical samples. Thus, a score in this range may indicate a high level of psychopathology (Garner, 2004).

Interpersonal Problems Composite (IPC)

The IPC consists of summed T scores for the II and the IA scales. These scales are correlated, but only moderately. The IPC measures the participants' experience that relationships are insecure, unrewarding, disappointing, tense, and generally of poor quality. Many patients with eating disorders are described as experiencing insecurity and social self-doubt, along with an overall distrust of relationships. Table 2 shows a qualitative range in the 85th percentile, which classifies the figure skaters in the Elevated Clinical Range. A T score in this range indicates extreme distress and illustrates that the figure skaters may regard social relationships as unrewarding, disappointing, insecure, tense, and generally of poor quality. It also demonstrates a strong tendency to feel trapped in relationships, as well as to experience a lack of understanding and love from others. An IPC score in this range is uncommon among those diagnosed with clinical eating disorders. It reflects very serious interpersonal problems that could be major obstacles in the process of psychotherapy, as well as in establishing supportive relationships with others to facilitate recovery. An IPC score in this

range is rare among adolescent and adult respondents from the nonclinical samples *5% and 4%, respectively) (Garner, 2004).

Interpersonal Insecurity (II) Scale. The II scale consists of seven items that assess discomfort, apprehension, and shyness in social situations. The II scale focuses specifically on difficulties expressing personal thoughts and feelings toward others. Lastly it assesses the tendency to withdraw and isolate from others. Table 2, shows a mean raw score of 16.92, which falls within the 80th percentile, classifying the figure skaters in the Elevated Clinical Range. A raw score in this range suggests that on average the figure skaters in this sample are experiencing extreme discomfort, apprehension, and shyness in social situations. It also reflects frequent and significant problems expressing personal thoughts and feelings to others, leading to withdrawal and isolation from others. An II raw score in this range is not uncommon for those with clinical eating disorders and suggests difficulties in interpersonal communication. Communication is critical to psychotherapy; therefore, a score in this range could limit the effectiveness and ultimately the outcome of treatment. An II scale raw score in this range is rare among adolescent and adult respondents from the nonclinical samples (4% and 5%, respectively) (Garner, 2004).

Interpersonal Alienation (IA) Scale. The IA scale consists of seven items that assess estrangement, distance, disappointment, and a lack of trust in relationships. It also measures the degree to which one feels trapped in relationships, as well as the failure to experience understanding and love from

others. Table 2 illustrates a mean raw score of 16.4, which falls within the 84th percentile, indicating that on average the female figure skaters are in the Elevated Clinical Range. This finding illustrates an extremely high level of estrangement, distance, disappointment, and a lack of trust in relationships. It also reflects a strong tendency to feel trapped in relationships, as well as failure to experience understanding and love from others. An IA scale raw score in this range is uncommon among those diagnosed with clinical eating disorders and suggests very serious difficulties in interpersonal relationships. Positive interpersonal connection is very important in psychotherapy; thus, an extremely high score in the IA scale such as this reflects interpersonal obstacles with the clinician(s) that may interfere with treatment. An IA scale raw score in this range is relatively rare among adolescent and adult respondents from the nonclinical samples (5% and 9%, respectively) (Garner, 2004).

Affective Problems Composite (APC)

The APC is derived by summing the T scores for the ID and ED scales. The APC assesses the ability to correctly identify, understand, or respond to emotional states. Table 3 shows a T score of 68, which falls within the 96th percentile, indicating that the figure skaters in this sample are in the Elevated Clinical Range. This reflects severe and persistent problems in correctly identifying, understanding, or accurately responding to emotional states. This can be demonstrated by difficulties in identifying or responding to emotions or by reacting with confusion, fear, or mistrust. The APC can also indicate mood instability, impulsivity, recklessness, anger, mood intolerance, self-

destructiveness, and substance abuse to control mood. An APC score in this range is relatively uncommon among those with clinical eating disorders and suggests very serious disturbances in mood regulation, which can present challenges in conducting psychotherapy. Thus, a score in this range may indicate a high level of psychopathology in this area. An APC score in this range is relatively rare among adolescent and adult respondents from the nonclinical samples (4% and 7%, respectively) (Garner, 2004).

Interoceptive Deficits (ID) Scale. The ID scale consists of nine items that measure confusion related to accurately recognizing and responding to emotional states. Brush (1962) was the first to suggest that “lack of interoceptive awareness” is central to the understanding of eating disorders. Table 2 illustrates a mean raw score of 23.16, which falls within the 75th percentile, classifying the figure skaters in Elevated Clinical Range. This indicates extreme confusion in accurately recognizing and responding to emotional states, as well as intense fear and mistrust of certain emotions when they are too strong or experienced as out of control. It can lead to various strategies to “escape” from discomfort, confusion, or fear brought on by negative or even positive emotional states. Rather than simply accepting emotions for what they are; people falling in this range tend to evaluate their emotions to determine if they are “appropriate”, “legitimate”, “valid”, or “justified”. Due to the fact that psychotherapy often elicits intense emotions, this behaviour can create major obstacles in the treatment process. An ID scale raw score in this range is relatively uncommon among those diagnosed with clinical eating disorders and rare among adolescent and

adult respondents from the nonclinical samples (2% and 4% respectively). Thus, a score in this range likely indicates a high level of psychopathology in this area (Garner, 2004).

Emotional Dysregulation (ED) Scale. The ED scale consists of eight items that assess a tendency toward mood instability, anger, self-destructiveness, impulsivity, and recklessness. Two of the items assess potential problems with substance abuse: one for alcohol and one for drugs. Table 2 shows a mean raw score of 23.42, which falls within the 99th percentile, indicating that on average the figure skaters are in the Elevated Clinical Range. Thus, the figure skaters are experiencing an extreme tendency toward mood instability, anger, self-destructiveness, impulsivity, and recklessness. There may be associated problems with substance abuse involving alcohol, drugs, or both. A score in this range indicates tendencies toward poor impulse regulation, self-harm, and mood intolerance, which have been identified as poor prognostic signs in eating disorders. These tendencies can create major problems in psychotherapy since the process often elicits intense emotions. An ED scale raw score in this range is uncommon among those diagnosed with clinical eating disorders and is uncommon among adolescent and adult respondents from the nonclinical samples (13% and 12% respectively). It is evident that a score in this range may indicate a high level of psychopathology in this area (Garner, 2004).

