Handbook on eating disorders for dance teachers: A guide to understanding anorexia nervosa, bulimia nervosa and promoting proper nutrition in young female dancers

Jennifer Tena Krogman
HANDBOOK ON EATING DISORDERS FOR DANCE TEACHERS: A GUIDE TO UNDERSTANDING ANOREXIA NERVOSA, BULIMIA NERVOSA AND PROMOTING PROPER NUTRITION IN YOUNG FEMALE DANCERS

A Project
Presented to the Faculty of California State University, San Bernardino

In Partial Fulfillment of the Requirements for the Degree Master of Arts in Education: Kinesiology

by Jennifer Tena Krogman
June 2002
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Approved by:

[Redacted]
Dorothy Chen-Maynard, Ph.D., R.D., First Reader
[Redacted]
Sarah M. Boeh, Ph.D., Second Reader
ABSTRACT

This project discusses the problem of eating disorders in dancers. The development of eating disorders can be contributed to sociocultural, developmental, and psychological factors. Dance places an emphasis on thinness, and the pressure to obtain ideal standards of thinness appear to be particularly salient in the development of eating disorders in dancers. Dance teachers and a dancer's environment, in general, reinforce this emphasis of thinness by supporting and even encouraging weight loss and dieting. Research has identified health consequences of extreme finiteness including amenorrhea, bone density loss, fertility problems, osteoporosis, and a variety of additional health problems as a result of malnutrition. Dancers do not receive proper nutrition information that support energy needs and healthy weight maintenance. Despite current prevention programs for eating disorders there is little evidence that supports actual behavior change or development of programs specifically targeting the dance population. Therefore, this project aims to create a handbook for dance teachers, as an effective tool in the prevention of eating disorders in dancers.
ACKNOWLEDGEMENTS

Thank you, Natalie, Tim, Kofi, Jodi, Frank, Dr. Boeh, Dr. Chen-Maynard, Mom, and Sue. I wouldn't have made it without all of you.
DEDICATION

This handbook is dedicated to Kelsee. You deserve every opportunity to express your talents, and explore and take pleasure in the artistic opportunities you have in dance. Let your dreams take you wherever you want to go and enjoy all life has to offer you.

Break a leg!
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CHAPTER ONE

BACKGROUND

Introduction

The contents of Chapter One present an overview of the project. The contexts of the problem are discussed followed by the purpose, significance of the project, and assumptions. Next, the limitations and delimitations that apply to this project are reviewed. Finally, definitions of terms are presented.

Context of the Problem

The National Association of Anorexia Nervosa and Associated Disorders [NAANAD] (2000) reported that there are more than 8,000,000 sufferers of eating disorders. Although cases of eating disorders have been identified in males, approximately 90 to 95 percent of reported cases are female (Mussell, Binford, & Pulkerson, 2000). Athletes participating in sports that emphasize a lean body build and which require weight control, report a higher incidence of eating disorders (Berry & Howe, 2000; Maine, 1994; Montanari & Zietkiewics, 2000). Due to demands associated with weight and appearance, female dancers are at an extremely high risk of developing an
eating disorder (Cox, 1997). According to Hamilton, a clinical psychologist who advises dancers through a column in Dance Magazine, 4 to 15 percent of female dancers may fall victim to an eating disorders compared to 1 to 3 percent of the general population (as cited in Mattingly, 1997). Dancers are more susceptible to developing an eating disorder due to their overachieving personality. Studies have revealed perfectionism as a common trait evident in dancers with eating disorders (Bakker, 1988; Berry & Howe, 2000; Kalliopuska, 1991; Maloney, 1983; Murnen, Ruble, & Smolak, 2000; Taub & Blinde, 1992). Aspiring dancers are socialized into believing that the only way to succeed in a highly competitive professional environment is to acquire and maintain an extremely thin body (Montanari & Zietkiewics, 2000).

Unfortunately, dancers are rarely given the proper nutrition information needed to acquire the perfect genetic and healthy dancer physique (Braisted, Mellin, Gong, & Irwin, 1985; Montanari & Zietkiewics, 2000). According to Braisted et al. (1985) dancers use of weight reduction strategies that include fasting, binge-eating, and restricting food intake as ways to maintain their
physique. The NAANAD (2000) conclude that the opportunity for early detection is lost if individuals lack the basic information concerning recognition of symptoms, psychological insights, or nutritional requirements. Disordered eating is more difficult to treat once it reaches the advanced stage. Braisted et al. (1985), Eating Disorders Awareness and Prevention [EDAP] (2000) and NAANAD (2000) all indicate that dance teachers need to be educated about eating disorders.

Purpose of the Project

Due to the prevalence of eating disorders in dancers, the purpose of the project was to develop a handbook for dance teachers, which includes information on eating, healthy diet, and healthy weight management recommendations for dancers. Specifically, the handbook provides information for dance teachers to promote healthy eating behaviors and a positive body image in young female dancers.

Significance of the Project

Dancers are up to five times more likely to develop eating disorders than an average person. Therefore, educating dance teachers on anorexia nervosa, bulimia
nervosa, and other associated diseases will serve to reduce the incidence of eating disorders. Using the information provides, dance teachers can help to identify symptoms of eating disorders and encourage dancers to adopt healthy eating behaviors; thereby, increasing lifelong careers for the dancers. Dancer teachers can also use the handbook as an excellent tool in providing students, who are not at risk of eating disorder, with dietary recommendations needed to adopt and maintain a healthy lifestyle.

Assumptions

The following assumptions were made regarding this project:

1. It was assumed that a handbook on eating disorders and proper nutrition for dance teachers of young dancers is needed and unavailable.

2. It was also assumed that once the handbook is developed, it might be utilized by dance teachers throughout the State of California.
Limitations and Delimitations

During the development of the project, a number of limitations and delimitations were noted.

Limitations

The following limitations apply to this project:

1. The handbook was developed only for dance teachers residing in private studios.
2. The handbook was developed only for dance teachers and dance team coaches.
3. The handbook was developed to help prevent anorexia nervosa and bulimia nervosa in young female dancers.

Delimitations

The following delimitations apply to this project:

1. The handbook for dance teachers may be utilized by other facilities including schools, fitness centers, or by the general public to prevent eating disorders.
2. The handbook for dance teachers may be utilized by other occupations.
3. The handbook for dance teachers may also be utilized to identify and prevent eating disorders in male dancers.
Definition of Terms
The following terms are defined as they apply to this project.

Amenorrhea - The absence of at least three consecutive menstrual cycles (Szmukler, Dare, & Treasure, 1995).

Anorexia Nervosa - An eating disorder characterized by refusal to maintain a minimally normal weight for height and age (American Psychiatric Association [APA], 1994).

Anthropometrics - The science and procedures that deal with measurements of the size, weight, and proportional dimensions of the human body (Worthington-Roberts & Williams, 1996).

Basal Metabolic Rate (BMR) - The energy expenditure of the body under resting conditions (Davis & Katzman, 1999).

Binge Eating Disorder (BED) - Eating disorder characterized by reoccurring binge eating (American Dietetic Association, 1994).

Body Mass Index (BMI) - A technique of weight assessment based on weight and height to assess health risk. (Bettle, Bettle, Neumaerker, & Neumaerker, 2000).
**Bulimia Nervosa** - An attempt to lose weight through cycles of binge eating with vomiting or overuse of laxatives (APA, 1994).

**Control Group** - The group of subjects in a study to whom a comparison is made to determine whether an observation or treatment has an effect. In an experimental study, it is the group that does not receive a treatment (International Food Information Council Foundation, 2001).

**Dehydration** - Loss of body water (Davis & Katzman 1999).

**Disease** - A state in which there is sufficient departure from the normal signs and symptoms produced (Davis & Donatelle, 2000).

**Disorder** - An ailment that affects normal healthy functioning (Davis & Donatelle, 2000).

**Eating Attitudes Test** [Eat 26 Test] - One of the most widely used standardized measure of symptoms, concerns, and characteristics of eating disorders (Garner, 1982).

**Eating Disorder Inventory** - Method used to document pretreatment status and for assessing progress toward achievement goals for eating disorders (Szmukler, Dare, & Treasure 1995).
Emaciation - Extreme thinness resulting from starvation or illness (Beals & Manore, 1998).

Emotional Eating - Eating in response to moods feelings such as being sad or angry, as opposed to internal eating in response to infernal hunger cues (Szmukler, Dare, & Treasure, 1995).

Energy Deficit Theory - Menstrual dysfunction may be related to the imbalance between energy intake and energy expenditure (McComb, Jacaly, Massey, McComb, & McTee, 1999).

Energy Expenditure - The amount of energy the body expends on a daily basic (Shils, Olson, & Shike, 1994).

Heterogeneity - Consisting of completely different parts (International Food Information Council Foundation, 2001).

Hydrostatic Weighing Techniques - Methods of determining body fat by measuring the amount of water displaced when a person is completely submerged (Davis & Katzman 1999).

Hypochondriasis - Preoccupation with fears of having, or the idea that one has, a serious disease based on
misinterpretation of one or more signs or symptoms (APA, 1994).

**Incidence** - The number of new cases of a disease during a given period of time in a defined population (International Food Information Council Foundation, 2001).

**Meta-Analysis** - A quantitative technique in which the results of several individual studies are pooled to yield an overall conclusions (International Food Information Council Foundation, 2001).

**Metabolism** - Sum of all the various biochemical and physiological processes by which the body grows, repairs, and maintains itself including processes that makes or breaks down and reshapes tissue, transformation of energy to do work (Worthington-Roberts & Williams, 1996).

**Obesity** - A disorder of excess body fat beyond that considered to be normal for a person's age, sex, and body type (Davis & Katzman, 1999).

**Osteoporosis** - A skeletal disease in which the bones mass and density are lost, where the pores in bones are enlarge and the bones generally become fragile and

**Perfectionism** - Setting extremely high standards and being displeased with anything less (Cory & Corey, 1997).

**Prevalence** - The number of existing cases of a disease in a defined population at a specified time (International Food Information Council Foundation, 2001).

**Purging** - Persons with bulimia nervosa engage in a destructive pattern of ridding their bodies of the excess calories (to control their weight) by: vomiting, laxatives or diuretics, enemas, and/or exercising obsessively (ViaHealth, 2001).

**Restrained Eating** - Deliberately withholding food from the body to lose weight despite hunger cues (Taub & Blinde 1992).

**Risk** - A term encompassing a variety of measures of the probability of an outcome. Usually used in reference to unfavorable outcomes such as illness or death (International Food Information Council Foundation, 2001).
Risk Factor - A risk factor is anything statistically shown to have a connection with the incidence of a disease, however, it does not necessarily conclude cause and effect (International Food Information Council Foundation, 2001).

Set Point Theory - A theory to explain cause of obesity that suggests fat storage is determined by a thermostatic mechanism in the body that acts to maintain a specific amount of body fatness (Davis & Donatelle, 2000).

Skin-Fold Test - A technique used to determine subcutaneous body fatness using different body sites (Davis & Katzman, 1999).

Statistical Significance - The probability of obtaining association in a study sample as or more extreme that the one observed if there was actually no effect in the population (International Food Information Council Foundation, 2001).

Organization of the Project

This project is divided into four chapters. Chapter one provides an introduction to the context of the problem, purpose of the project, significance of the
project, limitations and delimitations, and definitions of terms. Chapter Two consists of a review of relevant literature. Chapter Three details the methodology used in developing this project. Chapter four presents conclusions and recommendations drawn from the development of the project. The Appendix follows Chapter Four. The Appendix consists of the Dance Teachers’ Handbook for identification and prevention of eating disorders in young female dancers. References used follow the Appendix.
CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

There is a need to develop a handbook for dance teachers to identify dancers with eating disorders, specifically anorexia nervosa and bulimia nervosa. The review of literature will be separated into three subsections in this chapter. Subsection One consists of literature reviewing the etiology of eating disorders. Subsection Two consists of literature on dancers and eating disorders based on the etiology of eating disorders introduced in Subsection One. Finally, Subsection Three consists of literature reviewing nutritional and medical concerns related to eating disorders as well as to address the need for a handbook that deals these issues identified in the first two subsections.

Etiology of Eating Disorders

The etiology of anorexia nervosa and bulimia nervosa is best understood as the interaction of many factors, including developmental, psychological, environmental, and sociocultural variables. The strength of each of
these factors varies, depending on the individual who suffers from the eating disorder. An individual can acquire an eating disorder despite the fact that they grew up in a loving and nurturing environment. On the other hand, some develop the disease as a direct result of disharmony at home. Then, there are those, who develop the disease while trying to conform to the pressures from society (Shils, Olson, & Shike, 1994). Research provides persuasive evidence of a rising incidence of eating disorders from 1950’s to the year 2000. Various studies attribute the increase changes in trend to culturally determined attitudes and behavior patterns over time (Szmukler, Dare, & Treasure, 1995).

**Anorexia Nervosa**

Anorexia Nervosa is a disorder where the individual has compulsively preoccupation with dieting and thinness that leads to excessive weight loss. Anorexics have an intense fear of becoming fat and often present underlying psychological issues, which lead to their preoccupation with food and weight. Most individuals do not accept that their extreme weight loss and restrictive eating behavior is a problem (American Anorexia Bulimia Association, [AABA], 2001). Anorexia nervosa is the most common
psychiatric diagnosis in young women (as cited in Eating Disorders Awareness and Prevention [EDAP], 2000). One percent of teenage girls in the United States develop anorexia nervosa and as many as 10 percent of these individuals may die as a result (as cited by AABA, 2001).

The diagnostic criteria for anorexia nervosa (APA, 1994) include:

1. The individual refuses to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85 percent of reference body weight; or failure to make expected weight gain during period of growth, leading to body weight less than 85 percent of expected weight).

2. Intense fear of gaining weight or becoming fat, even though underweight.

3. Exhibits a significant disturbance in the way in which body weight or shape is experienced, undue influence of body weight or shape on self-evaluation or denial of the seriousness of the current body weight.
4. Amenorrhea, (e.g., the absence of at least three consecutive menstrual cycles). A woman is considered to have amenorrhea if her periods occur only following hormone, replacement (e.g., estrogen).

Eating disorders primarily affect females, usually in the adolescent years, at the onset of puberty. Eating disorders are reported chiefly between 16-32 years of age, although onset can begin as early as 10 to 11 years of age (Szmukler et al., 1995). Developmental stages and life transitions help initiate the development of anorexia and bulimia nervosa. Dissatisfaction of body-image coupled with an increased concern about eating and problematic eating behaviors emerge simultaneously with the developmental changes associated with puberty (Shisslak & Crago, 1992). During this stage of development, adolescents face a number of difficult tasks, which include, forming peer relationships, starting to date, developing a sense of identity, and gaining autonomy from parents. For some, the progression from childhood to adolescence is an easy task; but for others, this transition is more difficult. To handle the pressure, a young girl may develop an eating disorder as
a way to cope. Peers may tease early maturing females, negatively affecting their self-esteem and self-image. When a woman is sensitive about a developing figure along with rapid weight gain, young girls may begin to restrict their food intake.

Most adolescents are unaware that weight gain will stop after the body goes through these physical changes. The psychological and social consequences that accompany changes in the adolescent's physical development increase the risk of developing an eating disorder. When epidemiological studies were reviewed, the consistent finding pointed to the fact that dieting is the major cause in development of eating disorders (Szmukler et al., 1995).

**Bulimia Nervosa**

Bulimia nervosa is a serious life-threatening disorder characterized by secretive cycles of purging and binge eating behavior. People suffering from bulimia nervosa will often appear to be at normal or average weight. These individuals will often create complicated schedules and rituals to allow for opportunities for binge-and-purge sessions. Approximately 80% of bulimic sufferers are female (as cited by ADA, 2001).
The diagnostic criteria for bulimia nervosa (APA, 1994) include:

1. Reoccurring episodes of binge eating. An episode of binge eating is characterized by the following:
   a. Eating within a discrete period of time (e.g., within any two-hour period), an amount of food that is defiantly larger than most people would eat during a similar period of time and under similar circumstances.
   b. A sense of lack of control over eating during the episode (e.g., feeling that one cannot stop eating or control what or how much one is eating).

2. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise physical active.

3. The binge eating and inappropriate compensatory behaviors both occur on an average of at least twice a week for three months.
4. Self-evaluation is unduly influenced by body shape and weight.

