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AT-RISK FEMALE
ADOLESCENT ATHLETES FOR EATING DISORDERS:
AN INSERVICE FOR COACHES

Scholarly Project for the Degree of M. S. N.
MICHIGAN STATE UNIVERSITY
LIESL MARIE ZYLSTRA
1998

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AT-RISK FEMALE ADOLESCENT ATHLETES FOR EATING DISORDERS:
AN INSERVICE FOR COACHES

By

Liesl Marie Zylstra

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Submitted to
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ABSTRACT

AT-RISK FEMALE ADOLESCENT ATHLETES FOR EATING DISORDERS: AN INSERVICE FOR COACHES

By

Liesl Marie Zylstra

Athletic coaches are a primary link to the prevention of eating disorders in athletes, yet few educational inservices exist to educate coaches about eating disorders, their identification and preventive activities. The advanced practice nurse is in a unique position by virtue of education and experience to develop such an inservice. This scholarly project includes: (a) a literature review which targets eating disorders in adolescent female athletes, (b) the examination of possible strategies for the early identification and prevention of eating disorders, and (c) the development of an educational inservice for athletic coaches on the prevention and identification of eating disorders in female adolescent athletes. The development of this inservice was guided by Malcolm Knowles principles of the adult learner. Implications related to advanced practice nursing education, research and policy development are described.

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TABLE OF CONTENTS

List of Figures.....	v
Introduction.....	1
Problem Statement.....	2
Purpose.....	3
Conceptual Definitions.....	3
At-Risk Female Adolescent Athletes.....	3
Eating Disorders.....	4
Inservice for Coaches.....	5
Prevention.....	6
Conceptual Framework.....	7
Literature Review.....	12
Eating Disorders.....	12
Guidelines for the Prevention/Treatment of Eating Disorders.....	17
Eating Disorder Prevention Programs.....	21
Female Adolescent Athletes.....	25
Discussion.....	29
Proposed Inservice.....	29
Eating Disorders.....	31
Physical Issues Related to Eating Disorders.....	32
Self-Esteem and Societal Pressures.....	32
Healthy/Normalized Eating Habits.....	34
Disordered Eating/Nutrition Resources.....	35
Implications.....	36
Advanced Practice Nursing Education.....	38
Research on the Inservice.....	39
Policy Development.....	40
Summary.....	42
List of References.....	43
Back Pocket: Sample Inservice Packet	

LIST OF FIGURES

Figure 1 - Knowles' Principles of Adult Learning.....	8
Figure 2 - Knowles' Adult Learning Principles Applied to Athletic Coaches.....	9
Figure 3 - Knowles' Adult Learning Principles Applied to Athletic Coaches' Inservice.....	37

Introduction

Eating disorders currently affect a large portion of the U.S. adolescent female population. The Eating Disorders Awareness & Prevention organization provides general estimates of the prevalence of eating disorders among middle school and high school girls: Bulimia nervosa (1-3%), anorexia nervosa (.25-1%), and atypical eating disorders i.e., sets of signs and symptoms which do not meet all the criteria for bulimia or anorexia nervosa (2-13%) (Levine, 1996).

While multiple factors including those of a psychological, biological and social nature have been directly linked to the onset of an eating disorder, evidence is mounting which identifies sport settings as promoting specific risk factors for the development of these disorders (Brownell, 1994; Sundgot-Borgen, 1994; Taub & Blinde, 1992; Wichmann & Martin, 1993). Recent studies have found that the stated symptoms of eating disorders are more often prevalent among female athletes than nonathletes (Sundgot-Borgen; Taub & Blinde) and that detection can occur when coaches are knowledgeable about the disorders and can identify women athletes at risk (Dick, 1991; Fairburn, 1994; Sundgot-Borgen). However, for this to occur the coaches of

female adolescent athletes must also have a good understanding about nutrition as related to athletic performance. The development and implementation of prevention programs for elementary through high school students appears lacking and programs which specifically target coaches of this age group are virtually non-existent. Health care providers and specifically the advanced practice nurse are in an excellent position to work with coaches in addressing this issue.

Problem Statement

Athletic coaches are a primary link to the prevention of eating disorders in athletes, yet few educational inservices exist to educate coaches about eating disorders, their identification and preventive activities. The Healthy People 2000 National Health Promotion and Disease Prevention Objectives (U.S. Department of Health and Human Services, 1991) supports the need for the development of intervention programs on eating disorder prevention. Similarly, the Centers for Disease Control ([CDC], 1996) provides support for the education and in-servicing of coaches on nutrition and eating disorders. The Michigan Program for Athletic Coaches' Education (Seefeldt & Brown, 1995) reflects a lack of information on eating disorders being provided to coaches currently. The advanced practice nurse is in a unique position by virtue of education and experience to develop such an inservice.