Overcontrol Composite (OC)

The OC is derived by summing the T scores for the P and A scales. These scales are moderately correlated; however, a higher-order factor analysis of all the Psychological scales indicates that these two scales form a distinct factor. Together, they indicate that the respondent places an emphasis on achieving a high standard of personal achievement, as well as the belief that it is virtuous to engage in self-denial, self-sacrifice, and suffering. They believe that there is shame around personal weaknesses and they have a desire to rigidly control bodily urges. Table 2 illustrates a T score of 49, which falls within the 45th percentile, classifying the figure skaters in the Typical Clinical Range. A OC T score in this range reflects a strong demand to achieve the highest possible standards, as well as to engage in self-denial, self-sacrifice, and suffering. Failure to meet these standards is usually associated with self-criticism. It reflects a significant need to be the best at doing things and to avoid disappointing others, such as parents, teachers, or coaches. These experiences are not unique to those diagnosed with eating disorders and occur in psychiatric patients with other diagnoses. An OC score in this range is common among those with clinical eating disorders; however, it is relatively rare among adolescents and is relatively uncommon among adults from the nonclinical samples (Garner, 2004).

Perfectionism (P) Scale. The P scale consists of six items that assess the extent to which a person places an emphasis on achieving high goals and the highest possible standards for personal achievement. Perfectionism can be “socially prescribed” or “self-oriented” or both. “Socially prescribed” indicates a need to

meet high standards for performance that are tied to expectations from parents, teacher, or coaches. "Self-oriented" reflects a drive to meet high standards for performance that are not explicitly linked to family, teachers, or coaches.

Perfectionism has been identified as a key feature in the development and maintenance of eating disorders. Table 2 illustrates a mean raw score of 8.64, which falls within the 23rd percentile, classifying the figure skaters in the Low Clinical Range. A P scale raw score in this range suggests that on average the figure skaters in this sample do not have rigid or inappropriate standards for performance. Rather, it indicates more realistic expectations for achievement. Furthermore, the figure skaters may not be experiencing excessive demands for performance from parents, teachers, or coaches. However, it is important when interpreting this information to consider other sources of clinical information to determine the accuracy of the self-report. It is also possible that a low score in the P scale could reflect denial of the current clinical state or a response bias on the part of the patient. A P scale raw score in this range is common among respondents from the nonclinical samples (Garner, 2004).

Asceticism (A) Scale. The A scale assesses the tendency to seek virtue through the pursuit of spiritual ideals such as self-discipline, self-denial, self-restraint, self-sacrifice, and control of bodily urges. Table 2 shows a mean raw score of 17.46, which falls within the 77th percentile, indicating that on average the figure skaters are in the Elevated Clinical Range. This indicates an extreme tendency to seek virtue through the pursuit of spiritual ideals such as self-discipline, self-denial, self-restraint, self-sacrifice, and control of bodily urges. A raw score in this

range also reflects a very strong tendency to place positive connotations on achieving virtue through self-restraint. There is also a considerable amount of guilt and shame surrounding the experience of pleasure. An A scale raw score in this range is uncommon among those diagnosed with clinical eating disorders. It indicates very serious problems related to the tendency to seek virtue through self-sacrifice and self-denial. A raw score in this range is rare for respondents from adolescent and adult nonclinical samples (1% and 4%, respectively). Therefore, a score in this range may be representative of a high level of clinical psychopathology in this area (Garner, 2004).

Maturity Fears (MF) Scale

The MF scale consists of eight items that assess the desire to return to the security of childhood. It represents one of the key maintaining factors for a subgroup of adolescent patients whose weight loss is motivated by fears associated with psychosexual maturity. Research has contended that the central psychopathology in anorexia nervosa (AN) and bulimia nervosa (BN) is related to fears of psychological, social, and biological events associated with an adult weight. According to this view, weight loss becomes the mechanism for avoiding adolescent turmoil, conflicts, and developmental expectations because it results in a return to prepubertal appearance and hormonal status (Crisp, 1965). Table 2 illustrates a mean raw score of 17.58, which falls within the 84th percentile, indicating that the figure skaters in this sample are in the Elevated Clinical Range. A MF scale raw score in this range reflects an extreme desire to be younger and return to the security of childhood. There is a belief that the

demands of adulthood are too great and that the happiest time in a person's life is childhood. A MF scale raw score in this range is relatively uncommon among those diagnosed with clinical eating disorders. A score in this range is also relatively uncommon among samples (17% and 16%, respectively) (Garner, 2004).

General Psychological Maladjustment Composite (GPMC)

The GPMC consists of the summed T scores of all nine of the Psychological scales. Some factor analytic research on the EDI in nonclinical samples has suggested that there are two major factors: one reflecting eating concerns and the other related to general psychological maladjustment. Table 2 shows a T score of 61, which falls within the 85th percentile, indicating that the figure skaters are in the Elevated Clinical Range. A GPMC T score in this range illustrates an extremely high level of distress across a wide range of psychological constructs including low self-esteem, personal alienation, interpersonal insecurity, interpersonal alienation, interoceptive deficits, emotional dysregulation, perfectionism, asceticism, and maturity fears. It likely indicates extreme dysfunction in both personal and interpersonal psychological domains. A GPMC score in this range is relatively uncommon among those diagnosed with clinical eating disorders and reflects very serious problems with psychological adjustment. Poor overall psychological functioning is often associated with negative outcomes in psychotherapy. A GPMC score in this range is rare among adolescents and adults from the nonclinical samples (2% and 5%, respectively) (Garner, 2004).