5. The disturbance does not occur exclusively during episodes of anorexia nervosa.

It has been postulated by Abraham (1997) that people suffering from an eating disorder have an identifiable personality. The existence of certain personality traits may predispose individuals to disordered eating (Mussell et al., 2000). These identifiable risk factors include, low-self-esteem, negative self-evaluation, and perceived ineffectiveness (Montanari & Zietkiewiez, 2000; Mussell et al., 2000). Low self-esteem has been shown to be common in individuals with eating disorders; and because of its association with heightened self-awareness, it may be a precipitating factor in the development of an eating disorder (Lindeman, 1994; Committee on Sports Medicine and Fitness [CSMF], 2000).

Self-esteem, defined as the value placed upon our characteristics, abilities, and behavior is shaped by physical, social, and relational factors. The self-esteem of individuals with anorexia nervosa is largely determined by how they perceive their body weight and shape. For example weight gain is unacceptable for
anorexics. When weight gain occurs, the individual feels a sense of failure. While on the other hand, when weight loss is achieved, anorexics feel an outstanding achievement and are impressed with their behavior. Similar to anorexics, individuals with bulimia nervosa place an excessive amount of importance on body shape and weight in self-evaluation. Because sufferers feel that they cannot control their food intake, many individuals develop bulimia out of guilt.

According to Vygotsky’s sociocultural theory, cognitive development, which includes what and how a child learns about the world, is shaped by our culture (as cited in Robinson, 2000). Robinson, (2000) suggests that culture also shapes the way learners view and evaluate themselves. Because thinness and athletic achievement is valued in American culture, low self-esteem can be a result of not achieving this standard.

Individuals with low self-esteem do not like what they see in the mirror. They are continually criticizing themselves, including feeling that they lack the ability to succeed. To compensate for this low self-image, such individuals may go to extreme measures to achieve
excellence in other aspects of their lives. The need to obtain perfection is often one of the reasons why individuals become anorexic or bulimic (Abraham 1997; Davis & Katzman, 1999). Individuals, who have a negative self-perception, often develop disordered eating as a protective mechanism from feelings of failure. These individuals direct their attention to issues related to food and avoid the underlying issues that contribute to feelings of inadequacy (Mussell et al., 2000).

The origin of eating disorders can also be contributed to factors in the individual’s environment, such as, growing up in a family that does not encourage the development of one's ideas, beliefs, and opinions. These individuals are not encouraged to express their feelings; therefore, problems are usually ignored, secretly kept, and rarely discussed (Davis & Katzman, 1999). These individuals could also have grown not understanding the relationship with their parents; and they feel the excessive need to please others before herself. These individuals will try to replace their sadness and feelings of emptiness with food. Parents, who overemphasize competitiveness and stress the importance of winning at all costs, can also encourage eating
disorders. If individuals do not live up to their parent's expectations, they may stop eating as a way to punish themselves for their failures. Individuals, who come from families where there is alcoholism or addictive behaviors, are more at risk of developing an eating disorder. The individual is comfortable imitating the addictive behaviors. There are evidence supporting the increased risk of eating disorders in children who have been sexually abused (Baines, 2001; Garner & Garfinkel, 1997).

Sociocultural factors within American society are strongly related to the development of eating disorders (Baines, 2001; Levine & Smolak, 1994; Miller & Pumariega, 1999; Mussell et al., 2000). Many individuals develop eating disorders in response to the tremendous amount of sociocultural pressure to obtain the current ideal standard of thinness (Mussell et al., 2000).

Within the past 50 years the ideal woman has gotten thinner. A portrait painted by Rubens' in the 1800's of his adored second wife, Helene Fourment, is a perfect example. Although overweight by today's standards, in the 1800's she was considered one of the most beautiful women of her time (Szmukler et al., 1995). Twenty-five years
ago Miss America would be roughly 5 feet tall, and weigh about 140 pounds. Today’s models at the same height have lost 25 pounds and weight a mere 115 pounds, if not less (Kinoy, 2001). Constant exposure to media's representation of the ideal woman influences how females perceive their bodies in relation to weight. American women are considered to be attractive, alluring, and successful if they are thin (Levine & Smolak, 1994). Body dissatisfaction and weight loss concerns are directly related to society's adoption of the accepted female role (Levine & Smolak, 1994). Young girls, who internalize this message, are more likely to develop an eating disorder. A feminist writes, “The process of becoming a women is the attempt to live up to the various standards of her society, the struggle to behave according to her own and her society’s standards. Because femininity is an idealized and illusory quality, and because it is composed of inconsistent and contradictory parts, its pursuit is doomed to failure. She cannot please all the people all the time. To be a women is thus necessarily to carry a sense of failure” (as cited in Szmukler et al., 1995, p. 225).
In addition, media images and myths created by the diet and fitness industry perpetuate the overwhelmingly high rate of body dissatisfaction in society; thus, contributing to the high incidence of eating disorders. Most recommended diets found in fashion magazines are not scientifically based or nutritionally adequate and could possibly be harmful to a woman’s health. Advertisements for weight management, diet products, and exercise programs on television and in magazines, reinforce the emphasis society places on having a thin body shape. The extent to which girls report beauty magazines as a relevant source of information can be a powerful predictor of investment in thinness, weight management, and disturbed eating (Hawthorne-Hoeppner, 2000). Young women begin to think that the thin “look” can be accomplished strictly through reducing her energy intake.

Clinicians for some time have long suspected that excessive dieting puts individuals at risk of developing an eating disorder. In one such retrospective study with adolescents, researchers found that dieters had an eight-fold increase in the incidence of broadly defined eating disorders (Patton, Johnson-Sabine, Wood, Mann, & Walkeling, 1990). These authors research found that over
60 percent of cases related to eating disorders occurred from recent bout of dieting.

Many young women assume that the fastest way to lose weight is to stop eating. They believe that if they stop putting food into their bodies, then the body will eventually use up all the stored energy. Therefore, they will be thinner. When drastic steps are taken to lose weight, the body naturally defends its natural weight or set point (Hamilton, 1998). Based on the set point theory, there is an internal mechanism that controls one's weight, the body will try and retain its set point through regulating energy expenditure activity level, hunger, and metabolic rate.

When a person does not eat or reduce food intake, the body goes into "starvation mode of conservation" (Hamilton, 1998; Szmukler et al., 1995). To protect itself, the body learns to use less energy. The body adjusts to the lack of food by actually slowing the rate of basal metabolism and energy expenditure. Once the individual stats to eat, the body becomes efficient and stores the excess energy until the next time food is eaten. Hamilton, (1998) reported that in addition to drastically increasing the urge to overeat, the resting
metabolic rate is slowed down by as much as 45 percent, making losing weight even more difficult the next time. Attempting to lose weight by eating less energy can actually make an individual gain weight due to the increased metabolic efficiency and retention.

Young girls are more susceptible to developing eating disorders when thinness is further reinforced through messages from family and peers (Hawthorne-Hoeppner, 2000). These mothers can constantly stress to their daughters the importance of being thin. Mothers who are overweight, or struggle with food issues themselves can strongly encourage unhealthy eating behaviors leading to anorexia or bulimia nervosa (Baines, 2001; Levine & Smolak, 1994; Abraham, 1997; Mussell et al., 2000).

Eating disorders develop within cultures that sustain their existence. In this environment, food is readily available and the pursuit for thinness is encouraged and connected to acceptability and self-esteem. Therefore, it can be said they exist in relationship to others, both to our society in general and in the relationships between family and friends. Together, researchers conclude that eating disorders can
be understood when constructed in terms of the relationships with others; "both in the 'inner' world, of the sufferer and in the 'real world' of family relationships" (Szmuker et al., 1994, p. 256).

The risk of developing eating disorders in young girls increases as sociocultural messages gain more acceptance; especially, the belief of "transformation" that is associated with thinness. Young women believe that by being thin, they will have a more successful career, love, life, and social life. The transition to adulthood is associated with the development of self-identity, directly relating to self-esteem, and self-image. Increasingly, abnormal weight control strategies may be adopted by these girls in an attempt to maintain a threatened self-concept. The more young girls try to fit into the thinness in order to obtain social approval, the less likely they are to develop a deep understanding of their own significance and self-identity in society.

Higher rates of eating disorders are found in societies where beauty is described as the essence of femininity and principle root of achievement (Miller & Pumariega, 1999; Mussell et al., 2000). Eating disorders
have traditionally been associated with the White middle class due to the dominated cultural norms and socio-economic status in the United States (Miller & Pumariega, 1999). However, research conducted on larger, ethnically and economically diverse populations confirms that eating disorders exist in a variety of cultures (Neumark-Sztainer, Story, & Blum, 1997; Neumark-Sztainer & Story, 1998; APA, 1994).

Studies examining the influence of fashion magazines on eating habits indicate that levels of abnormal eating behaviors and body dissatisfaction in African-American at least as high as Caucasian women (Miller & Pumariega, 1999; Neumark-Sztainer & Story, 1998). The increased incidence of eating disorders among African Americans may indicate or emphasis on thinness in Caucasian culture is becoming more popular in African-American women.

Eating Disorders in Dancers

A number of interesting issues relevant to the sociocultural models of disordered eating are raised when examining the relationship between eating problems and female athletics (Benson, Eiserman, Geiger, & Wardlaw, 1989; Berry & Howe, 2000; Gillespie, Micheli, & Walaszek,
1984; Johnson, 1994; Murner et al., 2000). These models emphasize the role of the social influences and cultural environment as etiological factors in the development of eating disorders.

**Sport Participation**

There are increasing numbers of athletics in certain sports, such as dance, wrestling, and gymnastics, and their relations to eating disorders, including anorexia nervosa, bulimia nervosa, and a variety of eating disorders not otherwise known (ED-NOS) as anorexia athletica. Many examiners that agree “success in these sports requires a particular appearance, a more or less lean almost prepubescent look, which may lead to direct pressure from coaches, judges, and parents to be thin” (Murner et al., 2000, p. 371). Results of several inquiries support this premise and have identified particular sports that place individuals at a greater risk of developing an eating disorder (Berry & Howe, 2000; Wilkins & Boland, 1991; Mussell et al., 2000; Maine, 1994; McComb et al, 1999; Shisilak & Crago, 1992).

A psychological trait commonly associated with eating disorders is self-esteem. Several studies have indicated that lowered self-esteem has been found to be
an important psychological correlate to eating disorders in athletes (Berry & Howe, 2000; Murner et al., 2000; Taub & Blinde, 1992; Daniels, 2000; Taylor, 1997; Kalliopuska, 1991; Bakker, 1991). However, participation in sports, such as dance, has long been known to be linked with higher levels of self-esteem among female athletes (Wilkins & Boland, 1991). High self-esteem is generally associated with lower psychopathology, which is often seen by people who participate in sports. Therefore, athletic participation is said to be a protective factor against the development of eating disorders. For young girls “being an athlete can give a girl a sense of pride that is separate from appearance and may invest in what her body can do rather than how it looks” (Murnen et al., 2000, p. 372). Whether sport participation is a protective factor in the development of eating disorders or not has been the focus of many research studies.

For example the incidences of eating problems in athletes versus non-athletes were examined by Murner et al., (2000). These researchers hypothesized that:

1. female athletes will have a higher incidence of eating disorders; and
2. the overall difference between athletes and non-athletes will be marked by considerable homogeneity.

To isolate the sources for these differences, several follow-up examinations were conducted. The following questions were addressed in this analysis:

1. Are participants in certain sports, namely dance, running, and swimming, especially at risk? Are participants in sports that require a certain look, a thin or lean body, at special risk?

2. Are elite athletes at greater risk for eating problems than are non-elite athletes?

3. Is athletic participation a protective factor under some circumstances, such as non-elite levels or in sports that do not emphasize slender or thin body build?

A sample of college student's showed a significant difference in the prevalence of eating disorders between the athletes and controls. Although more eating problems were found in athletes, the difference between controls, were not as large among the high school students. This indicates that both sides of the debate, whether sport
participation is a risk or protective factor for eating disorders could be true.

Murner et al. (2000) hypothesized that those athletes participating in lean sports or sports or sports that focused on having a slender appearance would demonstrate specifically higher incidences of eating problems than would controls, whereas those in non-lean, non-thin sports would not differ.

The results showed that subjects participating in various forms of dance are more likely to show signs and symptoms of disordered eating than are non-athletes.

Aesthetics

In dance, compared to other sports, such as wrestling, the trend toward increasing leanness is even more pronounced. "Thinness is intrinsic to the art form" (Mattingly, 1997, p. 66). In Ryan and Stephens's book (1988), The Dancer's Complete Guide To Health Care And A Long Career, suggests that "leanness is not only an artistic standard in many professional dance companies: it is an occupational absolute" (p. 18). These authors provide physical characteristics shared by elite female dancers. These measurements are based on a number of studies conducted on professional dancers from
international, national, and regional ballet companies, They found that the average female dancer in these companies was 23 years old, 5 foot 5 1/2 inches, 107 pounds, with 13-16 percent body fat. These measurements were also found in advanced students in major ballet schools and studios (Ryan & Stephens, 1988).

Other researchers have identified similar findings for percent body fat in dancers. Hergenroeder, Wong, Fiorotto, O’Brian-Smith, and Klish (1991) examined body composition of adolescent and young adult ballet dancers using total body electrical conductivity (TOBEC). This procedure uses an oscillating radio frequency current to determine the subjects’ lean tissue mass (Shils et al., 1994). The study population included 112 females and 33 males. This was the largest group of ballet dancers whose body composition has been studied. Percent body fat of 13.6 percent was recorded for these female subjects.

Leanness, even thinness, has been thought to enhance performance. "A smaller figure makes certain steps and movement easier, from balances to turns. Gaining a couple pounds can mean fewer pirouettes" (Mattingly, 1997, p. 66). More importantly, if a dancer does not maintain her thin figure, it can negatively affect her
performance. When a dancer knows her body weight, she is comfortable balancing or finding her center of gravity. If a dancer is heavy or especially if her weight fluctuates, it will be difficult to execute the delicate dance steps. Weight changes can throw off a dancer's center of gravity making it harder for her to balance. Extra weight can affect a dancer's timing or the ability to complete the dance step on the right count. To master excellent split leaps or jumps, a dancer must elevate high into the air. If the dancer gains weight, she will need additional strength to lift herself off the ground. Gaining weight will also make landing more difficult in addition to increasing a dancers risk of injury.

Studies have also shown that particular body types are favored for certain types of dance. Dances that require great agility, jumping, and flexibility, requires small, light bodies. A slender body is also recommended for dances that utilize aerobatics techniques that require good balance and quickness of movement.

Testimonies from former professional ballet dancers indicate the importance of having a slim figure in dance. Retired ballet professional, Donna Boguslav, states that, "There will always be the need for the partners sake as
well as the dancer's sake to achieve a certain size" (as cited in Mattingly, 1997, p. 66). As a general rule, the female dancer should be smaller and weigh less than the male. The size and strength of the male partner would determine the weight requirements for the female dancer. The male partner must be able to successfully hold, carry, and catch his partner. In addition, the male dancer must be able to lift his partner effortlessly into the air. Both dancers must maintain their required weight to consistently accomplish the choreography. It is not surprising therefore, based on the physical requirements of dance that these athlete-artists have a greater risk of developing eating disorders (Shisslak & Crago, 1992).

Western culture's "ideal physique" for a dancer can be traced back to the classical ballet's Romantic Era. During this time, dance was related to the era's fascination of the supernatural (Carter, 1998). At this time, stage props were introduced making the ballet magical and much more entertaining. Audiences were mesmerized as they would watch dancers fly delicately across the floor. Choreographers conspired to produce a style of dance and stage machinery ideal for the supernatural subject. These roles require that dancers be
extraordinary slender and full of grace (Calabrese & Kirkendall, 1983).

The ideal ballet dancer was praised for her lightness and her seemingly effortless movements as she floats across the floor. This ideal figure continued to gain acceptance into the 1900’s. Professional companies aspired to have a uniform group of young dancers, whose movements were characteristic of the styles emerged in the Romantic Era.

While classical ballet and competitive sports demand similarly high standards of technical proficiency, ballet is radically different in its aesthetic requirements (Hamilton, Brooks-Gunn, Warren, & Hamilton, 1988). In the dance world, there is a preference for the “right” body shape, weight, and look—the aesthetic, which is not generally necessary in sport. In comparison to sports, where a larger body build is important, maintaining a low-body weight and thin exterior is essential for progress in classical ballet (Braisted et al., 1985). To conform to body-weight requirements, a dancer will restrict her food intake to lose weight or to maintain an acceptable stature. When weight management is a constant
concern, a dancer may have an increased risk for the development of an eating disorder.