Purpose

Based on the lack of existing educational inservices for coaches about eating disorders, the purpose of this scholarly project is the development of an inservice for athletic coaches to provide information on the prevalence, prevention and identification of eating disorders in female adolescent athletes. This scholarly project includes: (a) a literature review which targets eating disorders in female adolescent athletes, (b) the examination of possible strategies for the early identification and prevention of eating disorders, and (c) the development of an educational inservice as described above.

Conceptual Definitions

Several terms and phrases are examined conceptually and specific operational definitions for this project are described. The terms defined are at-risk female adolescent athletes, eating disorders, inservice for coaches, and prevention.

At-Risk Female Adolescent Athletes

There is no specific definition of at-risk female adolescent athletes in the literature. However, there are guidelines for defining this term.

According to Santrock (1993), adolescence is a period of development and transition between childhood and adulthood which involves biological, cognitive and social changes. Santrock encourages the distinction between early and late adolescence. Adolescence begins at approximately

10 to 13 years of age and ends between 18 and 22 years of age for most individuals.

Athletes are those individuals trained in exercises, games, or competitions which require physical strength, skill, speed, stamina, etc. (Webster's New World College Dictionary, 1997). The term at-risk refers to the possibility of injury, harm or loss (Webster's New World College Dictionary, 1997). The concept, risk factor, is addressed in the literature with two important implications. A risk factor has a probability component and "...embraces the idea that disease (and conversely health) is overwhelmingly multifactorial in genesis" (Milsum, 1991, p. 289).

For this project at-risk female adolescent athletes refers to females between the ages of 10 and 18 who are involved in an organized school sport at the junior or senior high school level and have the potential for developing an altered pattern of eating.

Eating Disorders

According to the literature, eating disorders occur along a continuum with anorexia nervosa and bulimia nervosa at the extremes of the continuum. Eating disorders are in general "...a set of eating habits, weight management practices and attitudes about weight and body shape" (Maine & Levine, 1997, p. 1). These attitudes and behaviors result in: (a) loss of self-control and other behavior problems, (b) obsession, anxiety, guilt, (c) social and self

isolation, and (d) physiologic imbalances which may be life-threatening (Maine & Levine).

The definition of eating disorders for this scholarly project is based on the conceptual definition of eating disorders but also includes the definition of "normal" eating. Normal eating as defined by Satter (1987, p. 69) "...is being able to eat when you are hungry and continue eating until you are satisfied." Normal eating is considered to be flexible and varies in response to one's emotions, schedule, hunger and proximity to food (Satter). Eating disorders in this scholarly project refers to any deviation from normal eating.

Inservice for Coaches

An inservice is training, "as in special courses, workshops, etc., given to employees in connection with their work to help them develop skills" (Webster's New World College Dictionary, 1997, p. 698). The literature generally refers to an inservice as training or education which promotes the use and/or development of skills in relation to one's work. A coach is defined as, one who trains athletes or athletic teams (Webster's New World College Dictionary).

For the purposes of this scholarly project, inservice for coaches, is defined as an educational session for individuals who train athletes and/or a team of athletes at the junior or senior high school level, which promotes the development and use of skills for the prevention and

identification of eating disorders in female adolescent athletes.

Prevention

Prevention can be defined as medical interventions or approaches "...to eliminate disease-related morbidity and mortality" (Fairburn, 1994, p. 289). The Neuman Systems Model, founded by Betty Neuman, describes "prevention-as-intervention" (Reed, 1995, p. 539). "...it is a way to view the links between environmental stressors, the reaction of the client to stressors, and the role of nursing in helping clients to retain, attain or maintain wellness" (Reed, p. 539). Furthermore, these interventions i.e., types of prevention include primary, secondary and tertiary and are classified according to the stage of the stressor. According to Neuman, primary prevention refers to interventions which assess potential stressors and strengthen and protect the individual from the potential stressors. Secondary prevention refers to interventions after a reaction to a stressor has occurred and include problem/disorder identification, e.g., screening activities and treatment of acute episodes (Wesley, 1995). The aim is to reduce the reaction to the stressor. Tertiary prevention refers to approaches which occur after the treatment of the stress reaction. The goal is to maintain adaptation and to prevent reoccurrence that result from the stressor, i.e., the reduction of impairments that result from the stressor.

For the purposes of this scholarly project, the definition of prevention includes the conceptual definitions of primary, secondary and tertiary prevention. The main emphasis is on primary prevention, i.e., education and activities aimed at the prevention of eating disorders. Coaches also need information related to secondary and tertiary prevention for a comprehensive review, i.e., early diagnosis, treatment and rehabilitation of eating disorders in female adolescent athletes.