Behavioural Symptoms

Dieting Concerns

When asked if they had ever restricted their food intake due to concerns about their body size or weight, 56% of the figure skaters revealed that they had while 44% revealed that they had not. The highest percentage of figure skaters (16%) revealed having dieted for the first time as young as 12. At 13 years of age, 8% of the sample reported restricting food for the first time. At 14 years of age, 12% of the figure skaters began dieting, and 8% reported dieting at 15 and 17 years of age. Questions concerning the frequency of exercising indicated that the figure skaters in this sample participated in regular physical activity, in other words, they did not over-exercise. When asked how much of their exercise was aimed at controlling their weight, 16% reported 0%, 40% reported less than 25%, 32% reported between 25% to 50%, and 12% reported more than 75%.

Bingeing Behaviours

When asked if they had ever had an episode of eating an amount of food that others would regard as unusually large, 32% of the figure skaters reported that they had, while 68% had not. Twelve percent of the figure skaters revealed that they had their first eating binge as young as 14 years of age. Four percent of the sample reported that they had binged in the last 3 months. Out of this 4%, 1 skater reported having binged once in the last 3 months, 2 skaters reported having binged twice in the last 3 months, and 1 skater reported having binged 4 times in the last 3 months. In the worst of times, 8% of skaters reported having binged once a week, 4% reported bingeing 3 times a week, 8% reported 4 times

a week, and 4% reported 5 times per week. In addition 8% said they often felt that bingeing was pleasurable.

Vomiting Behaviour

When asked if they had ever induced vomiting after eating in order to get rid of the food eaten, 16% of the skaters reported that they had, while 84% revealed that they had not. The figure skaters who reported vomiting admitted that this began between the ages of 14 and 17. Twelve percent of the sample admitted to vomiting in the last 3 months. In the worst of times 12% of the figure skaters reported vomiting between 1 to 5 times per week.

Laxative, Diet Pills, and Diuretic Use

None of the figure skaters in this sample reported using laxatives and only 8% reported having used diet pills and diuretics in the last 3 months to control their body weight. In the worst of times, 1 skater indicated that she had taken 7 diet pills per week and 1 skater revealed that she had taken 14 diuretics per week.

EIQ Interpretations

1. Aesthetic Influence: Do you think in order to be a successful figure skater you have to be thin?

Table 3 illustrates a mean of 4.58 for question 1, suggesting that the figure skaters somewhat agree that one has to be thin in order to be a successful figure skater.

Table 3. Environmental Influences Questionnaire

	N	Min	Max	M	SD
1. Aesthetic Influence	24	1	7	4.58	1.792
2. Judges' Influence	24	1	7	3.79	1.817
3. Coaches' Influence	24	1	5	2.17	1.341
4. Coaches' Comments	24	1	6	2.38	1.837
5. Parents' Influence	24	1	7	2.75	2.152
6. Peers' Influence	24	1	7	3.88	1.985

Note. 7-pt Likert, 1 = Strongly Agree, 7 = Strongly Disagree

2. Judges' Influence: Do you think that judges consider weight when deciding the scores of figure skaters?

Table 3 shows a mean of 3.79 for question 2, suggesting the figure skaters have a neutral opinion on whether or not judges consider weight when deciding the scores of figure skaters.

3. Coaches' Influence: Do you feel pressures from your coach to be a certain weight?

Table 3 illustrates a mean of 2.17, which indicates that the figure skaters in this sample disagree that they feel pressures from their coaches to be certain weights.

4. Coaches' Comments: Has your coach ever commented on your weight?

Table 3 shows a mean of 2.38, suggesting the figure skaters in this sample disagree that their coach has commented on their weight.

5. Parents' Influence: Do you feel pressure from your parents to be a certain weight?

Table 3 illustrates a mean of 2.75, indicating that the figure skaters from this sample somewhat disagree that they feel pressure from their parents to be a certain weight.

6. Peers' Influence: Do you feel pressure from your peers to be a certain weight?

Table 3 shows a mean of 3.88, suggesting the figure skaters in this sample have a neutral opinion on whether or not they feel pressure from their peers to be a certain weight.

Health Promotion Education

Demographics

In order to better understand whether or not figure skaters were learning about eating disorders and its prevention, the participants in this sample were asked a series of demographic questions. The majority of the figure skaters in this sample have undergone off-ice training (96%); however 40% of the figure skaters reported that they did learn about eating disorders in their off-ice training while 56% reported not having learned about eating disorders. Sixty-four percent of the sample reported that their off-ice training taught them mental training skills while 32% reported having not undergone any kind of mental training. When asked about healthy eating, 76% of the sample revealed that their off-ice training discussed nutrition while 20% revealed they had not learned about nutrition in their off-ice training. Lastly, when asked if their off-ice training discussed self-

confidence, 68% of the figure skaters said “yes” while 28% said they had not learned about self-confidence in their off-ice training.

Qualitative Analysis

The purpose of the educational component was to develop a model of healthy living while increasing the participants’ knowledge base encompassing the topics of nutrition, regular physical activity, healthy body image, self-esteem, and diet attitudes; in hopes that it may lead to an increased awareness of a healthy lifestyle.

The participants were asked to use descriptive adjectives that they believed to be indicative of a healthy lifestyle both at the beginning and at the end of the health promotion education. During the beginning of the first educational session the participants believed that exercising, eating healthy (fruits and vegetables), drinking water, looking younger, living longer, and having energy, self-confidence, and a positive body image encompassed healthy living. Post Education, the figure skaters felt that eating healthy, following the Canada’s food guide, being active, following the Canada’s physical activity guide, being yourself, and having self-confidence, energy, and a positive body image to be representative of healthy living. Based on this information, which was solely produced by the figure skaters participating in the health promotion education, a model of healthy living was developed and is illustrated in figure 1.