The Young Dancer

Adolescence is period of time when young girls are very susceptible to developing an eating disorder. Additional pounds gained as well as body fatness during the pubertal years may account for dissatisfaction of the body and unhealthy dieting behaviors. Anorexics try to diet to get rid of pubertal fat. Facing the overpowering demands of adulthood is difficult and some adolescents never make the transition (Cory & Corey, 1997). For a dancer, making that transition could mean, not gaining weight. To attain the slender "girlish" physique of the dancer, food restriction becomes the way to regain the prepubescent figure she had at one time (Montanari & Zietkiewicz, 2000).

Psychological and social changes also occur at this time, making a young girl very vulnerable, since this is a time where adolescents establish a strong sense of identity. Increasing body size and shape can negatively affect body image, especially in an environment that favors a slender physique. When a dancer sees that all famous dancers are thin, it gives her the impression that
this is the example body type. Because the aesthetic look of a dancer isn't that different from society's view of the ideal women, it reinforces the importance of thinness. It creates a climate in which weight is crucial to a dancer's identity. In order to be famous, a young dancer believes she must be thin (Daniels, 2000). Because puberty is associated with weight gain, young dancers may become increasingly concerned with their weight. During the developmental stage, hormonal changes trigger the onset of menstruation and her associated physical characteristics. At this time breasts form, hips widen, and there will be an increase in height. The young dancer will see an increase in body fat, occurring in the upper leg region and around the breasts (Baines, 2001; Abraham, 1996). Before puberty, the young dancer's body resembled the physique of a dancer.

Along with an increase in body weight, a dancer will have an increase in fat mass, length of arms and legs, and a changing pre-portion of limb to torso. As the nervous system struggles to keep up with muscular and skeletal changes, a dancer will begin to experience fluctuations in coordination and balance. Due flexibility and strength can also decrease, the fact that muscles do
not always lengthen as fast as the bones. These physical changes will significantly affect her ability. A dancer will see a decrease in flexibility and control, which results in lower leg extensions, decreased coordination, and a lack of balance, making pirouettes more difficult. With the combination of hormonal changes and perceived lack of ability, a young dancer may begin to lose confidence. This can have negative effects on their self-esteem. Research has clearly pointed out that low-self esteem, coupled with the extreme pressure to be thin, promotes unhealthy eating habits leading to eating disorders.

Braisted et al. (1985) studied the adolescent ballet dancers and found that unhealthy dieting practices and characteristics of anorexia nervosa were common in these young girls. The subject population included 45 female, ballet dancers with age between 12 and 21 and 44 non-athletic female subjects who age between 14-16 years. A questionnaire was given to each participant, which focused on background and general health information as well as characteristics associated with anorexia nervosa, nutrition beliefs, and food practices. To detect an eating disorder, the completed questionnaires were
compared to characteristics of anorexia nervosa, based on the diagnostic criteria for psychiatric research:

1. Menstrual History - including age of gestation and cycle regularity;
2. Frequency of the Abuse Behaviors - Including binging, purging, laxative abuse, and diet pill usage;
3. Anxiety About Weight and Eating - Assessed using a four-point Likert-type scale of "not anxious at all" to extremely anxious;
4. Body Image Distortion - Involved contrasting self reported weight categorization to objective weight category taken from The National Center for Health Statistics height and weight of youth's 12 through 17 years of age.

Examination of the data indicated that ballet dancers exhibited a higher number of characteristics similarly to the induce of anorexia nervosa. There was a smaller number of non-athletic controls, which reported being underweight, having a distorted body image, amenorrhea, and binge eating. The ballet dancers also had a higher occurrence of having body image distortion. Notably more
dancers reported binging behavior and were more than 20 percent below their expected weight for height. More dancers (23.5%) were at 75% or less than their expected weight compared to controls (5.7%). Only 20% of the controls were ≤80% of expected weight for height, whereas 50% of the dancers were below this level. Despite being 20-30% below the mean weight for height, 47% described themselves as a “little overweight” or “very overweight”. On the other hand, all the control group that were 20% below the mean for weight and height described themselves as “just right” (Braisted et al., 1985). Dancers also had a distorted body image and exhibited amenorrhea (27% of the ballet group had not experienced menarche) compared to 9.8% of the controls. In addition, higher number of dancers, in contrast to the control group, weighed 75 percent or less than the expected weight for height. In addition, dancers were found to diet more frequently and fast for longer periods of time when compared to the control group.

In another study by Montanari and Zietkiewicz (2000) conducted on adolescent South African ballet dancers, they reported a highly significant difference in drive
for thinness in adolescent female ballet dancers when compared to normal adolescent samples (there findings also supported the results of Braisted et al., 1985).

Participants in Montanari and Zietkiewicz study consisted of 37 adolescent female ballet dancers in full time training, dancing two to three hours five to six times a week. An eating disorder inventory (EDI) and the Multidimensional Perfectionism Scale and biographical questionnaire were completed by the subjects.

The results indicated that the prevalence of dieting, preoccupation with weight, and an extreme pursuit of thinness were seen more in the dancers than in the average adolescent subjects. No significant differences were found between the dancers and the group of anorexic nervosa patients regarding bulimia nervosa, body dissatisfaction, and maturity.

The dancers studied, similar to other diagnosed bulimics, engaged in punitive, restrictive patterns as opposed to binge-purging behaviors. Data collected from the Eating Disorder Inventory (EDI) indicated that many dancers reported episodes of uncontrolled eating, presenting a clearer indication of the existence of anorexia nervosa.
Similar to anorexics, the large number of dancers reported dissatisfaction with their bodies, and believed that specific areas of their body, especially hips, buttocks, and thighs were too big. The study points out that it is impossible for these dancers to deviate from the sylph-like body, which is expected and required because a dancer is consistently being judged on her physique (Montanari & Zietkiewicz, 2000). The more a dancer’s body shape deviates from what is considered to be “ideal” for the sport, the greater her risk is of in development an eating disorders (Berry & Howe, 2000).

When the dancers were compared to other bulimics, each group practiced the same behaviors of dissatisfaction, distrust, and fear of her maturing body. Dissatisfaction of the body is probably due to the pressure dancers faces to maintain a slim figure and conform to the standards expected of them (Montanari & Zietkiewicz, 2000). Physiologically, not all dancers will be able to attain this prepubescent slender figure, even when practicing extreme food recitative behaviors. These individuals may not have a natural predisposition to the slender figure lines of a dancer.
To explore the possibility further, Hamilton et al., (1988) examined girls who matured early (early maturers) and those maturing at the average age (on-time maturers). The study confirmed that dancers are less susceptible to the development of eating problems if they are more suited to the thin ideal required by the profession. The ideal body type for dance is long, lean, and linear. This body type is more likely to be found in girls with a delay in menarche rather than in early or on-time maturers.

As validated by the article in Christian Science Monitor (2001), dancers are quickly weeded out of the system when body shape and weight standards are not met. In the extremely competitive School of American Ballet, only 5 percent of the girls who begin training at the age of eight graduate nine years later (Hamilton et al., 1988). It was hypothesized that dancers, who were chosen specifically by a professional ballet company, may be more naturally suited to the thin body standards, because they survived the strict process of selection throughout their developing years (Hamilton et al., 1988).

In another study, the incidence of eating disorders and familial obesity was examined in national companies
that differed in the selection process of their dancers. Subjects consisted of forty-nine dancers performing in four national ballet companies in America and the People's Republic of China. The emphasis on thinness, job security, and training regimen were the same for the dancers in each company. The American companies used in the study were considered to be extremely competitive and the Chinese company was the only national company in the People's Republic of China. One American company and the Chinese company only chose their dancers from company schools, where girls were enrolled in late childhood. These two companies also had to constantly meet rigid weight standards for technique, body shape, and weight.

Anthropometric measurements where taken to examine and make the comparisons for weight and height of the dancers. Three different strategies were used to assess if subjects had any eating problems. Subjects were then asked if they have had a past history of anorexia nervosa and bulimia nervosa.

First, a description for each type of eating disorder was provided to dancers based on the symptoms defined in the third edition of the Diagnostic And Statistical Manual For Mental Disorders (DSM-III).
Dancers were also asked if they had ever purged on a regular basis to control their weight.

Second, the subjects were asked to complete a version of the eating problem scale, EAT-26 developed by Garner and Garfinkel (1997). Changes were made to the EAT-26 scale to make the data more comparable to those collected on adolescent dance students. Based on the validity seen in other studies the following subscales were used.

1. Dieting - "I am on a diet much of the time."
2. Bulimia Nervosa - "I have the impulse to throw up after meals."
3. Oral Control - "I feel that others pressure me to eat."

Items were rated on a six-point scale with 1 as, not at all to 6 very well. For the third strategy, the dancers were asked to indicate whether they shared similar characteristics of the six behaviors typically seen in people who suffer from anorexia nervosa and bulimia nervosa:

1. Deliberate weight loss;
2. Menstrual irregularity;
3. Over activity without enjoyment;
4. Feeling terrified of becoming fat;
5. Feeling fat despite others stating you are too thin;

The age of menarche, from stating date up to the last cycle, was recorded for each subject. Comparisons were made between the American and Chinese dancers in companies that chose their dancers exclusively from company schools. Based on anthropometric comparisons, possibly due to genetics, the Chinese were smaller and lighter than the American dancers; in addition there was no significant differences in familial obesity. Delayed menarche was observed in both the Chinese and American dancers; however, there was significant difference in the starting age of training. Dance training started 5 years later for the Chinese dancers compared to American dancers. Using the EAT-26 subscales and the anorectic behaviors for both groups of dancers, there were no significant differences in regards to eating problems.

The study refers to the dancers as highly selected and non-selected dancers. The highly selected dancer refers to the elite few, the prima ballerinas, dancing with a top-notch professional company. Non-selected
dancer refers to those dancers in a studio or an unknown company that may have extremely talented dancers; but may lack the reputation needed to compete with the first-rate ballet companies.

The height, weight, percent ideal weight, and the age when training began did not differ between the highly selected (elite) and non-selective (non-elite) groups. There were also no differences found when comparing the age of menarche onset in the two groups. Each group exhibited a delay in menarche when compared to population norms. The results for familial obesity exhibited distinct differences. Only five percent of the highly selected dancers, compared to 42 percent of the less-selected American dancers, reported that a close family member was obese. A higher incidence of eating problems and anorectic behaviors was seen in the less selected group of dancers. Despite cultural differences in the onset of training in Americans and Chinese dancers, the age of menarche was positively related to the amount of time-spent training before menarche.

The findings from this study indicate that national ballet companies, who do not control the early selection process of their dancers, may be choosing women who have
more difficulty maintaining the low-body weight demanded by its profession. As a result, these dancers are more at risk for developing eating-related problems than highly selected dancers. Ballet dancers on an average usually maintain weight that range from 6 percent to 12 percent below their ideal weight for height (Shisslak & Crago, 1992). In the present study, there were no differences in percent of ideal weight between different selection processes or cultural backgrounds. The dancers were found to be 14 percent below their ideal weight for height.

Highly selected dancers only had 5 percent incidence of familial obesity. This is substantially contrary to the findings found for both audition companies and the general population. Because family-line resemblance in fatness can run as high as 80 percent if both parents are obese. Since ballet does not expend many calories, the low weight achieved by the selected dancers could be a result of deviant eating behaviors. This statement is further validated by the fact that these dancers reported more eating problems and anorectic behaviors.

Delayed menarche, close to two years over the population norms, was reported in both American and Chinese dancers. The differences found in menarcheal age
could be due to eating behaviors practiced among dancers. Dance companies, who are able to choose from a large selection of adolescent dancers, may be more willing to select late-maturing dancers because the delay is associated with a long linear body. Because of the body shape accompanied by late maturers, a delay in menarche may predispose certain women to a career in a national ballet company. Unfortunately, those who do not share these characteristics may be more susceptible to the development of a serious eating problem. This study also identifies the same physical characteristics associated with the ideal body in female dancers, even across two very different ethnic and culture groups.

**Personality**

There is increasing evidence that eating disorders are more common in athletes exhibiting a certain type of personality. This is based on studies that have identified personality types that are characteristics of patients with eating disorders (Bakker, 1988; Berry & Howe, 2000; Kalliopuksa, 1991; Maloney, 1983; Murnen et al., 2000; Taub & Blinde, 1992). Perfectionism, concern with performance, compulsive concern with body shape and
competitiveness, were found to be description of athletes with eating disorders.

As indicated in a study by Murnen et al. (2000), dancers have a higher risk of developing an eating disorder when compared to other athletes. Dancers must constantly push themselves to succeed, to persist, and survive in an environment, which favors the development of eating disorders (Holderness, Brooks-Gunn, Warren, 1994). Creative energy, narcissism, and personal discipline are required to excel in this highly competitive sport. Results from other studies concur with findings by Murnen et al. (2000) that dancers are at greater risk for psycho-physiological problems associated with dance compared to other athletes. Based on the study of 20 female college students majoring in ballet, Murnen et al. (2000) reported the following characteristics among the dancers: low self-esteem, hypochondriasis, obsessive-compulsive tendencies, anxiety, strong sense of femininity, and sensitivity. These results indicated that profiles of young dancers' were positively correlated with adults having anorexia nervosa and university students with bulimia nervosa. Based on the unique personality profile found in these ballet majors, Murnen
et al. (2000) concluded that various intervention programs could benefit and possibly prevent eating disorders in dancers.

In addition, Murnen, Ruble, and Smolak (2000) compared 60 elite dancers to non-elite dancers and found that elite dancers had an increased risk for eating problems compared to non-athletes (d = .54, z = 6.68, p < .01). These researchers contribute this association to the personality traits of the elite athlete, (competitiveness, concern with performance, compulsive concern with body the shape of the body, and perfectionism), which are also characteristics associated with disordered eating.

According to Montanari and Zietkiwicz (2000), dancers are significantly different from the normal adolescents in terms of perfectionism. Dancers, who are perfectionists, place a great deal of pressure on themselves. A dancer is constantly learning and rehearsing choreography. She may repeat a dance step until it is done correctly. To improve a dancer’s performance, she is taught to critique her movements until they are technically acceptable. They have the idea that “If I make a mistake on this step, I’m a failure”
Since it is impossible to achieve perfection, to demand a flawless performance is not only impractical but also contributes to low self-esteem and "self-punishment."

A longitudinal study by Bakker (1991), conducted on personality found that dancers are introverted, strongly achievement motivated, emotional, and exhibit less favorable self-attitudes. These findings were similar to previous reports, with respect to physical self-concept and self-esteem.

In an additional study, Biasi, Bonaiuto, Giannini, and Chiappero (1999), examined whether Type A behavior pattern is more frequently seen in dance artists when compared to sedentary people. Type A personalities exhibit characteristics such as anxiousness, competitiveness, and are described as being perfectionists (Davis & Donatelle, 2000). Having this type of personality may add to the degree of self-imposed stress a dancer may experience.

The study on 400 young adults, including the comparable sedentary subjects, classical ballet, or modern dance professionals or amateurs, and high level or amateur athletes practicing different sport specialties
through the year (Biasi et al., 1999). Participants were assessed based on two scales of Type A behavior pattern. The Type A personality was found to be almost twice as prevalent among dancers, while Type B was found to be more evident in the sedentary participants. When comparing athletes to sedentary people, dancers were found to be less hard, and have more of a tendency to deny and control negative emotions, and to avoid interpersonal contact. These features seem consistent with the severe continuous discipline, aesthetic sensitivity, and high social coordination that the art demands (Biasi et al., 1999). When internal comparisons were made between amateur vs. professional dancers and amateur vs. high-level athletes, remarkable homogeneity was found.

These personality traits were also reported by Bettie et al., (2000) in a study conducted on 90 ballet dancers, between 11 through 17 years of age. Subscales from the Eating Disorder Inventory (EDI) found significant differences between the psychological characteristics of dancers and the 156 non-dancers in the study. Higher scores for the dancers were found in their 1) drive for thinness, 2) bulimia nervosa, 3)
interpersonal distrust, 4) ineffectiveness, and 5) perfectionism. The highest scores were evident in dancers 16 years of age. The study points to important psychological irregularities prevalent in the course of adolescence for female dancers.