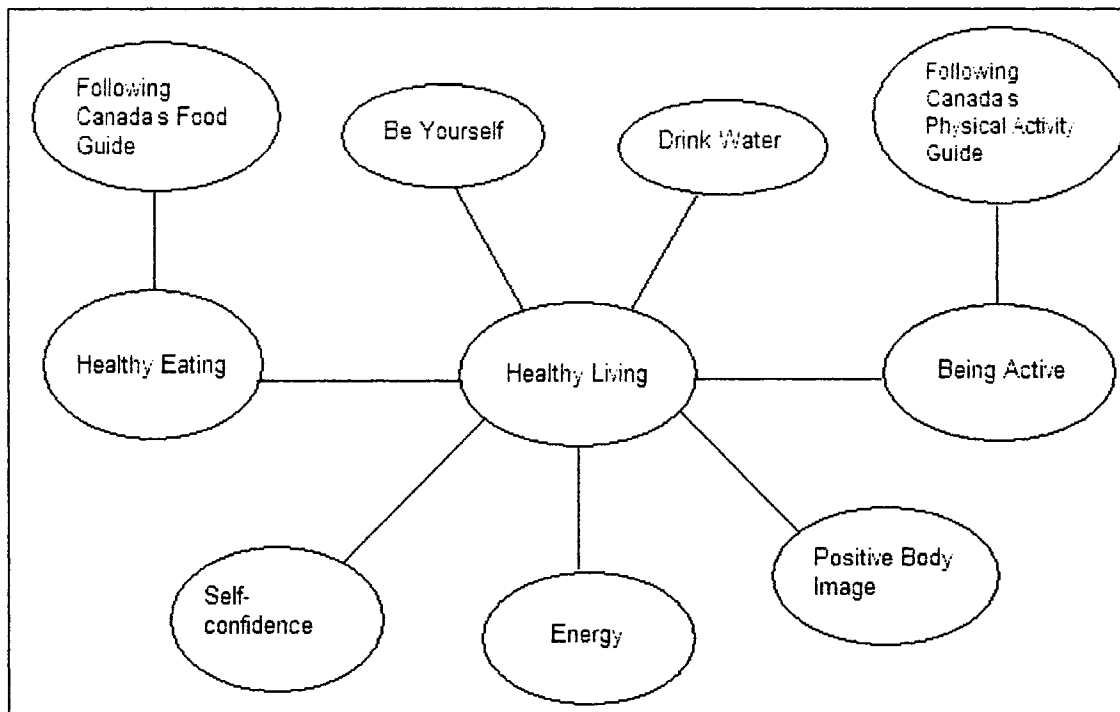


Figure 1. Model of Healthy Living

Nutrition Awareness

Pre-education qualitative analysis indicated that the participants were quite knowledgeable on the topic of nutrition; however, post education analysis did reveal some improvements. All 6 participants knew what Canada's Food Guide was; however only 1 followed it. Post-education qualitative analysis revealed that all 6 participants were now making improvements in their diet and attempting to follow Canada's Food Guide.

Pre-education qualitative analysis revealed that the figure skaters in this sample knew a number of benefits to healthy eating including; an increase in strength, looking healthy, living a long life, not being overweight, good performance, and having energy and a positive body image. Post-education qualitative analysis revealed that in addition to these benefits to healthy eating,

the figure skaters were able to list several more benefits, which included; feeling good about oneself, a decrease in the risk of developing a number of diseases, an increase in strength, optimal performance, the ability to control one's body weight, and optimal brain functioning.

The figure skaters were also asked whether or not they thought they made healthy food choices. Pre-education qualitative analysis indicated that 4 of the participants thought they did and 2 thought that they sometimes made healthy food choices. Upon completion of the health promotion education, qualitative analysis revealed that all 6 of the figure skaters thought they were now making healthy food choices. When asked to list some of their healthy food choices the only difference in pre and post education was that they were able to classify the food choices into the food groups according to Canada's Food Guide.

At pre and post education, all of the figure skaters believed that they would skate better if they were eating healthy because they would be stronger and they would have more energy.

When asked how many glasses of water one should drink a day, pre-education analysis revealed that two skaters said two glasses, two skaters said four glasses, and two skaters said six glasses. Post-education analysis indicated that all 6 skaters accurately said seven glasses per day.

Pre and post educational analysis indicated that all skaters understood the importance of staying hydrated during exercise. At pre and post education, when asked if they drank anything during skating practices/competition all 6 figure skaters indicated that they did in fact drink fluids during skating practices/competition. All figure skaters were able to list healthy fluid choices

(water, milk, real fruit juice) at pre and post education. Furthermore, at post-education they were able to identify water as being the best way to hydrate one's body.

Throughout the health promotion education the participants were asked to take home Canada's Food Guide to their parents in hopes that it might help them to make healthy food choices. At pre education 4 of the figure skaters indicated that they thought their parents made healthy food choices, while 2 of them thought that their parents sometimes made healthy food choices. At post education 5 of the figure skaters believed that their parents made healthy food choices while only 1 felt they their parents sometimes made healthy food choices.

A feedback questionnaire revealed that 3 figure skaters agreed that they knew what a 'nutrient' was before having participated in the health promotion education series while 3 expressed a neutral opinion.

Regular Physical Activity

It was evident that the figure skaters in this sample were able to list a number of physical activities that they participated in both pre and post education. These activities included; basketball, soccer, track and field, walking, horseback riding, dodge ball, hockey, baseball, swimming, dancing, gymnastics, snowboarding, skiing, skipping, and of course, figure skating. This indicated that the figure skaters understood the importance of being active while realizing that although figure skating may be their favourite sport it does not define them and they can enjoy other forms of physical activity as well.

When asked if they found physical activity to be important all 6 figure skaters responded “yes” on both pre and post analysis. At pre-education analysis the figure skaters indicated that they felt physical activity to be important because it makes one fit and strong, it builds strong bones, it keeps one healthy and prevents one from becoming overweight. Post-education analysis revealed that the figure skaters had a better understanding of why physical activity was important. In addition to the reasons they listed at pre-education they were able to add that physical activity was important because it makes one more alert, it increases learning as a result of better brain functioning, it increases self-confidence, and it decreases the risk of illness.

When asked if they have heard of Canada’s Physical Activity Guide, 2 of the figure skaters indicated that they had, while the other 4 had not. The 2 that had heard of Canada’s Physical Activity Guide indicated that they followed it some of the time. At post education all 6 figure skaters indicated that they had heard of the Canada’s Physical Activity Guide and followed it.

The figure skaters were also asked if they thought there was such a thing as too much exercise upon which they responded “yes” at both pre and post education analysis.

Healthy Body Image and Self-Esteem

When asked if they had a role model, only 1 figure skater indicated that she did at pre-education. This person was her mother who was identified as her role model because “she went to provincials for gymnastics, she eats healthy, and she doesn’t care how she looks.” At post-education 5 of the figure skaters

indicated that they had role models and all 5 revealed that their role models were their mothers. The mothers were identified as role models because they were confident, helpful, intelligent, kind, and recognized people's inner beauty.

At pre-education, the figure skaters were asked if they have ever made a list of their successes in skating; 5 of the figure skaters indicated that they had, while 1 figure skater revealed that she did some of the time. Post-education analysis revealed that all 6 figure skaters had made a list of their successes in skating.

At pre-education skaters were also asked if they felt confident in their abilities as a figure skater; at which time 1 figure skater strongly agreed, 3 skaters agreed, 1 skater somewhat agreed, and 1 skater somewhat disagreed. Post-education analysis revealed an improvement in this area suggesting that 5 of the figure skaters strongly agreed and only 1 figure skater somewhat agreed.

At pre-education only 1 figure skater indicated keeping a journal, this remained unchanged at post-education.

Four of the figure skaters indicated that they have undergone off-ice training at pre and post education. When asked if they were familiar with self-talk, 5 of the figure skaters indicated that they had at pre-education, while all 6 were able to say that they were familiar with self-talk at post-education.

A feedback questionnaire at post-education revealed that all 6 figure skaters strongly agreed that the health promotion education helped them to understand the importance of and to develop a positive body image. The figure skaters also strongly agreed that the educational sessions helped them to understand the importance of and to increase their self-esteem. When asked to

list some of the techniques that were discussed in class to increase self-esteem, all 6 figure skaters remembered self-talk, four remembered the self-affirmation lists, and one skater listed positive thinking.

Diet Attitudes

When asked if there were health risks to being underweight, the figure skaters responded “yes” at pre and post education. When asked if they could name any health risks 2 figure skaters listed eating disorders, 2 figure skaters listed anorexia, and 1 figure skater said “being too skinny”, which remained unchanged from pre to post education. At pre-education 3 of the figure skaters indicated that they were familiar with the term “eating disorder” and were able to identify anorexia as being one of them. At post-education all 6 figure skaters indicated that they were familiar with the term “eating disorder” and 5 skaters were able to list anorexia, bulimia, and obesity as different types of eating disorders.

A feedback questionnaire illustrated that all 6 figure skaters strongly agreed that the health promotion education helped them to realize that media images are not always healthy and that dieting is unnecessary and unhealthy.

Feedback Questionnaire Interpretations

A feedback questionnaire was designed to arrive at the figure skaters perception of the educational experience. All 6 figure skaters strongly agreed that the educational sessions were enjoyable and informative. They also strongly agreed that the instructor was knowledgeable on the topics presented in class and that the educational series was beneficial for figure skaters.

On the topic of eating disorders, 4 figure skaters strongly agreed that they knew what to do if they thought they might have an eating disorder or if there is someone that they think might have one, while 1 skater agreed, and 1 skater somewhat disagreed. All 6 figure skaters strongly agreed that the instructor answered any of the questions they had on concerning disordered eating.

When asked what they liked about the educational series, the figure skaters revealed that they thought it was fun, they learned a lot, they found the instructor to be “very nice”, they enjoyed the slide shows, and when they didn't understand something the instructor would take the time to explain it again.

The feedback questionnaire also included a space to write down anything that the figure skaters disliked about the educational component, upon which, nothing was written.

Another section provided the figure skaters with the opportunity to write suggestions or comments, upon which, the 4 figure skaters revealed that they learned a lot and 1 revealed that she would use the information delivered throughout the educational series.

Discussion

Profile

Female figure skaters were targeted in the present research, a population that has not been investigated extensively, but nonetheless could be considered a likely target group for having a high incidence of eating disorder symptoms. The aim of this study was to generate a profile of eating disorder symptomatology among female adolescent figure skaters at the senior competitive level. It was hypothesized that the figure skaters in this sample would be at risk for developing an eating disorder; however, it was not expected to be as high as the results indicated. The sample of figure skaters showed elevated scores on all the EDI-3 scales and composites, with the exception of the Drive for Thinness scale, the Body Dissatisfaction scale, the Perfectionism scale and the Overcontrol composite. Collectively, the profile of eating disorder symptomatology in this sample of skaters was similar to other reports of figure skaters (Brooks-Gunn et al., 1998; Gould, Jackson, & Finch, 1993; Monsma & Malina, 2002; Taylor & Ste. Marie, 2001;), dancers (Anshel, 2002; Brooks-Gunn et al., 1988; Thomas et al., 2005) and gymnasts (Davis, 1992; Petrie, 1993).

According to Garner (2004) the high scores and the little variation between scales demonstrated by the figure skaters illustrates that they are reporting concerns related to eating and body shape.

Interestingly, the figure skaters depicted low scores on the Drive for Thinness, Body Dissatisfaction, and Perfectionism scales; indicating that the skaters in this sample do not have significant problems with eating and weight

concerns, do not show marked dissatisfaction with body weight and shape, or have rigid or inappropriate standards for performance. Similarly, Taylor and Ste. Marie (2001) found that the figure skaters in their sample scored low on the Body Dissatisfaction scale, but elevated on all other scales. It is important to note; however, that the Drive for Thinness and the Body Dissatisfaction scales are components of the Eating Disorder Risk Composite, upon which the figure skaters were found to be in the Elevated Clinical Range. The EDRC provides a global measure of the Drive for Thinness, Bulimia, and Body Dissatisfaction constructs with equal weighting for each of the contributing scales. The EDRC is also used for screening purposes or to obtain one score reflecting the level of eating concerns (Garner 2004).