If dancers' expectations for success are low, this pessimistic attitude limits their ability to cope with the daily stresses of dance. The obsessive behavior exhibited in dancers, also found in anorexics, stems from an intense desire for control and perfection.

Dance Teachers

Dancers function in an environment that places them more at risk of developing an eating disorder. Dancers receive a considerable amount of pressure to remain thin. Because thinness is often a requisite for success in dance, such distorted eating behavior may be considered a norm in this world. If losing weight provides recognition by their dance teacher, a dancer will go to any means to receive this attention. Some dancers are extremely competitive and are constantly judging their own performance to other dancers. If this means being skinnier, a dancer being a perfectionist, will go to any extreme to weigh less than their peers.
In a study exploring the energy deficit hypothesis, McComb et al. (1999) stress the impact coaches and teachers can have on the cause and prevention of eating disorders in their athletes. When certain sports were examined, more cases of eating disorders were found in various forms of dance/performance sports. These sports include ballet, aerobics, and cheerleading. Based on the heterogeneity between these sports, athletes were found to have a greater risk for eating disorders. This suggests that participating in sports does not create the problem. Other psychological factors, such as actual demands of the sport, and pressure from coaches and teachers can significantly contribute to the development of disordered eating.

Dance teachers can play a significant role in the development of anorexia nervosa and bulimia nervosa. For example, a dancer who suffers from anorexia nervosa and bulimia nervosa stated that her first sign of body dissatisfaction occurred after her dance teacher called her a “fat cow” in front of everyone in the dance class (Mattingly, 1997). Dance teachers tend to encourage their dancers to lose weight by setting weight standards. One dancer, who attended a summer ballet program, recalled
that students were weighed before class each morning. However, she was not allowed to see the numbers. This type of cruel control dance teachers/directors can have over their young dancers reinforces the behaviors that dancers have with their body weights. Dancers were kept on strict meal plans and parents were discouraged from sending care packages that contained food. At this age, these 12 to 15 year old dancers were not only too young to understand the complicated effects of dieting, but had no frame of reference by which to judge their director’s behavior (Mattingly, 1997).

Even though, dance has evolved since the 1800’s, the desire for leanness in dancers has intensified in major dance companies today (Calabrese & Kirkendall, 1983). A dancer faces an extreme amount of pressure when she begins auditioning for dance companies. Many professional ballet schools still require dancers to meet physical “standards” as conditions of enrollment.

The lawsuit against San Francisco Ballet School is an excellent example. Without even given the opportunity, to perform, the young dancer was dismissed from the audition for having “the wrong body type.” The statement on the school’s website, “The ideal candidate is a
healthy child with a well-proportioned body, a straight and supple spine, legs turned out from hip joint, flexibility, slender legs and torso, and correctly arched feet” (Christian Science Monitor [CSM], 2001, p. 6).

A dancer is presented with a serious dilemma. Her future depends on being optimally nourished and injury free; but she is also aware that even the most technically talented dancer may be rejected because her body size or shape does not project the right “look” (Benson et al., 1989).

New York City Ballet student quoted that “Today's concept of thin is extreme compared to 30 years ago. And for many of the increasingly young dancers embarking on professional careers, the immediate results of the disorder-lean, delicate, articulated figures outweigh potential life-threatening effects” (as cited in Mattingly, 1997, p. 67).

As a whole, female athletes can be expected to receive some degree of pressure to remain lean and maintain a low percent of body fat. These expectations have a direct relationship to the athlete’s drive for thinness, leading to preoccupation with weight and shape,
dieting practices, adoption of extreme methods of weight loss, and lastly, development of serious eating problems.

**Nutrition Concerns**

Disordered eating behavior can impair a dancer’s performance and increase her risk of injury. When a dancer consumes an insufficient amount of energy (Calories), which can lead to inadequate nutrients, fluids, and electrolytes imbalances. This can lead to decreased endurance, speed, strength, reaction time, and the ability to concentrate. At first the body’s adaptation to these changes and a decrease in performance may not become evident for some time. Therefore, the dancers believe that distorted eating practices are harmless. As a result, they continue to practice the same eating behaviors, which further increases their risk of injury and medical problems. Continual food restriction can result in menstrual dysfunction and potentially irreversible bone loss. Psychological and other medical complications including fluid and electrolyte imbalances, depression, changes to the cardiovascular, endocrine, gastrointestinal, and thermoregulatory systems can also occur with prolonged malnutrition (CSMN, 2000; Fogelholm, Lichtenbelt, Ottenheijm, & Westerterp, 1996; Hoch, 2001).
As far as recovery is concerned, some of these complications may be reversible if intervention is provided in time (Fogelholm et al., 1996).

The pressures on today's dancers to achieve and maintain bodies with extremely low percentage of body weight are alarming. Many have questioned how dancers can maintain a slender body given the energy used in dance. Aside from other types of dance, ballet is primarily non-aerobic. According to Hamilton (1998), even the most demanding form of dance, ballet, only uses 200-300 calories per hour. Other forms of dance, such as, jazz, tap, are less physically demanding than ballet and do little for weight loss. Dancers exert little energy learning the choreography, most variations only last 2 to 3 minutes. Taking this into consideration, it is almost impossible for a ballet dancer to achieve weight reduction or maintain a low body weight through dancing alone. Body fatness has been found to be encouraged in families and is also considered to be heritable. The alarming incidence of anorexia nervosa and bulimia nervosa in ballet dancers insinuates that chronic dieting behavior practiced by this profession to achieve thin body standards may be important in the pathogenesis of
eating problems. In a dancer's pursuit to achieve and maintain the perfect "dancer's physique", nutrition and healthy eating practices are often ignored.

To better address the areas of nutritional concerns of dancers, Braisted et al., (1985) obtained data with regard to the dietary practices, nutrition status, nutritional knowledge and beliefs of 45 female ballet dancers. The following categories were used to assess the food practices:

1. Use of supplements;
2. Eating behavior prior to performance;
3. Eating response to non-hunger cues;
4. Weight loss strategies.

Comparable to other research findings, over half of the dancers reported taking supplements. The most frequently used supplements were vitamin C and multivitamins. Confirming conclusions of current research discovered the most popular method of weight reduction was restricting food intake. Dancers did not believe that any one nutrient enhances their performance, but did think ascorbic acid and protein were beneficial. The dancers did feel that candy and high-fat foods were venomous to their performance.
In an earlier study, similar results were reported by Sawyer-Morese, Mobley, Saegert, & Smolik, (1989), where nutritional beliefs and dietary practices of 49 ballet dancers were examined. To obtain the needed data, questionnaires were given to dancers to assess their nutritional beliefs and food practices. Subjects also voluntarily participated in three nutrition classes. The topics discussed in these classes included, food selection and nutrient density, energy balance, and food beliefs and myths.

The following responses were provided by dancers concerning their food practices and nutritional beliefs:

1. Over one third of the dancers did not feel that one food can enhance performance;

2. Close to 58 percent of the dancers did not believe that any nutrient can help performance;

3. Those who believed certain nutrients can help performance. Vitamin C and multivitamins were believed to help performance in those dancers that believed certain nutrients can help.

In the Sawyer-Morese et al. (1989), regardless of the fact that dancers were aware that their height and weight would be measured, they usually gave an incorrect
estimation of their weight. This may identify that the dancers had an inaccurate perception of body image. Dancers underestimated their weight by three pounds. This might reflect a dancer’s strong desire to obtain the professional “ideal” body size. Contrary to the study by Braisted et al., (1985) the dancers avoided and viewed protein negatively. Sawyer-Morse et al., (1989) indicated that this is an area of concern because increased protein turnover is needed to support adolescent dancers’ physical growth and developmental needs.

The nutrition classes were found to be helpful in increasing in knowledge by 90.4 percent of the subjects. The dancers felt that providing nutrition information in future dance workshops would be beneficial.

Not all dancers have a clinical eating disorder, but studies suggest that dancers do restrict food and practice fad diets for weight loss. The impact of dieting, based on plethora of similar research findings, have been shown to be significantly related to development of eating disorders. The main conclusion that can be gathered from research suggest that dancers, either those with clinical eating disorders or those
practicing distorted eating, greatly compromise their health and increase risk of the disease.

To emphasize that all athletes can be affected by the food restriction practices, Beals and Manore, (1998), completed a comparative study. They compared female athletes with subclinical eating disorders to female control athletes. Both of the athletes were similar in age, height, weight, fat-free mass and body mass index. Examination of data revealed that the mean energy intake was found to be lower in the subclinical group. The subclinical eating disorder group had significantly lower mean protein and fat intakes when compared to the control group (Beals & Manore, 1998). Since these athletes reportedly take a vitamin and mineral supplementation, their intake of iron, zinc, magnesium, vitamin B-12, and folate were unaffected by a decrease in energy intake. Even though the subclinical eating disorder group did not have severe nutritional deficiencies, inadequate intake of food, energy, carbohydrate, zinc, iron, and magnesium was found.

While female athletes with subclinical eating disorders might not experience the severe life-threatening malnutrition like those with clinical
eating disorders, they have an increased risk for suboptimal energy intakes and nutrient deficiencies (Abraham, 1996). Beals and Manore, (1998) examined food frequency questionnaires of ballet dancers and found that 69 percent of the dancers had nutrient intakes less than 70 percent of the Recommended Dietary Allowances (RDA).

**Medical Concerns**

Examination of the dietary practices of dancers provides increasing evidence that dancers severely restrict their intake of food to achieve desirable weights. Although dance may not be the best activity for weight loss due to low energy expenditure, it does involve intensive training. The body requires sufficient energy intake to maintain adequate body protein (muscles) and fat reserves, as well as sufficient water and electrolyte intakes to replace fluid losses. In addition, good nutrition practices are extremely important for the adolescent dancer. Pubertal growth and development of this time requires an increase in dietary needs of both macro and micronutrients (Braisted et al., 1985). These findings allude to potential medical problems that may surface as a result of malnutrition in young dancers. The nutrient deprivation and low body fat stores seen in
dancers appears to be related to the increased prevalence of menstrual abnormalities in young dancers.

An increasing number of studies have reported cases of primary amenorrhea, secondary amenorrhea, oligomenorrhea, and luteal phase deficiency among dancers (Downing, 1997). Primary amenorrhea can be defined as the absence of menses by 16 years of age. The absence of three to six consecutive menstrual cycles in an already menstruating female is defined as secondary amenorrhea. Oligomenorrhea is defined as menstrual cycles that occur at or in intervals. In the luteal phase, the low levels of estrogen secretion influence pituitary secretion of both follicle-stimulating hormone and luteinizing hormone. In postmenarcheal females, amenorrhea is an indicator of physiological dysfunction of anorexia nervosa (APA, 1994).

Similar to the dietary profile of a dancer, the typical sufferer of amenorrhea has an inadequate intake of nutrients and an overall dietary intake that is insufficient to meet the actual energy needs by the body. The energy deficit theory states that menstrual dysfunction may be related to the imbalance of energy intake and energy expenditure ( Marshal, 1994). According
to Marshal (1994), professional dancers seem to have a highest risk for this disorder. The increased risk in dancers may be attributed to their dieting behaviors and practices. Lending further support, The Committee on Sports Medicine and Nutrition, (2000) suggested the increased cases of amenorrhea seen in athletes are caused by an eating disorder.

Brooks-Gunn, Warren and Hamilton, (1987) examined the relationship between eating problems and amenorrhea in ballet dancers. Professional dancers, having eight years of training participated in the study. Measurements were taken for menstrual history, weight, and psychological characteristics of anorexia nervosa. Results indicated that 56 of the dancers had a delayed menarche, and 19 percent of the participants currently had amenorrhea. Eating disorders were reported in one-third of the dancers (Brooks-Gunn et al., 1987).

Results from this study by Brooks-Gunn et al., (1987) support the conclusions by The Committee on Sports Medicine and Nutrition (2000), when stating that amenorrhea in dancers was significantly related to the presence of an eating disorder.
Half of the dancers were reported to have anorexia nervosa. The activity level and age in which training began were not found to be a causative factor of amenorrhea in dancers. Dieting, low body fat stores, and absolute body weight were related to prolonged amenorrhea.

These results were also reported in a previous study conducted by Warren, (1980), where amenorrhea observed in dancers was significantly related to the combination of dietary restriction and low body weight. The results indicated that eating problems might be a factor in the pathogenesis of prolonged amenorrhea seen in dancers.

These studies verify the relationship among food restriction, eating disorders, and amenorrhea in dancers. It also indicates that amenorrhea may place dancers at risk of developing further health consequences. In addition to maintaining a low-body weight, dancers who practiced rigid dieting behaviors or those with eating disorders often avoid high-fat foods, for fear in gaining weight (Brooks-Gunn et al., 1987). Research has suggested that fat consumption may be involved in regulating estrogen production and excretion. When nutrients and minerals are deficient or consumed in excess, it modifies
the role of the endocrine system. Amenorrhic women with little body fat tend to have lower than required levels of estrogen and estadiol. Snow-Harter (1994), explains how the alterations in reproductive function potentially decrease bone mass:

1. Amenorrhea lasting less than or equal to three years results in low serum levels of both estrogen and progesterone. As a result, skeletal health is compromised and bone mass density is comparative to that of a postmenopausal women;

2. Oligomenorrhea lasting four to nine menstrual cycles per year is accompanied by low levels of reproductive hormone, resulting in low bone density;

3. During adolescence, 48 percent of skeletal mass and 15 percent of bone mass as well as 15 percent of adult height are gained. Skeletal development is greatly impaired as a result of the low serum estrogen levels during adolescence.

Taking into account the study by Beals and Manore (1998), 69 percent of the dancers had an overall nutrient
intake less than 70 percent. Considering the overall poor intakes of energy and food in dancers, along with the high nutrient demands necessary for adolescent growth, dancers are placed at an even greater risk of bone loss and development of osteoporosis (Braisted et al., 1985).

The body's peak bone-building years are critical to maximizing bone calcium content. At least 40 percent of skeletal calcium should be accumulated during the teen years (Frusztajer, Dhuper, Warren, Brooks-Gunn, & Warren, 1990; Henderson, 1998). Osteoporosis is characterized by a loss of bone, resulting in fractures (CSMN, 2000). The restrictive diets lacking in energy and nutrients, which are commonly seen in dancers with eating disorders, increase the risk of osteoporosis. In fact, the bone mass density of some young dancers can be comparable to that of a 50-year-old woman (Huch, 2001). When intakes of energy and food are restricted, the body lacks the proper amount of calcium and it is unable to supply adequate amounts of this nutrient to growing bones. As a result, the bones become brittle and sensitive to breakage.

McComb et al., (1999) investigated the difference in dietary fat and calcium intakes between eumenorrheic and oligo/amenorrheic female athletes. The energy deficit
theory was utilized for analysis purposes. The energy deficit theory states that menstrual dysfunction may be related to the imbalance between energy intake and energy expenditure. The differences in the ratio of energy intake relative to energy expenditure, daily calories of fat and calcium intake of each group were compared. Consistent with other research findings, females with abnormal menses had an energy intake lower than the actual needs expected by their activity level. The athletes also consumed fewer calories from fat. The eumenorrheic group had a 22 percent of body fat compared to the 14 percent body fat seen in the oligo/amenorrheic group. This study suggests that restricting energy needs leading to depleted body fat, not only increases the risk of amenorrhea, but impairs estrogen production, thereby, decreasing bone mineral density. When estrogen levels are low, the bones release calcium (McComb et al., 1999). In addition, calcium intake of less than 1,200 milligrams per day is a risk factor for the development of osteoporosis (McComb et al., 1999).

In a study that examined dancers with similar endocrine profiles, Frusztafer et al. (1990) found that the high incidence of stress fractures seen in dancers
could be directly related to their dietary practices. When comparisons were made between dancers with and without stress fractures, the largest differences were seen in those who practice restricted diets. The researchers' conclusions identify the importance of proper nutrition in adolescence. In addition, based on the study by Henderson (1998), young dancers' nutritional deficiencies may affect the attainment of a normal skeletal mass. It was shown that 48 percent of skeletal mass is attained during adolescence and continues to grow through the age of 30. This was evidenced by the development of stress fractures in the dancers who participated in the study. This also supports the possible explanation for decreased bone mass seen by Snow-Harter, (1994) and Henderson, (1998), which further indicates a serious health problem for young dancers (Fruszajer et al., Fox, 1990).