Consistent with the findings of Barlow and Durand's (2002) study among others (Bulik, Sullivan, Joyce, Carter, & McIntosh, 1998), illustrating that many cases of eating disorders are not reported and most are resistant to treatment, Lowe et al.'s (2001) longitudinal study of patients with anorexia nervosa (AN), found that elevated scores in the Ineffectiveness and the Perfectionism scales were strong predictors of poor outcome. On the positive side to this finding the figure skaters scored low on the Perfectionism scale. On the negative side, the skaters exhibited a score in the Elevated Clinical Range for the Ineffectiveness composite; giving rise to the notion that treatment and recovery would be difficult. Furthermore, in a study of patients with anorexia nervosa-restrictive type (AN-R), Fassino et al., (2001) found that a high level of asceticism, like that experienced by the figure skaters in this sample, predicted poor response to treatment. Lastly, Norring (1990) found that an elevated Bulimia scale raw score, such as the one

found in the present research, was the most significant predictor of poor prognosis for a group of patients with anorexia nervosa (AN). A 1-year follow-up study for patients with bulimia nervosa (BN) illustrated similar findings with a high Bulimia scale raw score (Bulik et al., 1998).

Due to the fact that the figure skaters illustrated such high eating disorder risk in addition to the difficulty of treatment and the substantial medical and psychological complications that coexist with eating disorders (Wilson, Becker, & Heffernan, 2002), the need for early and effective prevention strategies is eminent.

It remains unclear as to why this population in particular show elevated scores on the EDI and engage in unhealthy means to lose weight. One might argue that it is because the skaters are in fact over-weight, as studies have shown that elevated EDI scores can be expected for heavier women who do not have eating disorders (Garner, 1991; Garner, 2004), however, figure skaters are typically not overweight (Vadocz & Malina, 1999). Thus, the argument that the findings arose as a result of the figure skaters being over-weight is unlikely. BMI was not taken into account for this study but may prove to be useful in future research.

An alternative hypothesis is that as a consequence of participating in the aesthetic sport of figure skating, the skaters are exposed to an environment wherein extreme weight loss pressures are a part of the experience. Research in the sport of figure skating suggests that casual comments from sport officials, coaches and/or peers within the competitive and/or practice environments often lead to negative self-perceptions associated with eating disorders (Gould,

Jackson, & Finch, 1993). Expectations were that the current research would have similar findings. This hypothesis received further support in Taylor and Ste. Marie's (2001) study in which 92.7% of the figure skaters revealed that they perceived weight loss pressures in this sport. Interestingly the figure skaters in this sample had a neutral opinion or disagreed that they were experiencing environmental pressures to lose weight. It is also important to note, however, that on average all figure skaters somewhat agreed that one has to be thin in order to be a successful figure skater suggesting that the figure skating environment is one in which thinness is held in high regard. What remains to be determined; however, is what the sources of these weight loss pressures may be and whether such pressures are in fact related to the adoption of unhealthy weight loss behaviours and eating disorder symptoms.

Health Promotion Education

The other goal of the present research was to test the effectiveness of a health promotion education series. In accordance with the hypothesis, qualitative analysis revealed that the early adolescent participants in this sample were successful in developing a model of healthy living while demonstrating an increase in knowledge base surrounding the topics of nutrition, regular physical activity, a healthy body image, self-esteem, and diet attitudes.

At the completion of the health promotion education series the figure skaters were asked whether or not they thought there was such a thing as too much exercise, upon which all 6 of them responded "yes" at both pre and post education. Due to the fact that some anorexics exercise excessively following

food intake in order to lose weight (Herrin & Matsumoto, 2002), it was important to ensure that the figure skaters understood that it is possible to over-exercise and that it can be unhealthy. During the second educational session, the instructor emphasized the importance of cutting down their participation in physical activity when feeling mentally and/or physically exhausted and the importance of listening to their bodies.

The feedback questionnaire indicated that all 6 figure skaters strongly agreed that the educational sessions were enjoyable and informative. All 6 skaters also strongly agreed that the instructor was knowledgeable on the topics presented in class and that the educational series was beneficial for figure skaters. Furthermore, they found the instructor to be “very nice” and they appreciated the fact that when they didn’t understand something the instructor would take the time to explain it. This is an important finding since studies have indicated that by creating a sense of fun, interaction, and trust, teachers and students can build a learning environment that promotes engagement, deep learning, and meaning. This approach emphasizes process, not product, personalizes learning, and contributes to whole person development (Robinson & Kakela, 2006). In order to facilitate this approach, the instructor of the health promotion education series, showed respect for her students as individuals, encouraged original thinking, allowed students opportunities to share personal experience reflections on critical issues, contributed to dynamic class dialogues, and developed and presented creative responses to social complexities and disordered eating. Factors that set the current health promotion education series aside from other such health oriented educational sessions like “Bodysense ©” is

the duration, interaction, and group discussion. The health promotion education series consisted of 4 two hour sessions, allowing sufficient time to teach the components of healthy living while maintaining the students' attention and enjoyment. "Bodysense ©" on the other hand consists of brief seminars often in the competition setting. Lastly, the current educational series strongly encouraged group discussions focusing less on lecturing and more on critical thinking, learning activities, group interaction, and the educational process rather than the product; in turn creating an environment of optimal learning (Robinson & Kakela, 2006).

The focus of the 4th educational session was to define disordered eating, anorexia, bulimia, and obesity and to educate the skaters on the appropriate actions to take if an eating disorder is suspected among themselves or someone close to them. Therefore, the finding that the majority of the figure skaters (4) strongly agreed that they knew what to do if they thought they might have an eating disorder or if there was someone that they thought might have one, along with the finding that all 6 figure skaters strongly agreed that the instructor answered any of the questions they had concerning disordered eating was of great importance.

Implications for Prevention and Future Research

New information was presented in the current research with respect to the eating disorder symptoms and health promotion strategies in the figure skating population. The sample involved in the development of the profile of eating disorder risk covered a significant portion of Ontario. At the same time; however,

there were limitations, making future research directions clearly apparent. First, the educational component consisted of a fairly small sample from a specific geographical location, thus future research involving figure skaters in a larger and more geographically representative sample would hold more merit in the realm of prevention.

Secondly, discussions with health professionals in the field of eating disorders revealed the concern that educating athletes on eating disorder signs and symptoms may encourage disordered eating. Thus, in accordance with this belief, the researcher in the current study focused only on disordered eating definitions and encouraged the students to lead a small group discussion on the topic of eating disorders. Due to the lack of research in this area details with regard to the content of educational interventions remain to be established. In light of the fact that eating disorder risk among the sample of figure skaters is high, further investigation into effective preventive strategies is critical.

The concept that eating disorder education can encourage eating disorders among children and adolescents suggests that it may be beneficial to educate the parents on disordered eating so that they may be able to properly assist their children. Neumark-Sztainer (2005) revealed in her review that parents can help their children engage in more healthful eating and physical activity behaviour and feel better about themselves through (1) role modeling healthful behaviours, (2) providing an environment that makes it easy for their children to make healthful choices, (3) focusing less on weight and more on behaviours and overall health, and (4) providing a supportive environment for their children to enhance communication. Today's society works against the development of a

healthy weight and a positive body image in children and adolescents. It is for this reason Neumark-Sztainer (2005) strongly believes that families need to be proactive within our society in order to counteract such unhealthy demands and to encourage healthy living. However, families cannot accomplish this independently and need support from health professionals within their communities. The researcher in the current study developed an information package for the parents of the figure skating participants, which included; tips to promote healthy body image, signs and symptoms of weight-related concerns, suggestions to encourage healthy living among children, Canada's Food Guide, Canada's Physical Activity Guide, and contact information for a health professional in an eating disorder program. Further research in the parents' role in the prevention, detection, and treatment of disordered eating would be of great benefit to our society and may help to increase awareness of the importance of health promotion education among parents and children. Future research needs to evaluate whether a prevention program aimed both at students and their parents might help improve the overall effectiveness of pre-adolescent prevention efforts.

Lastly, the effectiveness of the present educational series was only measured upon immediate completion. Future studies are needed to determine whether the gains can be sustained over a longer period of time and whether this health promotion education series is equal to or superior when compared with other prevention programs. As well, although the present research attempted to arrive at some of the weight loss pressures indicative of the figure skating environment, it still remains unclear as to why figure skaters display eating

disorder symptomatology. Future research is needed to identify variables prospectively associated with the onset of eating disorders as it would prove to be beneficial in the prevention and treatment of disordered eating.

The elevated eating disorder risk portrayed by the figure skaters in this sample, in addition to the complex nature of the disease, strongly support the need for preventive strategies. The health promotion education series evaluated in this study follows a current trend in the literature on the prevention of eating disorders. This trend involves the promotion of positive body image and self perceptions, as well as healthy attitudes and values (O'Dea & Abraham, 2000), as compared with the traditional approach of instructing students about the dangers associated with eating disorders (Becker et al., 2006; Franko et al. 2005, Killen et al., 1993; Killen, 1996; Shisslak, Crago, Renger, & Clark-Wagner, 1998; Stice et al. 2006; Winzelberg et al. 2000). The present educational series extended the work of O'Dea and Abraham (2000) who initiated the promotion of self-esteem as a prevention strategy and McVey and Davis (2002) who endorsed media literacy about the dangers associated with the idealization of thinness and the promotion of life skills in general including; self-esteem enhancement strategies, stress management, techniques, and peer relations skills. The health promotion education series gives preliminary evidence to support the effectiveness of health promotion strategies and adds necessary and original information to ongoing eating disorder prevention efforts. The high eating disorder risk demonstrated by the figure skaters in this sample along with the evident difficulties of treatment and recovery, provide strong justification for

further research into the identification and prevention of potential disordered eating among sporting populations.

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Appendices

Appendix A: Questionnaire package

DEMOGRAPHIC QUESTIONNAIRE

Directions: Please answer the following questions with the appropriate information.

Age: _____ Birthday: ____/____/____ (m/d/yr) Sex: _____

How do you racially identify? _____

First Language: _____

Directions: Please circle the appropriate answer for each of the following questions.

Have you ever received off-ice training? YES NO

If so, did you learn about eating disorders? YES NO

Did it involve mental training? YES NO

Did you learn about nutrition? YES NO

Did you learn about self-confidence? YES NO

Environmental Influences Questionnaire

Instructions: Please respond to the following statements by circling the number that best describes you. Please answer every question. Thank you.

	Disagree Very Much						Agree Very Much
1. Do you think in order to be a successful figure skater you have to be thin?	1	2	3	4	5	6	7
2. Do you think that judges consider weight when deciding the scores of figure skaters?	1	2	3	4	5	6	7
3. Do you feel pressures from your coach to be a certain weight?	1	2	3	4	5	6	7
4. Has your coach ever commented on your weight?	1	2	3	4	5	6	7
5. Do you feel pressure from your parents to be a certain weight?	1	2	3	4	5	6	7
6. Do you feel pressure from your peers to be a certain weight?	1	2	3	4	5	6	7

Appendix B: Health Promotion Education Lesson Plans

Lesson Plan for Session 1 – Health Promotion Education Series (2 hours)

- Introduction & Parental consent forms
- Discuss content of educational series
- Ice breaker and trust building activities
- T-shirt activity – name and interests
- Blind fold activity
- Qualitative analysis – set of questions – pre education

Lesson Plan for Session 2 – Health Promotion Education Series (2 hours)

Healthy Eating

Benefits of healthy eating

Brainstorm benefits of healthy eating/write on chalk board

Go over benefits in power point slides 1-3

What does being healthy mean to them? (model of healthy living)

You are what you eat: “Junk food” or “sometimes foods”

Power point slide 4

Ask the students to brainstorm “sometimes foods” that would cause a health problem if eaten regularly over a long period of time. List them on the board

Discuss some health problems that could result from eating these foods instead of “everyday foods” (obesity, heart disease, high blood pressure, diabetes, some types of cancer)

Discuss the health problems that could result from eating too little (heart irregularities, hair loses its shine, fatigue, faint, EDs (extreme weight loss))

Nutrients

Write the word “Nutrient” on the board and ask students to discuss what they think it means

Go over Canada’s food guide – define terms on power point slides 5-9

“Serving Size” hand out – go over serving sizes

“Nutrients” hand out – have them fill it out and then discuss answers

“Canada’s Guidelines for Healthy Eating” hand out – fill out then discuss

“Food Diary: What did I eat yesterday?”

ask students to list everything they ate and drank the previous day in the first column then next to each food item, under the appropriate food group, record the number of servings they had

ask the students to indicate “other foods” by check marks only

finally, students total and record the number of servings for each of the four food groups

“Sample Food Package” show example – with construction paper, markers, pencil crayons, and cereal boxes – have students make their own cereal boxes

Hydration

Power point slides 10-14

If Time or Take home

have students brainstorm a list of products they eat that are advertised on TV. Discuss how advertising on TV and in other media affect food buying decisions.