The internal and external pressures placed on women to achieve and maintain unrealistically low body weight underlie the development of the athletic triad (Downing, 1997). The triad is typically seen in young female athletes participating in high-intensity sports. These female athletes are competing in a sport culture that
strongly encourages maintaining a certain ideal body weight and shape for optimum performance (McComb et al. 1999). Female competitive athletes participating in appearance-orientated sports, such as competitive dance, are at risk of premature bone loss due to decrease body fat and estrogen.

Handbook Needs and Design

Both Henderson, (1998) and McComb et al., (1999) believes that early detection and education in the prevention of more serious health consequences associated with the female athletic triad has become increasingly important. Teenagers need to overcome the assumptions that osteoporosis only affects older people.

Due to the increased incidence of eating disorders in female adolescents, health professionals aim to increase awareness of the risk of osteoporosis in teenagers (Henderson, 1998). According to the director of The Massachusetts Department of Public Health’s osteoporosis awareness campaign, “Healthy young women can have strong minds, strong bodies, and strong bones for life by eating well and exercising moderately” (Henderson, 1998, p. 8).
Young women must be encouraged to resist striving for the emaciated figure that is dominant in today’s culture. “It is vital that professionals including school nurses, health education teachers, physical education teachers, and coaches work synergistically to develop a comprehensive assessment and prevention program for young female athletes, who may be at risk for the triad of disorders so commonly seen in high intensity sports, where body image plays a role in performance” (McComb et al., 1999, p. 24).

Rose, (1997) believes women with one component of the triad should be screened for the other two components. Screening should be done during the athlete’s pre-participation examination and during clinical evaluation of menstrual change, weight change, disordered eating patterns, cardiac arrhythmias, bradycardia, stress fracture, or depression. These authors believe that all athletic women should receive education on proper nutrition, safe training practices, and the warning signs and risks of the triad.

In regards to medical concerns related to nutritional practices, Beal and Manore (1998) emphasize the importance of increasing awareness of the
consequences of inadequate nutrition intake on performance and health. Inadequate intake of nutrients can have potentially negative health consequences, which include compromised immune function, chronic fatigue, poor or delayed healing and recovery from injury, anemia, endocrine abnormalities, and reduced bone density.

In order for dancers to be properly nourished, appropriate education and counseling are needed (Benson et al., 1989). To change behavior, dancers must receive "hands on" education dealing with daily nutritional concerns. Sawyer-Morese et al., (1989), believe that "education can provide a background for knowledgeable food choices and the application of necessary practice to affect behavior" (p. 202).

The American Dietetic Association (ADA) believes that registered dietitians should identify and inform health professionals and lay public of the dangers of diet advertisements and fad products. Dietitians should also provide education to public on healthy weight ranges and weight stabilization methods and risk factors for developing eating disorders (ADA, 1994). The ADA also states that behavior-change is most effective when coupled with education prevention.
Nutrition education should be given to female athletes with subclinical eating disorders concerning acceptance and maintenance of a body weight that is optimal for health and performance. The challenge for educators is to find effective ways of communicating the nutrition message to these athletes (Beals & Manore, 1998). As many as 46 percent of dancers as reported by Hamilton (1998) have an eating disorder. The high risk of eating disorders seen in dancers provides insights into the environmental causes of eating disorders.

The Office on Woman’s Health (OWH) Initiative to End Racial and Ethnic Disparities in Health has developed the Body Wise packet, which provides teachers information on eating disorders. The packet is available for middle school personnel and has now been revised to include information on eating disorders among students of various racial and ethnic backgrounds. In addition, it also contains materials for parents with updated resources guides. The main goal of the packet is to raise awareness and understanding about eating disorders. It emphasizes the links among healthy eating, positive body image, and favorable learning outcomes (Daniels, 2001).
The Body Wise packet is targeted for all personnel interacting with children in grades 9 through 12. The information emphasizes and encourages an environment that; 1) provides and introduces policies that discourage distorted eating and 2) help identify warning signs of eating disorder in youth. As of Fall 2000, OWH distributed 10,000 of these packets to health and education related organizations. Health educators teaching grades fifth, sixth, and seventh were randomly chosen to receive a packet.

Healthy Body Image is another curricula developed on eating disorders. Healthy Body Image’s concept is that adolescent girls face an enormous amount of pressure to be thin. “Statistics show that 80 percent of adolescent girls feel bad about their bodies, 75 percent feel ‘fat’ and up to 70 percent are on diets at a given time” (as cited in Kater, 2001). How can young girls feel good about their bodies, when their surrounding environment emphasizes thinness as a characteristic of beauty. In order to teach kids to eat and love their bodies, a healthy body image needs to begin development in the elementary school grades. The curriculum lesson topics include:
1. Develop incentives for healthy eating and active lifestyle;
2. Think critically about messages from the media;
3. Resist unhealthy cultural pressures regarding weight and dieting;
4. Dangers of dieting;
5. Respect genetic diversity of body shapes and sizes;
6. Understand normal weight gain during puberty;
7. Gain an historical perspective on current American body image attitudes;
8. Develop an identity based on inner strengths not on appearance.

As morbidity and mortality rates of eating disorder become increasingly more evident, prevention strategies and full awareness of the challenges involved need to take place (Piran, 1996). The challenges are as follows:

1. Fighting the Thinness Model

It is hard to counteract particular behaviors associated with eating disorders: restrained eating, dieting, and even limited purging because it is supported by our culture. Our culture endorses attitudes that contribute to
eating disorders, such as, emphasis on thinness instead of health. There is also an intolerance of such normal changes that occur in the female body. For example, weight gain due to water retention related to menstruation or weight gain during pregnancy. When adolescents function in this context, it makes it difficult to accept physical changes occurring in puberty.

2. Building Self-Esteem in Girls
Research looking at development in females reveals that girls 11 through 12 years old suppress their self-identity, and they are generally more confused about who they are, their attitudes, values and have a low-self-esteem. Eating disorders have continually been link to low self-esteem (Piran, 1996).

3. Encouraging Adult Responsibility
The eating disorder prevention packets available place more responsibility on the child, instead of the parents. In addition, information provided to parents does not
correlate to lessons used in the school program. This questions whether adults are adequately prepared to take responsibility for the welfare of their children. A study conducted on 11-year old girls living in a large urban center found that 44 percent of the subjects were on a "diet". When these study results were reported, only a few parents came to an education night to discuss eating disorders (Piran, 1996).

4. JTK Need for Good Resources

There have been prevention efforts in the United States, Canada, and Europe, although only a few have evaluated the effectiveness of the program. Strategies that have been found to be successful in smoking and substance abuse prevention have not been used with an eating disorder prevention program. Most of the current programs emphasize the long-term effects of eating disorders. Some of the prevention program contained information that may even be destructive. For example, stressing how girls are more sensitive than boys and boys
should help girls. For those prevention programs that were evaluated, knowledge was positively affected but not behavior. It is hard to recommend a model program when prevention programs do not address all relevant risk factors.

5. Risks of Prevention Activities
There are potential risks when the intervention involves topics adolescents are sensitive about, such as body shape and image. Negative outcome is usually exhibited by signs of anxiety, intensified efforts for weight loss, or a hostile environment rather than supportive. Prevention activities may invite adolescents to support common attitudes about weight and dieting. If an adolescent is asked to obtain weights above those of her peers, adequate support must be provided to help her face social challenges.

6. Changing the Environment
Prevention is only successful when the social structure is supportive. To illustrate this point, look at the success rate of smoking and
alcohol prevention. Alcohol prevention has been less successful because it is socially acceptable to drink, giving adolescents conflicting messages. Some may try very hard to change their eating behaviors but have a difficult time when their environment continually supports it. How students identify with role models, the curriculum, and negative messages concerning women's role in society are presented are all crucial environmental elements that may contribute to eating disorders.

7. Targeting the Adults

In order for a prevention program it is essential that adults change the way they operate around children. It is important to work with adults and teachers to address prejudices concerning body image, acceptable weights, informing them of the consequences of negative comments and unsupervised dieting.

8. Strategies That May Work

a. To develop a successful implementation program it needs to be thoroughly planned
and evaluated. Peer group and image-building strategies used in smoking and substance abuse programs may be effective.

b. Because adolescent are very concerned about their appearance the intervention program should focus and short-term consequences rather than long-term. Such as negative effects of dieting on metabolism, instead of long-term consequences like osteoporosis. Stressing stamina instead of appearance may be a successful approach (Piran, 1996).

c. Support should be provided to adolescents to develop a counter-culture environment. Children must know there is someone they can go to for help. The programs also need to be ongoing, and age appropriate.

9. Filling the Knowledge Gap

While continuing to search for better prevention programs, intervention must still be attempted based on the information currently available. Since clinical date can be
generalized to the population at large, more community studies are required. Based on research that revealed negative attitudes and dieting practices in prepubescent girls, younger populations should be studied. Attention should be placed on listening, and understanding their culture and the pressures that adolescents face.

The position adopted by the Eating Disorders Awareness and Prevention Incorporated (EDAP) and the American Anorexia/Bulimia Association (AABA) stated, "Eating disorders seriously endanger the health and well-being of student athletes. All personnel involved in the teaching, coaching, training, and support of sports, dance and other physical activities should be aware of the risk factors and the pivotal role they can have in the prevention of eating disorders" (as cited in Maine, 1994). The Eating Disorders Awareness and Prevention Incorporated and The American Anorexia/Bulimia Association made the following recommendations:

1. Physical educators, coaches and trainers should obtain education on nutrition needs of
athletes, due to the stress of training and competition.

2. Physical educators, coaches and trainers should be trained to recognize the signs and symptoms of eating disorders and understand the potential effect sports may have on such problems.

3. Physical educators, coaches and trainers should identify and refer student athletes for assessment and treatment in addition to working corporately with the students and clinical personnel to assure full recovery.

4. Physical educators, coaches and trainers should stress the physical risk of being under weight, especially when female athletes have menstrual irregularities or amenorrhea.

5. Physical educators, coaches and trainers discourage restrictive dieting and weight control techniques.

6. Physical educators, coaches and trainers should consider an athletes health, physical and emotional well-being when making decisions about inclusion and exclusion.
7. Physical educators, coaches and trainers should provide educational materials, speakers. Activities should be provided to inform athletes and parents about the importance of appropriate nutrition, the principles of set-point theory and the dangers of restrictive dieting and maintaining an artificially low body weight.

8. Physical educators, coaches and trainers should encourage a positive self-esteem and self-image in athletes and should recognize the importance of their personal and professional role to communicate respect and validation to student athletes.

Daniels, (2000) stated that dancers need to be well informed of the physical changes that accompany puberty. Changes in body size and shape may challenge a young dancers positive self-image, especially in a dance environment that encourages a slender physique. Dancers should also be educated about healthy eating habits and be encouraged to pursue a healthy lifestyle to improve and prolong their dance careers (Daniels, 2000).
In order to accommodate students, teachers can modify class structure and content on an individual basis. This time can be dedicated to increasing technical understanding, enhance artistry, learn about the body, and work on individual needs. The challenges for a dance teacher would be to continue class as normal as possible. It might be beneficial to postpone high profile competitions during this time to decrease the amount of pressure on a young dancer (Daniels, 2000). Dancers must be provided with medical support. Health professionals should work in collaboration with teachers and students to establish a team approach.

To determine the model treatment approach Mussell et al. (2000) examined the efficacy of prevention programs. Several interesting issues prevailed from Mussell et al., (2000) research. Most of these programs have been implicated in the educational setting, many were conducted in junior high and high schools, with a few studies performed on college students. There has only been one study conducted with elementary students and of these studies, only a small number present outcome data. This was evident in the Body Wise packet, which seems to be beneficial but there are no outcome data to establish
if the program did make a difference. There has also only been a few controlled research studies published that evaluate the actual efficacy of the eating disorder prevention program.

Although the studies focused on different age groups, they all involved some type of education, with didactic and discussion formats, emphasizing the negative consequences of unhealthy weight control and encouraging healthy eating patterns. Most of the programs included information on the maturation process and promoted establishing a positive body image. Secondly, the programs usually included a section to build skills or understanding to resistance negative media images about dieting and body image. There was also a component to develop coping skills to resist sociocultural pressures for thinness and excessive dieting.

The largest and best-executed primary prevention and one of the few long-term controlled studies to date consisted of 931 junior high school girls. The girls were assigned to either a non-treatment control group or the intervention group. Eighteen lessons were used, which had three educational goals that included helping students to:
1. Understand the consequences of dieting;
2. Learn the importance of exercise and having a balanced diet;
3. Develop coping skills to fight societal pressures to be thin.

Three slides were shown, depicting seven characters similar in age and ethnicity. The characters modeled either healthy or unhealthy eating behaviors. Dialogue was read for each character and then students completed supplemental worksheets, which asked questions correlating to the story.

To evaluate the program, several measurements were taken including body mass index (BMI), height, weight, and knowledge about eating disorders, dietary constraints, and characteristics of eating disorders. Pre and post assessments were taken along with an evaluation performed four times during the two-year follow-up period. Unfortunately, there were no significant differences found between the intervention and control groups, at the end of the study. It seemed as though there was improvement in knowledge, but no such results have shown improvements in efficacy of preventing behavior leading to preventions of eating disorders.
According to Mussell et al. (2000) the results from these well-designed studies are peculiar. Some studies provided evidence demonstrating increased comprehension understanding of eating disorders. Other studies showed improvements in attitudes related to eating disorder behavior. These disappointing results may be due to to small assessment tools, lack of control groups, and possibly inadequate sample sizes.

Due to the adverse medical consequences of eating disorders, it is crucial that intervention begins prior to development of unhealthy eating behaviors to reduce the growing number of eating disorders. Intervention strategies that stop the progression at an early stage are crucial to reduce future psychological and physical diseases.

On the other hand, the positive effects of the intervention program may have prevailed after the study had already ended. The disease specific-approach taken by most primary prevention programs may be the reason why positive findings were not reported. The disease-specific approach focuses mainly on modifying specific behaviors with the intention of changing those behaviors that are considered to be unhealthy (Mussell et al., 2000).
Mussell et al. (2000) outlined an excellent model for the development, implementation, and evaluation of an eating disorder prevention program. The program aims to "prevent or delay the onset of disordered eating, reduce the impact of existing attitudes and behaviors related to eating disorders, foster healthier knowledge, attitudes and behaviors to promote psychological and physical well-being, and provide support for schools in preventing eating disorders through systematic intervention designed to modify the social environment" (Mussell et al., 2000, p. 774). Because the disease-specific approach had not provided positive results, the program was based on the social cognitive theory. The theory "recommends that change programs should address environmental, personnel, and behavioral factors and the relations among them, since changes in one factor are expected to reinforce changes in other factors" (Mussell et al., 2000, p. 780).

The goals of the program were to modify knowledge, attitudes, and behaviors pertaining to nutrition and weight management, to enhance body image, and to facilitate self-efficacy in fighting social pressures regarding weight and eating issues. The content included nutrition and body image issues as they relate to
adolescent changes, healthy eating guidelines, and specific nutritional principles, exercise, and behavior modification for weight management, education about prevention of anorexia nervosa and bulimia nervosa, critical evaluation of messages from weight loss advertisements and media images related to body image and self-esteem, and the importance of resisting harmful social norms and actively modifying the immediate social environment.

Students were encouraged to actively create healthier norms within the classroom environment as well as with family and peers. Another useful component of the program involved of teachers into the curriculum and training. Special attention was given to help teachers refine skills of listening actively, and providing feedback in a nonjudgmental manner. To help athletes develop healthier eating patterns and to detect prospective eating disorders, future prevention programs should include coaches. As research supports the link between eating disorders and self-identity, attempts must be made to help young girls and women develop a positive self-identity. This could include creating and promoting opportunities for girls and young women to interact with
strong female role models who have a strong sense of self-identity and demonstrate academic, personnel, and career success.

Intervention programs that focus on systemic aspects and developing resiliency factors have been shown to be successful. Intervention program has a greater chance of success when attempts were made to improve the immediate environment of young women. This is done through educating staff and administrators and promoting behavior to counter act prejudice that contributes to the development of eating disorders. Prevention efforts can help coaches and dance teachers "understand that pathological eating behavior and attitudes may be ‘adaptive’, learned responses to powerful, societal messages about women. and effective coping strategies to deal with a wide range of stressors and can encourage changes in the way in which those in power respond to various messages and acts that hurt young women" (Mussell et al., 2000, p. 789).