Discuss methods used by advertisers to influence children to buy their products

Free prize

Win a prize

Famous personality

Humour

Take home “TV food commercial survey”

Take home “Personal Food Guide”

Healthy Eating and Physical Activity

“Tips for Kids on Eating Well and Feeling Good about Yourself” hand out

Power point slides 15-18

Go over Canada’s Physical Activity Guide

Activity – students list their ten favourite physical activities on a sheet of paper

Students will then answer the following:

What did the ten favourite physical activities exercise tell you about yourself, are you active, are there more or less things you could do?

What, if anything, do you plan to do as a result of this exercise

Daily Activities – brainstorm daily activities and write on the board

“Setting Healthy Goals” hand out

Lesson Plan for Session 3 – Health Promotion Education Series (2hours)

Positive Body Image and Self Esteem

Natural Body Size

Handouts of slideshow

Slides 1-12

“We All Grow” hand out

“How Do I Look?” hand out

Positive Body Image

Slide 13

“Are You Seeing Clearly?” hand out

“Body Image is...” hand out (pink)

“Follow That Star!” activity

“Personal Fan” activity

“Affirmation list” activity

have students take turns reading the “Ten Steps to Positive Body Image”

have students take turns reading the “How can you change your thinking?” hand out

Lesson Plan for Session 4 – Health Promotion Education Series (2 hours)

Self-Esteem

Slides 14-16

‘Factors Affecting My Body Image/Self-Esteem’ activity sheet

Slide 17

Share affirmation lists

Focusing on inner positive attributes

Positive self-talk – slides 17-21

‘Self talk’ activity sheet

‘Things that increase my self-esteem and things that lower my self-esteem’ activity sheet

Critical Thinking

Perception of body image/self-esteem stories

Story 1,2,3, discussion questions

Important things to remember

Media Messages

Slides 22-24

Discuss as a class how magazines and other forms of advertising place pressure on people to be thin, strong, or muscular. Discuss how this makes them feel and influences their body image and how that could influence their food choices.

Creating a collage

Ask students to create a collage of examples of body images portrayed by the media

Present what they noticed about the people in their theme collages. Students should observe the following

How people are similar or different to each other

How real people (people they know) are similar or different to fashion models, sports figures, and celebrities

Some themes to consider

Women and men in the fashion media

Sport figures and celebrities in the media

Real people like parents, siblings, and neighbours in the media

Discuss advantages of being unique and being your own person

Eating disorders in the media

Brief definition of anorexia/bulimia

Question/answer period

Qualitative Analysis

Feedback Form

Qualitative Questionnaire

What does being healthy mean to them? (model of healthy living)

debrief

If Time—Tic-Tac-Toe Game

Draw tic-tac-toe on chalk board

Two teams, X and O

Line up each time in single file
The first person in line of the first team picks a box
Ask a question and that student tries to answer the question
If the answer is correct the team gets to place their symbol in the box
Play continues until one team wins
Review any wrong answers at the end of the game

Appendix C: Qualitative Questions

Health Promotion Education

1. What does health mean to you?

2. Do you know what Canada's Food Guide is? YES NO

a. If so, do you follow it? YES NO

3. What are some benefits to eating healthy?

4. Do you think you make healthy food choices? YES NO

5. What are some of the foods that you think are healthy?

6. Do you think that you will skate better if you are eating healthy? YES NO

a. Why or why not?

7. Circle how many glasses of water you drink a day on most days?

1 2 3 4 5 6 7 8 9 10

8. Do you drink anything during skating practices? YES NO

9. What are some healthy fluid choices?

10. Do you think your parents make healthy food choices? YES NO

11. What do you think regular physical activity is? (e.g., days/week, min.)

Number of Days per week = _____ Minutes = _____

12. What are some examples of physical activity that you take part in?

13. Do you think that regular physical activity is important? YES NO

a. Why or why not?

14. Have you heard of the Canada's Physical Activity Guide? YES NO

a. If so, do you follow it? YES NO

15. Is there such a thing as too much exercise? YES NO

16. Are there health risks to being underweight? YES NO

a. Can you name any?

17. Do you have a role model? YES NO

a. If so, how is it?

b. Can you describe this person?

18. Have you ever made a list of your successes in skating? YES NO

(e.g., coming first in a competition, landing a jump)

19. Do you feel confident in your abilities as a figure skater?

Strongly Agree 1 2 3 4 5 6 7 Strongly disagree

20. Do you keep a journal? YES NO

21. Do you have off-ice training? YES NO

22. Are you familiar with self-talk? YES NO
23. Are you familiar with the term "eating disorder" YES NO
a. If so can you name a few?
-
-

Feedback Questions – Health Promotion Education

1. I found the health promotion education program to be informative.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

2. I found that the instructor was knowledgeable on the topics presented in class.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

3. I found the health promotion education program to be enjoyable.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

4. Did you know what a ‘nutrient’ was before having taken this class?

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

5. I believe this program helped me to develop a more positive body image.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

6. I think this program helped me to understand the importance of having a positive body image.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

7. I think this program helped me to increase my self-esteem.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

8. I believe this program helped me to understand the importance of having healthy self-esteem.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

9. I think this program is beneficial for figure skaters.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

10. What are some of the ways discussed in class that we can increase self-esteem?

11. I know what an eating disorder is.

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

12. This program helped me to realize that media images are not always healthy

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

13. I know what to do if I think I may have an eating disorder or if there is someone that I think might have one

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

14. This program helped me to realize that dieting is unnecessary and unhealthy

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

15. The instructor answered any questions that the students had concerning eating disorders

Strongly Agree 1 2 3 4 5 6 7 Strongly Disagree

16. What did you like about the health promotion education program?

17. Was there anything that you disliked about the health promotion education program or was there something you think could have been done differently?

18. Any other suggestions or comments?