Summary

The literature important to this project was presented in Chapter Two and provided vindication for the
following three premises. First, a dancer has an increased risk of developing an eating disorder due to the emphasis dance places on thinness. Second, dancers engage in restrictive dietary practices, and consume inadequate nutrients needed to support health. Third, the long-term consequences of nutrient depletion can have detrimental effects on a dancer's quality of life and lifelong career in dance.

The literature integrates the work of noted researchers to support these premises. The information presented in Chapter Two suggests that due to the increased number of medical problems, inadequate nutrition and chronic calorie restriction reported in dancers, the problems with eating disorders among these artists can no longer be ignored. There is a definite need for developing a handbook designed to educate dance teachers on eating disorders and to define their role in the development of the disease. This handbook will provide dance teachers with the tools needed to detect and prevent eating disorders.
CHAPTER THREE

METHODOLOGY

Introduction

Chapter Three details the steps used to develop the handbook. Specifically, the research articles and information on dancers and eating disorders was obtained through various sources as listed in the reference section. Questions for the handbook were formulated with special attention directed to the causative factors contributing to the increasing incidence of eating disorders in the dance population and more importantly, how behaviors of teachers/coaches can help or hinder the spread of this disease. Existing data were collected and analyzed to be included/concluded. Ultimately, it was concluded that dancers’ environmental surroundings enforce unrealistic weight standards and support, even encourage unhealthy dietary practices. Existing data and theory were compiled and analyzed. Results of this literature review led to the ultimate question that can be used as the basis of this project: What could be done to create a handbook, to educate and provide teachers
with the information needed to prevent dancers from developing eating disorders among dancers?

**Purpose of the Handbook**

Consensus among the studies of dancers can be stated briefly: The pressures felt by dancers face to achieve and maintain the "ideal body" lead to increased body dissatisfaction and the development of restrictive dieting behaviors, leading to eating development disorders. Providing dance teachers with knowledge concerning eating disorders and promoting an overall awareness of anorexia nervosa and bulimia should cause a decrease in the prevalence of this disease. Rather than contributing to the problem, dance teachers can be part of the solution.

**Population Served**

This handbook is created to provide dance teachers with information about the development of eating disorders as well as strategies for prevention. This handbook has been designed for teachers whose primary focus is to properly train students to become professional dancers. The majority of these dance
teachers teach in private studios working with teaching young, female students aged 7-17.

The targeted audience for the handbook comes from various artistic institutions. The background of these teachers’ may include some college, a professional career in dance, or a dance studio, company, or convention member launching his or her career in dance choreography.

Handbook Development

Choreographing, performing and teaching various dancers elicited the initial interest and dedication to the development of this handbook. The content of this handbook has been developed after investigating relevant conclusions and implications of literature identifying dancers (specifically female ballet) as a high-risk group, having common nutritional practices, and medical problems resulting from inadequate nutrient intake. The non-existing intervention strategies found after reviewing literature from traditional and on-line resources warranted a definite need for this handbook.

Handbook Resources and Content Validation

Handbook resources utilized much of the information presented in the body of this project. Particularly,
summarizing the conclusions and implications alluding from research was used to determine the content of this handbook. Because a model eating disorder prevention program for dance teachers did not surface in research, programs created for school settings were utilized. Additional studies and validation of the usefulness of the handbook are necessary. They would include, but not limited to finding and identifying successful intervention programs targeting dance teachers, and possible eating disorder prevention strategies adopted by dance studios. This would require preliminary formulation of questionnaires to be distributed to dance studio teachers and personnel. Interviews of both dance teachers and studio members would be needed to determine the current needs of these young artists. Upon completion of handbook distribution and adoption, initial content validation would be sought from researchers with experience in eating disorder prevention and intervention strategies. Multiple copies of the handbooks for dance studios, companies, and conventions would then be produced. After distribution, input from those utilizing the handbook would be obtained and evaluated through a survey questionnaire. Careful follow-up would then be
scheduled in increments to include dance teachers, dancers, and additional studio members.

Handbook Design

This handbook was designed with a focus on supporting the arts, mainly dancers. It includes educational material that would provide dance teachers the realization of dancers' vulnerability to eating disorders. The handbook provides the resources that dance teachers would need to decrease the incidence of eating disorders among this population. Through utilizing and understanding the information in the handbook, the social context in which dancers work will be and continue to be a more positive environment, which supports self-identity, artistic development, and the attainment of a dancer's lifelong dreams. It is hoped that as dance teachers learn various risk factors, detection tools, and nutritional concepts, it will increase the overall awareness of their vital role in preventing eating disorders and encouraging overall health of their students.
Supported research revealed the impact dance teachers have on the development and prevention of eating disorders. In the presence of effective instruction, the number of eating disorders cases could significantly decrease. The main goal of this handbook is to prevent eating disorders and promote the overall health of dancers. Educating dance teachers will impact the overall understanding and prevention of eating disorder in the world of dance. As role models, dance teachers can decrease pressures, encourage a positive self image, and promote social change in dancers' immediate environment.
CHAPTER FOUR

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Included in Chapter Four is a presentation of the conclusions gleamed as a result of completing this project. Further, the recommendations extracted from this project are presented. Lastly, the Chapter concludes with a summary.

Conclusions

The conclusion extracted from this project follow.

1. Dancers have an increased risk in the development of eating disorders due to sociocultural pressures in their immediate and environment.

2. Dance teachers contribute to the development of eating disorders in dancers by:
   a. Emphasizing the importance of thinness.
   b. Giving dancers negative criticism.
   c. Encouraging weight loss and dieting.
   d. Not providing dancers with information on healthy eating practices and nutritional needs.
3. Dance teachers need to be trained in both eating disorder prevention and nutrition concepts as they pertain to dancers physical and psychological needs.

4. Dance teachers need to understand the consequences of eating disorders and the effect excess dieting has on the health of young female dancers.

5. Dance teachers need to be trained on how to address physical and behavioral risk factors in relation to the development of eating disorders.

6. Dance teachers should receive instruction on how to improve the immediate environment and promote behaviors to counter prejudice contributing to development eating disorder.

7. Dance teachers need to establish a relationship with students to promote self-esteem and development of a positive identity.

Recommendations

The recommendations resulting from this project follow.
1. Further research and evaluation are needed to verify the findings of this project.

2. Further research and evaluation are needed to address the issues of eating disorders, specifically, in dancers, in all styles of dance, not just ballet.

3. Further controlled research studies need to be performed on the efficacy of eating disorder prevention programs.


5. All dance teachers should receive training that includes primary intervention strategies as they pertain to social cognitive models.

6. Further research and evaluation are needed to ascertain whether this handbook has Internet applications.

7. Further research and evaluation are needed to determine if this handbook should be offered to coaches and teachers in the educational setting.
Summary

Chapter Four reviewed the conclusions derived from this project. The articles and on-line resources used during the research phase support the premise upon which this project is based. Due to the emphases placed on leanness and the pressure to conform to these standards, dancers have increased risks of developing eating disorder. Dance teachers have a significant impact on development of eating disorders in dancers. This chapter offers the primary reason for developing eating disorders that dance teachers lack the knowledge needed to prevent. It was also concluded by providing dance teachers with appropriate prevention strategies and nutritional information, it would bridge this knowledge gap. The recommendations indicated further research and evaluation should be conducted to verify the results of using this handbook as a potential eating disorder prevention tool. Lastly, if the results of this handbook lead to present the desired effects, broader applications should be considered. This would necessitate further research and evaluation into appropriate areas.
APPENDIX

DANCE TEACHERS EATING DISORDER HANDBOOK
"...never too thin"?

A Dance Teachers' Handbook to Fostering a Healthy Body Image

By

Jennifer T. Krogman,
BS Foods and Nutrition,
MA Education with a Kinesiology Option
June, 2002
Why do female dancers have an increased risk of developing eating disorders?

✓ Dance places a great deal of emphasis on thinness. In the dance world, there is a preference for the "right" body shape and weight. To conform to body weight requirements, a dancer will restrict her food intake to lose weight or maintain acceptable stature.

✓ Like others with eating disorders, some dancers are perfectionist, extremely competitive and achievement orientated, and are willing to sacrifice themselves to meet their goals.

✓ Think about how much time a dancer spends looking at her body in the mirror. As dancers we are taught to critique our movements, to look at the form and shape of our body.

✓ Dancers are continually corrected by their teachers and coaches. They are trained to focus upon their reflection to observe mistakes and perfect their technique.

✓ Dancers are pitted competitively against each other for highly popular roles in productions and entrance into professional dance companies.

✓ If the "diva" dancer at the studio is slender, it is easy for the other dancers to focus on weight and size. Some dancers, having a competitive nature, will often compare themselves to others.

✓ When dancers are in an environment that encourages thinness, it is almost impossible not to invest some effort to attain the "ideal dancers physique."

✓ Because puberty is associated with weight gain, this period of development can be a very difficult time for many young dancers.
What role do teachers play in the development of eating disorders?

✓ Dancers may even be asked or encouraged to lose weight, even though her body mass index is within healthy range.

✓ Most young dancers will try to measure up to their teachers and peers by restricting their food intake, which can be a precursor to the development of eating disorders.

How can dance teachers help to reduce the development of eating disorders in dancers?

✓ Dance teachers have the unique opportunity to promote the physical and psychological well-being of young dancers. Most dance teachers were once dancers and most likely faced similar pressures that students may encounter on a regular basis.

✓ As dance teachers, our goal is to help each dancer reach their fullest potential. This can be accomplished by learning, modeling and promoting healthy eating habits, using clear effective communication, and corrective criticism which focuses on the behavior, not the dancer. We can help each dancer fulfill their dream by encouraging self-expression, and investing time in giving positive feedback and recognize each dancers individual strengths.

This handbook focuses on female dancers learning dance at a studio or training and performing in a dance company or team. It is my hope that dance teachers will use this handbook to create a positive environment, one in which encourages proper nutrition, promotes self-esteem, and discourages the development of eating disorders.
What do you know about eating disorders and dancers?

Take this series of quizzes to find out how much you know about Anorexia and Bulimia Nervosa. (Answers located at end of the handbook)

ANOREXIA NERVOSA

dieting
heavier
fat
gaining weight
psychological disorder
weight loss

Anorexia Nervosa is a __________________________
characterized by a fixation to lose weight.

People who suffer from this disorder view themselves as being ____________, even when everyone else doesn't.

They have an intense fear of ____________ and a relentless pursuit of thinness.

Anorexics feel that they are ________________ than the rest of the people around them and want to do something about it.

Even after ________________, anorexics will continue to feel the need to be skinnier.

_______________ becomes an obsession and soon they believe that the quickest way to lose weight is to not eat at all.
BULIMIA NERVOSA

stop
being out of control
exercising
behaviors
will
binge
2 hours
hunger
hide
vomiting
purging

1. People who suffer from bulimia nervosa eat large amounts of food in a discrete period of time. This is generally referred to as a ______________ and lasts _______________.

2. A binge can be triggered by a certain mood, in reaction to stressors, or from intense _______________ resulting from food restriction.

3. Most bulimics are ashamed of their behavior and try to _______________ their symptoms from others.

4. Bulimics recognize that their _______________ are unusual and perhaps dangerous to their health.

5. After an episode of binge eating the individual feels a sense of _______________.

6. Once the binge starts the person feels like they can’t _______________ eating.

7. The most common technique used to compensate for binge-eating is _______________.

8. Due to physical discomfort and in fear of gaining weight, 80-90 percent of individuals practice methods of _______________.

9. Most bulimics become skilled at vomiting and eventually are able to vomit at _______________.

10. Another way to compensate for their binge episode is by fasting for days or more or _______________ excessively.
1. _____ Some bulimics misuse diuretics and laxatives.

2. _____ Similar to anorexics, people who suffer from bulimia nervosa do not have an intense fear of gaining weight.

3. _____ Bulimics are extremely concerned about their body size and shape. They are dissatisfied with their bodies and place a great deal of emphasis on being thin.

4. _____ Bulimia nervosa affects 1-3 percent of middle and high school girls and 1-4 percent of college age women.

5. _____ About 50 percent of people who have been anorexic develop bulimia nervosa or bulimic patterns.

6. _____ Approximately 90 percent of bulimia nervosa patients are female.

7. _____ People struggling with bulimia nervosa will often appear to be of average body weight.

8. _____ Eating disorders primarily affect females, usually in the adolescent years, at the period of puberty.

9. _____ Eating disorders usually begin in adolescence, with the majority of cases developing before the age of 25.
Could you have a student that may have anorexia or bulimia?

Indicate which of these warning signs is a sign or symptom of Anorexia(A), Bulimia(B), or both(AB). Examples below:

<table>
<thead>
<tr>
<th>AB</th>
<th>Extreme concern with body weight and shape and anxiety about becoming fat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Significant or extreme weight loss.</td>
</tr>
<tr>
<td>B</td>
<td>Taking laxatives, vomiting, and/or over exercising to &quot;purge&quot; food</td>
</tr>
<tr>
<td>___</td>
<td>Abnormal swelling of the cheeks or jaw area.</td>
</tr>
<tr>
<td>___</td>
<td>Alienation from usual friends and activities.</td>
</tr>
<tr>
<td>___</td>
<td>Calluses on the back of the hands and knuckles from self-induced vomiting.</td>
</tr>
<tr>
<td>___</td>
<td>Concerns about eating in public.</td>
</tr>
<tr>
<td>___</td>
<td>Consistent excuses to avoid mealtimes or situations involving food.</td>
</tr>
<tr>
<td>___</td>
<td>Creation of complex lifestyle schedules or rituals to make time for binge-and-purge sessions.</td>
</tr>
<tr>
<td>___</td>
<td>Ignoring hunger signals.</td>
</tr>
<tr>
<td>___</td>
<td>Development of food rituals (i.e., eating foods in certain orders, excessive chewing, rearranging food on a plate).</td>
</tr>
<tr>
<td>___</td>
<td>Discoloration or staining of the teeth. The enamel on the teeth begins to wear away causing cavities.</td>
</tr>
<tr>
<td>___</td>
<td>Eating large amounts of food on the spur of the moment.</td>
</tr>
<tr>
<td>___</td>
<td>Evidence of binge-eating behaviors, which include a disappearance of large amounts of food in short periods of time or the existence of wrappers and containers indicating the consumption of large amounts of food.</td>
</tr>
</tbody>
</table>
Evidence of purging behaviors, which include making excuses to go to the bathroom after meals, signs and/or smells of vomiting, presence of wrappers or packages of laxatives or diuretics.

Excessive exercising, rigid exercise regimen—despite weather, fatigue, illness, or injury, the need to "burn off" calories taken in.

Extreme concern with body weight and image

Frequent remarks about feeling "fat" or overweight despite weight loss.

In general, behaviors and attitudes indicating that weight loss, dieting, and control of food are becoming primary concerns.

Missing menstrual periods.

Preoccupation with food, calories, fat grams, and dieting.

Strange eating habits, like restricting certain foods or drastically reducing how much food you eat (i.e. no starchy foods).

This information was compiled from the following source:

Health Consequences

ANOREXIA NERVOSA involves self-starvation. The body is deprived of the essential nutrients needed to function normally, so it is forced to slow down all of its essential processes to conserve energy.

This "slowing down" can have serious medical consequences with prolonged practice of eating disorders.

✓ Abnormally slow heart rate and low blood pressure caused by changes in heart muscle. As heart rate and blood pressure levels decline, the risk for heart failure increases.

✓ Loss of bone mass or osteoporosis, which results in dry, brittle bones that break easily.

✓ Muscle loss and weakness.

✓ Severe dehydration, and an increased risk of injury.

✓ Overall weakness, fainting, and fatigue.

✓ Dry hair and skin / hair loss is common.

✓ Growth of lanugo all over the body, including the face. (In an effort to keep the body warm the body produces a downy layer of hair called lanugo).

BULIMIA NERVOSA can also be extremely harmful to the body. The recurrent binge-and-purge cycles can impact the entire digestive system and can lead to electrolyte and chemical imbalances in the body that affect the heart and other major organ
functions. Some of the health consequences of long-term bulimia nervosa include:

✓ Electrolyte imbalances that can lead to irregular heartbeats and possibly heart failure and death.

✓ Gastric ruptures can occur during periods of binge-eating.

✓ Frequent vomiting can cause inflammation and possible rupture of the esophagus.

✓ Tooth decay and staining from stomach acids released during frequent vomiting.

✓ Chronic irregular bowel movements and constipation caused by laxative abuse.

✓ Pancreatitis and peptic ulcers.

This information was compiled from the following source:


**DIET - The new 4-letter word**

D = Diet Industry-

✓ The dieting industry is a multi-million dollar business.

✓ Dieting for weight loss has become a national pastime in the United States.

✓ 40-60% of high school girls are on diets, 46% of 9-11 year olds are sometimes or often on diets, 42% of 1st to 3rd grade school girls surveyed reported wanting to be thinner.

✓ Americans spend more than $40 billion a year on dieting and diet-related products and many don't work.
✓ The dieting industry tries to convince people if you take this pill, drink this shake, or join this fitness club you too can have the “perfect” body.

**I = Incorrect information -**
✓ There is no “magic pill” that can instantly make you thin.
✓ 95% of diets fail—often mistakenly contributed to lack of will power.
✓ Depending on your bone frame and height, it may be impossible to obtain the weight of models seen in fashion magazines.
✓ Dieters often miss out on important nutrients. Dancers practicing dieting may often not get enough calcium, which increases her risk of osteoporosis, stress fractures, and broken bones.

**E = Encourages eating disorders -**
✓ The most common behavior that can lead to eating disorders is dieting. Sixty percent of eating disorders result from excessive preoccupation with body weight.
✓ Several research studies and health professions state that patients with eating disorders were dieting at the time of development of their eating disorder.
✓ Dieting may not directly cause the eating disorder, but the constant concern about body weight and shape, calories, and fat grams can start a vicious cycle of dissatisfaction with the body and this obsession that can lead to development of eating disorders.

**T = The Real Truth ⊲ Set Point Theory**
The set point theory states that there is a set weight, an internal ideal that the body has formed to monitor weight. Many dancers assume the fastest way to
lose weight is to stop eating. They believe if they stop putting food into their bodies, then the body will eventually use up all the stored energy and they will become thinner. This is not true. When drastic steps are taken to lose weight, the body naturally defends its natural weight, or set point from being attacked. Set point is like an internal "thermostat" that controls your weight. The body will naturally try and stay at its set point by controlling your energy use, activity level, appetite, and metabolic rate.

When dancers try to lose weight, instead of eating balanced meals many try and eat less food. When we don't eat, our body goes into starvation mode. To protect itself, the body learns to use less energy, adjusting to the lack of food by actually slowing the rate of basal metabolism in anticipation that another period of starvation may occur. When the individual does eat, the body will conserve and store the energy. Attempting to lose weight by eating less food can actually make an individual gain weight. Most dancers are unaware that weight gain and fat stores will stop after the body goes through physical changes that accompany puberty. When weight management is a constant concern, a dancer may have an increased risk for the development of an eating disorder.

The "weight loss" industry gives people misleading information and makes a fortune in the marketing of a product, it is in their best interest to get people believing in "dieting". Advertisements make claims like "I've lost 15 pounds in 1 week", where the message was that the person trying to lose weight just took the product, didn't make any changes in their diet or exercise habits, and they lost the weight. "Quick fixes" rarely work. It would be more appropriate to claim that frustration occurs as a result of taking this product, not weight loss. It makes food the enemy, something to feel bad about, or want to avoid. Instead of going on a ___ it would be more appropriate to focus on adopting healthy eating habits and changing behavior. The new eating behavior is learned after practicing the behavior over time, where the action becomes subconscious, it becomes habit.
Eating habits develop and are established at an early age. Changing behavior, such as adopting healthy eating habits, is not a change that can happen overnight; rather it is learned by continually practicing the new behavior. It takes time, commitment, and persistence to successfully change a behavior.

All right already!
Let's stop this Nonsense!

✓ Don't waste time- If a dancer stopped dieting, think of how much time she would save to do other hobbies or to spend doing fun activities with friends or family.

✓ Dance for life-To have long career in dance, a dancer needs to take care of her body and make sure it is constantly being fueled with nutritionally balanced foods.

✓ Take time-out- Encourage dancers to take time-out and really think about the reasons for weight loss. Inform dancers of the potential dangers of dieting and how it can either promote or prevent injury. Help dancers remember that they are worth so much more than what they weigh.

Dancers and Development During Adolescence

Adolescence is period of time when young girls are very susceptible to developing an eating disorder. Psychological and social changes in addition to physical changes also occur at this time, making a young girl very vulnerable. This is a time where adolescents establish a strong sense of identity. Increasing body size and shape can negatively affect body image, especially in an environment
that favors a slender physique. When a dancer sees that all famous dancers are thin, it gives a young dancer the impression that this is the accepted body type. Because the aesthetic look of a dancer isn't that different from society's view of the ideal woman, it reinforces the importance of thinness. It creates a climate in which weight is crucial to a dancer's identity. In order to be famous, a young dancer believes she must be thin.

Because puberty is associated with weight gain, young dancers may become increasingly concerned about their weight.

Changes That Occur During Puberty

✓ During the developmental stage, hormonal changes trigger the onset of menstruation and the development of physical characteristic.

✓ At this time breasts form, hips widen, and there will be an increase in height. The young dancer will see an increase in body fat, occurring in the upper leg region, and around the breasts.

✓ Along with an increase in body mass, a dancer will have an increase in fat mass, arm and leg length, and a changing portion of limb to torso.

✓ As the nervous system struggles to keep up with muscular and skeletal changes, a dancer will begin to experience fluctuations in coordination and balance.

✓ Flexibility and strength can also decrease, due to the fact that muscles do not always lengthen as fast as the bones.

Physical Changes That Will Significantly Affect The Ability Of A Dancer:

✓ A dancer will see a decrease in flexibility and control, resulting in lower leg extensions, decreased coordination, and a lack of balance, making pirouettes more difficult.
✓ With the combination of hormonal changes and perceived lack of ability a young dancer may begin to lose confidence, negatively affecting their self-esteem.

✓ Research has clearly pointed out that low-self-esteem, coupled with the extreme pressure to be thin promotes unhealthy eating habits leading to eating disorders.

Goals and Prevention Strategies

How Dance Teachers Can Help

✓ Learn all you can about anorexia nervosa and bulimia nervosa, to help detect the disease at an early stage, and to increase awareness and undermine judgmental or mistaken attitudes about food, body shape, and eating disorders.

✓ Maintain and encourage healthy body weight. Give your students feedback and provide corrective criticism in a nonjudgmental manner.

✓ Give dancers nutrition breaks during practice or to individuals with difficult schedules.

✓ Due to the low number of calories burned in dancing, encourage other physical activities to support weight loss and cardiovascular fitness.

✓ Display information in dressing rooms and bathrooms about nutrition and have healthy body weights posted.

✓ Stress the physical risk of being under weight; because adolescents are worried about their appearance, stressing stamina instead of appearance may be a successful approach.

✓ Do not evaluate a dancer's body composition, refer them to a health professional for assessment.
# Nutrition for Dancers

## Water

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>FUNCTION / IMPORTANCE</th>
<th>FOOD SOURCE</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water</strong></td>
<td>Water bathes cells, aids in fluid and electrolyte balance. Maintains acid/base balance, transports molecules and cells throughout the body. It is the major component of blood, which carries nutrients to the tissues and is responsible for keeping cells in working order.</td>
<td>Carry water and fluids with you as a constant reminder to drink. Freeze fluids to keep them cold during long hours of dance rehearsal. Drink 4 oz every 20 minutes.</td>
<td>50-60% of our total body weight is water.</td>
</tr>
<tr>
<td><strong>Carbohydrate</strong></td>
<td>The primary fuel for exercising muscles. It is stored in your muscles and liver in the form of glycogen.</td>
<td>Cereals, peanut butter on whole-wheat toast, fresh fruit and string cheese, broccoli, carrots.</td>
<td></td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>The most abundant substances in the human body. Maintaining appropriate balance between energy and protein is critical for the growth and development of dancers.</td>
<td>Chicken, tuna, low-fat cottage cheese, cornmeal, oats, rice, fruits, vegetables, dried peas, beans, sesame seeds, eggs, string cheese.</td>
<td></td>
</tr>
<tr>
<td><strong>Fat</strong></td>
<td>Most dancers feel fat is the enemy and choose &quot;fat free&quot; foods for snacks. However, many of these snacks are high in sugar and calories with very little protein, vitamins and minerals. The truth is, our bodies do need fat for proper growth and development.</td>
<td>Corn oil, olive oil, canola (rapeseed), safflower, sesame, and soybean oils, tub (not stick) margarine.</td>
<td>Bulk or roughage The indigestible part of plant foods.</td>
</tr>
<tr>
<td><strong>Fiber</strong></td>
<td>Plays a vital role in the maintenance of healthy skin, hair, insulation of body organs from shock, body temperature, and proper function of cells.</td>
<td>Helps move foods through the digestive system and promotes regular bowel movements.</td>
<td>Helps control weight by creating a feeling of fullness without adding calories.</td>
</tr>
</tbody>
</table>

When your muscle glycogen is depleted, your energy will drop, leaving you feeling overwhelmingly fatigued and ready to quit dancing. When your liver glycogen is depleted, the brain does not receive enough glucose. This will leave you feeling uncoordinated, light-headed, weak, and unable to concentrate. Taking this into account, the majority of the diet should come from carbohydrates to insure adequate fuel for dancing. When calorie intake is low, protein is used for fuel. As a result, not enough protein will be available to muscles. Muscle size and strength will decrease and performance and health will be affected. The most important function of fat in your diet is it helps make you feel full and satisfied after a meal. You may feel hungry all the time, if your diet does not include enough fat.

Water bathes cells, aids in fluid and electrolyte balance. Maintaining acid/base balance, transports molecules and cells throughout the body.

If you don’t drink enough water muscle strength and control are weakened, and negatively affect your mental capacity and physical performance.

As calorie intake is low, protein is used for fuel. As a result, not enough protein will be available to muscles. Muscle size and strength will decrease and performance and health will be affected.

Maintaining appropriate balance between energy and protein is critical for the growth and development of dancers.

The majority of the diet should come from carbohydrates to insure adequate fuel for dancing.

The most important function of fat in your diet is it helps make you feel full and satisfied after a meal. You may feel hungry all the time, if your diet does not include enough fat.
and intervention. Never give false information or mislead students concerning their health and well-being.

✓ Do not set weight standards. Never encourage students below the age of 16 to attempt weight loss, instead explain the development process, which accompanies puberty.

✓ Offer workshops and provide information to inform dancers and parents about the important facts on nutrition.

✓ Watch what you communicate to dancers about food. There are no good or bad foods For example, "I did really good yesterday and ate a salad for lunch. I did bad today and ate a brownie." Emphasize that all foods can fit into a healthy diet.

✓ Create an environment that accepts all individuals and allows every dancer the opportunity to express themselves.

✓ Respect confidentiality of student information. Never discuss a student's weight in front of other students.

✓ Emphasize that losing weight is not the key to improvement, but practice and dedication is.

✓ Provide healthy snacks and fluids to replenish your students after class. If snacks are sold at the studio, provide healthy food choices.

This information was compiled from the following sources:


Did You Know...

it is important to replenish energy stores at the beginning of each day, before and after dancing.

Here are some meal and snack ideas that will provide you with the fuel to perform at your very best.

One-Minute Breakfast Ideas

✓ Ready-to-eat Cereal topped with blueberries and skim milk
✓ Breakfast smoothie (skim-milk, frozen fruit, wheat germ whisked in a blender)
✓ 6 or 8 oz. container of low-fat yogurt
✓ Small muffin topped with yogurt
✓ Small slice of cheese pizza and orange juice
✓ Instant oatmeal with skim milk
✓ Toasted whole wheat waffle topped with fresh fruit
✓ Half toasted bagel with peanut butter or light cream cheese
✓ Lean ham on a toasted english muffin and a 6 oz. juice box
✓ Packet of instant breakfast with skim milk

High Performance Snacks for Dancers

BEFORE PRACTICE:
✓ 1 cup low fat yogurt
✓ 1 cup bean soup and bread sticks
✓ 2-3 pieces string cheese and 6 crackers
✓ English muffin pizza
✓ Lean meat sandwich and skim milk
✓ Energy bar
✓ Bowl of cereal and skim milk
DURING PRACTICE:
✓ 1/4 or 1/2 piece of fresh fruit
✓ 3-4 pieces of dried fruit
✓ 5-6 ginger snaps
✓ 2-3 graham crackers
✓ 10-12 cinnamon “Teddy Grahams”
✓ 1/2 energy bar
✓ 1/4 cup sport drink
✓ 5-6 vanilla wafers

This information was compiled from the following source:

Snack Ideas
✓ Trail Mix
✓ Cold cereal dry, or with low-fat milk
✓ Peanut butter and jelly sandwich
✓ Low-fat cheese pizza on English muffin
✓ Celery stalk with peanut butter
✓ Low-sodium vegetable soup with low-fat crackers
✓ Dry or roasted nuts
✓ Skim-milk and graham crackers
✓ Frozen grapes or bananas
✓ Low-fat yogurt
✓ Popcorn
✓ Pretzels
✓ Tuna Sandwich
✓ Granola (low-fat w/ dried fruit)
✓ Cottage cheese and fruit
✓ Potato, cottage cheese and salsa
✓ Apple slices with cheese or peanut butter
✓ Fruit smoothie
✓ Carrot and celery slices
✓ String Cheese

Dancers do not need to consume additional protein powders or supplements. Eat plenty of whole grain breads, cereal, rice, pasta, potatoes, and fresh fruits/vegetables for carbohydrates; dried beans/

Exercise & Water
How much water should I drink and when?

<table>
<thead>
<tr>
<th>How much?</th>
<th>When?</th>
</tr>
</thead>
<tbody>
<tr>
<td>About 3 cups (24 ounces)</td>
<td>2 hours before dancing or performing other physical activities.</td>
</tr>
<tr>
<td>About 2 cups (16 ounces)</td>
<td>10-15 minutes before dancing or performing other physical activities.</td>
</tr>
<tr>
<td>1/2 cup to 1 cup (4 to 8 ounces)</td>
<td>Every 15-30 minutes during dancing or performing other physical activities.</td>
</tr>
<tr>
<td>2 cups (16 ounces) for every hour of physical activity with perspiration.</td>
<td>After physical activity or dancing.</td>
</tr>
</tbody>
</table>

Physically active people should not wait until they feel thirsty before drinking. Before thirst begins, dehydration will occur. Dehydration will decrease performance during physical activity.
peas, lean meats, and low fat dairy products for protein; and moderate amounts of fat from primarily unsaturated sources (olive/canola/peanut oils, nuts/seeds, avocados, light margarine/salad dressing). And remember to drink plenty of non-caffeinated fluids.

Exercise, not extra dietary protein builds muscle. Today's popular high protein diets do not provide enough carbohydrate to fuel muscle, needed to perform at your physical best. Depending on your dancing goals, your protein needs range from 0.55 to 0.81 grams of protein per pound of body weight per day. When you eat too much protein it may make you to full to consume the adequate amounts of carbohydrate needed to fuel your muscles. Eating too much protein can promote dehydration through excess urination when waste products from protein metabolism are excreted. Many high protein foods are also high in fat. Therefore, a high protein diet can also promote high fat intake.

**Energy Expenditure for Physical Activities**

<table>
<thead>
<tr>
<th>SPORT</th>
<th>TIME</th>
<th>CALORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swimming (Breastroke)</td>
<td>30 min</td>
<td>120</td>
</tr>
<tr>
<td>Bicycling</td>
<td>30 min</td>
<td>159</td>
</tr>
<tr>
<td>Karate</td>
<td>30 min</td>
<td>318</td>
</tr>
<tr>
<td>Dancing: Moderately (waltz)</td>
<td>30 min</td>
<td>120</td>
</tr>
<tr>
<td>Active: (square, hip-hop)</td>
<td>30 min</td>
<td>168</td>
</tr>
<tr>
<td>Aerobic (vigorously)</td>
<td></td>
<td>228</td>
</tr>
<tr>
<td>Running (6 mph)</td>
<td>30 min</td>
<td>273</td>
</tr>
<tr>
<td>Walking</td>
<td>30 min</td>
<td>102</td>
</tr>
<tr>
<td>Pool (Billiards)</td>
<td>30 min</td>
<td>114</td>
</tr>
<tr>
<td>Water Skilling</td>
<td>30 min</td>
<td>166</td>
</tr>
<tr>
<td>Weight Training</td>
<td>30 min</td>
<td>195</td>
</tr>
<tr>
<td>Baseball (moderate)</td>
<td>30 min</td>
<td>240</td>
</tr>
<tr>
<td>Skiing (cross-country) (4 mph)</td>
<td>30 min</td>
<td>492</td>
</tr>
<tr>
<td>Soccer</td>
<td>30 min</td>
<td>450</td>
</tr>
<tr>
<td>Tennis</td>
<td>60 min</td>
<td>258</td>
</tr>
<tr>
<td>Volleyball</td>
<td>60 min</td>
<td>216</td>
</tr>
</tbody>
</table>
Health Benefits of Aerobic Activity and Physical Fitness

✓ Improves cardio respiratory endurance, flexibility, and muscular strength and endurance.

✓ People are less likely than sedentary adults to develop chronic diseases that cause most of the morbidity and mortality in the United States: cardiovascular disease, hypertension non-insulin-dependent diabetes mellitus and cancer of the colon.

✓ Regular physical activity improves aerobic endurance and muscular strength.

✓ Among healthy young people, physical activity and physical fitness may favorably affect risk factors for cardiovascular disease (e.g., body mass index, blood lipid profiles, and resting blood pressure).

✓ Alleviates depression and anxiety. Physically active adolescents is consistently related to higher levels of self-esteem and self-concept and lower levels of anxiety and stress.

✓ Weight-bearing exercise increases bone mass density among young people to help prevent osteoporosis.

A Closer Look at Self-Esteem

When children make the transition to adolescents it is usually a period characterized by confusion and a decrease in self esteem. During this time, self-esteem is influenced by how a young girl perceives her body and physical appearance. At this age, girls are
more vulnerable to a decrease in self-esteem. This is mainly due to the emphasis society places on beauty and the importance of being thin. Here are some of the things that research has found:

✓ Self-esteem is how we value ourselves. It is the image we have of who we think we should be.

✓ The beliefs and attitudes we have about ourselves that affect our self-esteem begin developing at birth.

✓ Many qualities such as our athletic ability, interests, our ability to help others, our social skills, our intellectual ability and our appearance contribute to our self-esteem.

✓ Our self-esteem is how valued, loved and worthwhile we feel about ourselves.

✓ Our self-esteem can be changed and become more positive.

✓ Children can be taught skills to develop a positive self-esteem.

✓ Body image and self-esteem are distinctly related to one another.

✓ People who have a healthy body image tend to have a positive self-esteem.

✓ People with a negative self-esteem tend to have a poor body image.

“Kind words can be short and easy to speak, but their echoes are truly endless.”

-Mother Teresa
Things You Can Do to Boost a Dancer’s Self-esteem

1. Help them feel important.
2. Focus on the positive.
3. Provide positive feedback.
4. Show you have confidence in them.
5. Set them up for success.

How to Build a Positive Self-Esteem in Dancers

To start-

1. Help students develop a well-rounded self-concept that encompasses many personal attributes.
2. Focus on technique rather than physical appearance.
3. Emphasize the students’ many qualities rather than concentrating on body shape.
4. Help them develop competence in a variety of areas.

✓ Ensure Performance Success-
   When dancers achieve success, it positively affects their self-esteem and feelings of self-worth.

✓ Modify activities, provide performance aids

*For example, to teach a dancer how to leap, the teacher can physically guide the dancer through the movements, by jumping over an object, and/or providing progressive activities that challenge and improve the skill. First the
Dancer can learn how to leap center floor, then do a leap combination across the floor, and last, perform a leap in a dance.

✓ Give students the opportunity to practice by themselves

Self-confidence is increased because the performance is contributed to one's own ability rather than external factors, such as performance expectations of the teacher.

✓ Goal Setting

Have dancers define performance standards or objectives to accomplish. Goals should be challenging yet attainable. Help students define specific, challenging and realistic goals.

For example- A beginning dancer's goal might be... to be able to perform 2 pirouettes by the recital.

✓ Emphasize process-related and outcome goals

• Instead of defining success through outcome measures such as winning and losing, success should be redefined to include effort and strategies. These are goals or abilities a dancer is able to control.

• When dancers are doing their best there is not much more that you can ask of them.

For example, in competition a dancer may have completed all 4 pirouettes in unison, but the spacing is off, leading to a second place instead of first. Although the dancers did not take first place, reward them for being able to nail their turns better than ever before!

Communicate Effectively

• Use a positive approach-focus on performance, rewarding them with encouragement, smiles, affectionate pats, and verbal praise.
• Most dancers feel discouraged and ashamed when they do not perform well and need the teachers support and encouragement.

• Do not focus on error, instead say something positive and constructive to improve their skills.

3 Steps to Effective Communication

✓ First compliment the athlete by finding something that was correct.

"Your leap was timed right."

✓ Follow-up with instructions on how the dancer can improve the movement.

"Your leaps would be even better if you pointed your feet."

✓ End on a positive note by encouraging the dancer to keep trying.

"Keep up the good work. Practice doing your leaps by yourself when you are not in class, and we will also continue to work on leaps in class."

✓ Incorporate self-evaluation into your dance curriculum to provide "checks and balances" for effective communication style. This is very important because although teachers may believe they verbally defend a positive side, they may be unaware of subtle contradicting verbal or nonverbal cues they may be portraying to dancers. Watch your body language.
After class rate yourself and ask others to rate the following:

"Did I use the same approach with low as well as high ability dancers?"
"Did I give rewards sincerely?"
"Did I give as much corrective feedback to the low ability dancers as compared to the high ability dancers?"
"Am I tolerant of dancers mistakes?"
"Did I award effort, form, and strategy as well as outcome?"

Modeling Techniques

Modeling techniques are effective means for dancers to learn a variety of skills and behaviors. Seeing others perform in various behaviors conveys information about the observer’s own performance.

When dancers are learning a new skill, have someone similar in age and dancing ability to model the movement. In essence, the model will instill the attitude that "If she can do it, so can I."

Use peer evaluation and support - After a dancer accomplishes a new dance step, have her work with other dancers explaining what her difficulties were and how she overcame them to accomplish the movement.

Be a role model- A teacher should be confident in words and actions, modeling desirable behaviors even under stress.

When dancers see their leaders acting confidently, they too will try and display the same behaviors.
Encourage Positive Talk

✓ When dancers believe that increased effort produces success, they persist longer in the face of difficulties, and thereby, increase their performance levels.

✓ Teachers can and should help dancers see that lack of appropriate effort or ability results in lack of success.

✓ Instead of focusing on the negatives, dancers should be directed to make their self-statements more positive.

Negative = "What if I forget the dance? What will everyone think of me?"
Positive = "I've practiced all week, I will do my best."

✓ Instruct your dancers to rid of negative thoughts, instead they should be redirected in their thinking to constructive appraisals of the situation at hand.

Reduce Anxiety-Producing Factors

✓ A high level of anxiety may be due to fear of failure or not being able to perform a certain skill or step in a dance.

✓ Having self-doubt can in turn increase anxiety, resulting in lack of focus, insufficient information processing, increased muscle tension, and overall lowering of performance quality.

One way to reduce anxiety is to interpret the dancers fear of failure to "readiness to
perform". Tell your dancers that heightened feelings of anxiety gives you energy, and helps you achieve an excellent performance.

Coping skills can be used to decrease anxiety. These include relaxation techniques, and mental imagery exercises.

Have your dancers sit or lie quietly and listen to their dance music. Have them go through the steps in their mind.

Get to know your students. Certain techniques are more effective with some dancers than others. Help each of your dancers develop self-confidence.

By this point you should have an increased understanding of eating disorders. Now how can you use this information to help prevent eating disorders?

First- Information is helpful in understanding eating disorders but is not a prevention strategy. Use the information as a tool to help identify signs and symptoms of eating disorders and to modify behaviors that may directly contribute to the development of eating disorders.

Second- Have a healthy attitude! Dance is a sport that requires tremendous strength, coordination, concentration, motivation and dedication. To be the best a dancer needs to take care of her body. By depriving the body of food, a dancer will not have what it takes to mentally and physically be her best. Strength, endurance, concentration, attitude and energy levels can be improved by optimizing calorie and nutrient intakes.

Third- Don't emphasize dieting or weight loss instead emphasize proper nutrition and it's role in allowing dancers to train at a more intense level for a longer time, reduces the risk of injury, and promotes happier healthier dancers.
Quiz Answers

ANOREXIA NERVOSA - Fill in the blanks
1. Psychological disorder
2. Fat
3. Gaining weight
4. Heavier
5. Weight Loss
6. Dieting

T/F
1. T
2. T
3. T
4. T
5. F, decreases: increases
6. T
7. T
8. T

BULIMIA NERVOSA - Fill in the blanks
1. Binge,
   < 2 hours
2. Hunger
3. Hide
   have an intense fear of
4. Behaviors
   gaining weight.
5. Being out of control
6. Stop
7. Vomiting
8. Purging
9. Will
10. Exercising

T/F
1. T
2. F, anorexics and bulimics
3. T
4. T
5. T
6. T
7. T
8. T
SIGNS AND SYMPTOMS

Abnormal swelling of the cheeks or jaw area. B

Alienation from usual friends and activities. AB

Calluses on the back of the hands and knuckles from self-induced vomiting. B

Concerns about eating in public. A

Consistent excuses to avoid mealtimes or situations involving food. A

Creation of complex lifestyle schedules or rituals to make time for binge-and-purge sessions. B

Denying hunger. A

Development of food rituals (i.e., eating foods in certain orders, excessive chewing, rearranging food on a plate). A

Discoloration or staining of the teeth. The enamel on the teeth begins to wear away causing cavities. B

Eating large amounts of food on the spur of the moment. B

Evidence of binge-eating behaviors, which include a disappearance of large amounts of food in short periods of time or the existence of wrappers and containers indicating the consumption of large amounts of food. B

Evidence of purging behaviors, which include making excuses to go to the bathroom after meals, signs and/or smells of vomiting, presence of wrappers or packages of laxatives or diuretics. B

Excessive exercising, rigid exercise regimen—despite weather, fatigue, illness, or injury, the need to "burn off" calories taken in. AB

Extreme concern with body weight and image. AB

Frequent remarks about feeling "fat" or overweight despite weight loss. A

In general, behaviors and attitudes indicating that weight loss, dieting, and control of food are becoming primary concerns. AB

Missing periods. A

Preoccupation with food, calories, fat grams, and dieting. AB

Strange eating habits, like restricting certain foods or drastically reducing how much food you eat (i.e. no carbohydrates). A
The following is a list of contact numbers, addresses and web links and treatment resources for eating disorders:

**AED - Academy For Eating Disorders**  
6728 Old McLean Village Dr.  
McLean, VA 22101  
(703) 556-9222  
Fax - (703) 556-8729  
http://www.acadeatdis.org

**AABA - American Anorexia/Bulimia Association**  
165 West 46th St. #1108  
New York, NY 10036  
(212) 575-6200  
http://members.aol.com/AmanBu/

**AFED - Alliance to Fight Eating Disorders**  
P.O. Box 14990  
Minneapolis MN 55414-0990  
(612) 824-2353

**AHHELP - Association for the Health Enrichment for Large People**  
P.O. Drawer C  
Radford, VA 24143  
(703) 731-1778

**American Eating Disorder Center**  
330 West 58th Street Suite 200  
New York, NY 10019  
(212) 582-5190

**American Psychiatric Association**  
Division of Public Affairs  
1400 K Street, NW  
Washington, DC 20005  
(202) 682-6220  
email paffairs@psych.org

**ANAD - National Association for Anorexia Nervosa and Associated Disorders**  
P.O. Box 7  
Highland Park, IL 60035  
(847) 831-3438  
http://www.members.aol.com/anad20
ANRED - Anorexia Nervosa and Related Eating Disorders, Inc.
P.O. Box 5102
Eugene, OR 97405
(541) 344-1144
http://www.anred.com

The Center Inc. - A Place of Hope
PO Box 700
547 Dayton
Edmonds, WA 98020
(888) 771-5166
http://www.aplaceofhope.com/

Council on Size & Weight Discrimination, Inc.
P.O. Box 305
Mt. Marion, NY 12456
(914) 679-1209

Dads and Daughters Organization
We are the national, nonprofit membership organization of fathers with daughters. DADs provides tools to strengthen our relationships with our daughters and transform the pervasive messages that value our daughters more for how they look than who they are.
http://www.dadsanddaughters.org

DRADA - Depression & Related Affective Disorders Association
Meyer 3-181
600 North Wolfe Street
Baltimore, MD 21287-7381
(410) 955-4647

EDAP - Eating Disorders Awareness and Prevention
603 Stewart Street, Suite 803
Seattle, WA 98101
(206) 382-3587
Hot Line - 1-800-931-2237
http://www.edap.org

Harvard Eating Disorders Center
356 Boylston Street
Boston, MA 02116
(617) 236-7766
http://www.hedc.org
Healing Connections
1461A First Avenue
Suite 303
New York, NY 10021
(212) 585-3450
Fax (212) 585-3452
Healing Connections, Inc. is a non-profit 501(c)(3) tax-exempt organization that raises funds to help defray the cost of treatment for individuals and families who could not otherwise afford care.
http://www.something-fishy.com/HealingConnections/

IAEDP - International Association of Eating Disorders Professionals
427 Whooping Loop #1819
Alta Monte Springs, FL 32701
(800) 800-8126
http://www.iaedp.com

Largesse: The Network for Size Esteem
P. O. Box 9404
New Haven, CT 06534
(203) 787-1624
Largely Positive
P. O. Box 17223
Glendale, WI 53217

MEDA - Massachusetts Eating Disorders Association, Inc.
92 Pearl Street
Newton, MA 02158
(617) 558-1881
http://www.medainc.org

NAAFA - National Association to Advance Fat Acceptance, Inc.
P. O. Box 188620
Sacramento, CA 95818
(916) 558-6880
http://www.naafa.org

National Center for Overcoming Overeating
P.O. Box 1257
Old Chelsea Station
New York, NY 10113-0920
(212) 875-0442
NEDO - National Eating Disorder Organization
6655 S. Yale Avenue
Tulsa, Oklahoma 74136-3329
(918) 481-4044
http://www.laureate.com/nedo-con.html

NEDSP - National Eating Disorders Screening Program
A program of the National Mental Illness Screening Project, Inc.
One Washington St., Suite 304
Wellesley Hills, MA 02181
(781) 239-0071
http://www.nmisp.org

National Institute of Mental Health
Information Resources and Inquiries
5600 Fishers Lane, Room 7C-02
Rockville, MD 20857

NMHA - National Mental Health Association
Information Center, 30
1021 Prince Street
Alexandria, VA 22314-2971
(703) 684-7722
(800) 969-NMHA

Overeaters Anonymous Headquarters
P.O. Box 44020
Rio Rancho, NM 87174-4020
(505) 891-2664
http://www.overeatersanonymous.org

P.L.E.A.S.E. - Promoting Legislation & Education About Self Esteem, Inc.
91 South Main Street
West Hartford, CT 06107
(860) 521-2515

Quality Inc.
Promoting Wellness and Respect for All Shapes and Sizes
91 South Main Street
West Hartford, CT 06107
(860) 521-2515
http://www.tiac.net/users/vtlty

WINS - We Insist on Natural Shape
P.O. Box 19938
Sacramento, CA 95819
(800) 600-9467
ADDITIONAL WEB LINKS:

The 25 Best Foods For Fitness
Visit this webpage to find information on the 25 best foods to eat for fitness nutrition. The list includes bananas, brown rice, chicken, and more.

ADA: Nutrition for Athletic Adults
Nutrition plays a great role in achieving optimal performance in athletes. The American Dietetic Association reviews nutritional needs for active or competitive athletes on this webpage. Good section on the different distribution of carbohydrates, protein, and fat for athletes.
http://www.eatright.org/afitperform.html | Source: The American Dietetic Association

Are You Winning At Sports Nutrition?
Test your sports nutrition knowledge with this online quiz. Answers to the questions provide information on iron deficiency, water consumption, and more.

Athletes Fuel Up For Fitness
In order to fuel up the body for athletic performance, athletes need to maintain a healthy, balanced diet. The athletes diet should include low-fat foods, and carbohydrate rich foods for energy.
http://www.primusweb.com/fitnesspartner/library/nutrition/fuelup.htm
HANDBOOK REFERENCES


REFERENCES


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