Conceptual Framework

The focus of this project is the coach of the female adolescent athlete. Therefore, it is important to recognize the significance of adult learning concepts when developing an educational inservice. The work of adult education consultant, Malcom Knowles, provides the basic framework for this project. Knowles' (1990) principles of the adult learner are pertinent and relevant to the development of an educational inservice for athletic coaches of female adolescent athletes.

While Knowles did not develop a conceptual visualization of these principles, a model depicting Knowles principles of adult learning, Figure 1, has been created by this author. An adapted model specifically for this project, the inservice for athletic coaches, is presented as Figure 2. These models reflect how the framework of adult learning principles are applied to the inservice for athletic coaches.

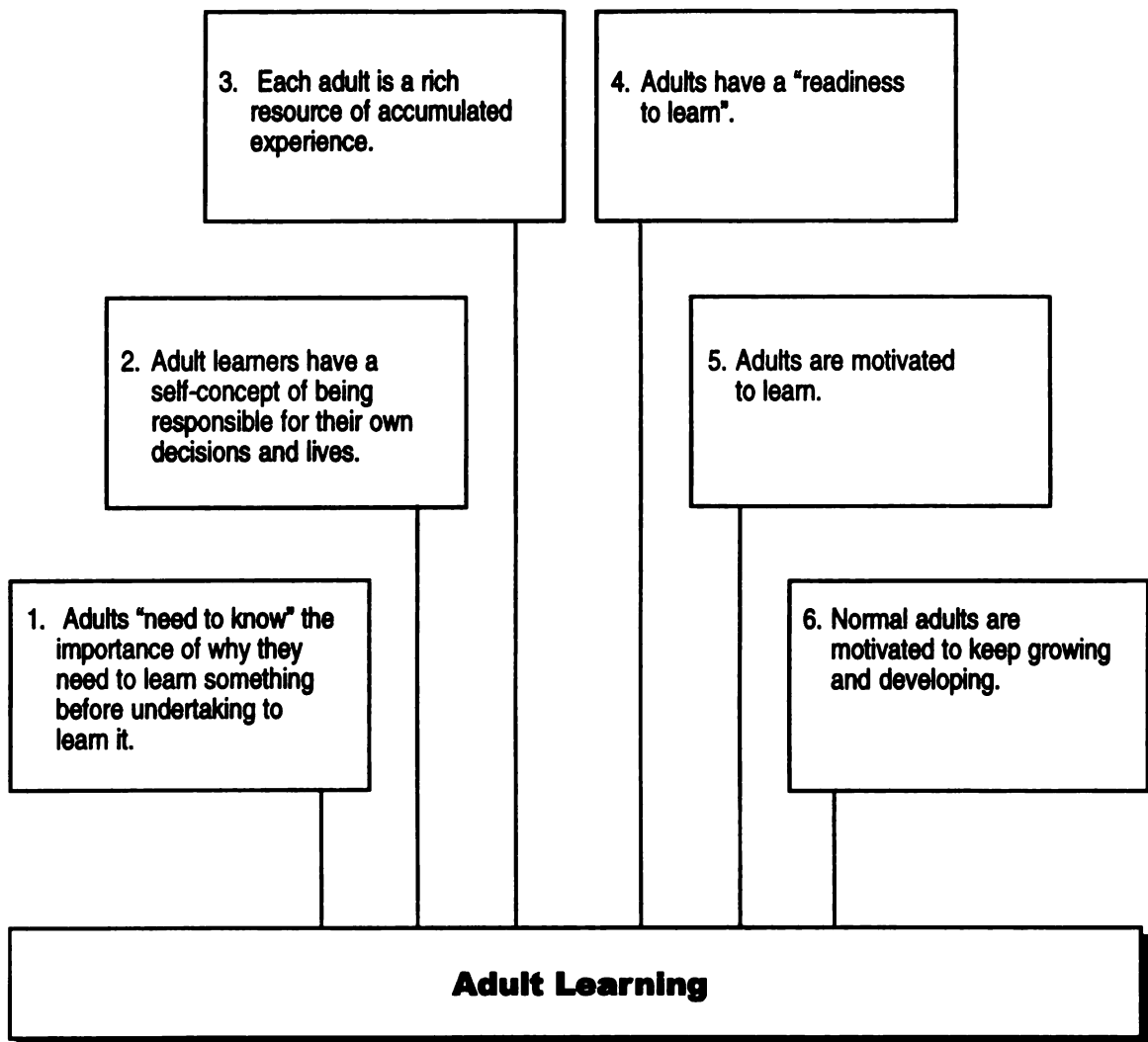


Figure 1 - Knowles' (1990) Principles of Adult Learning

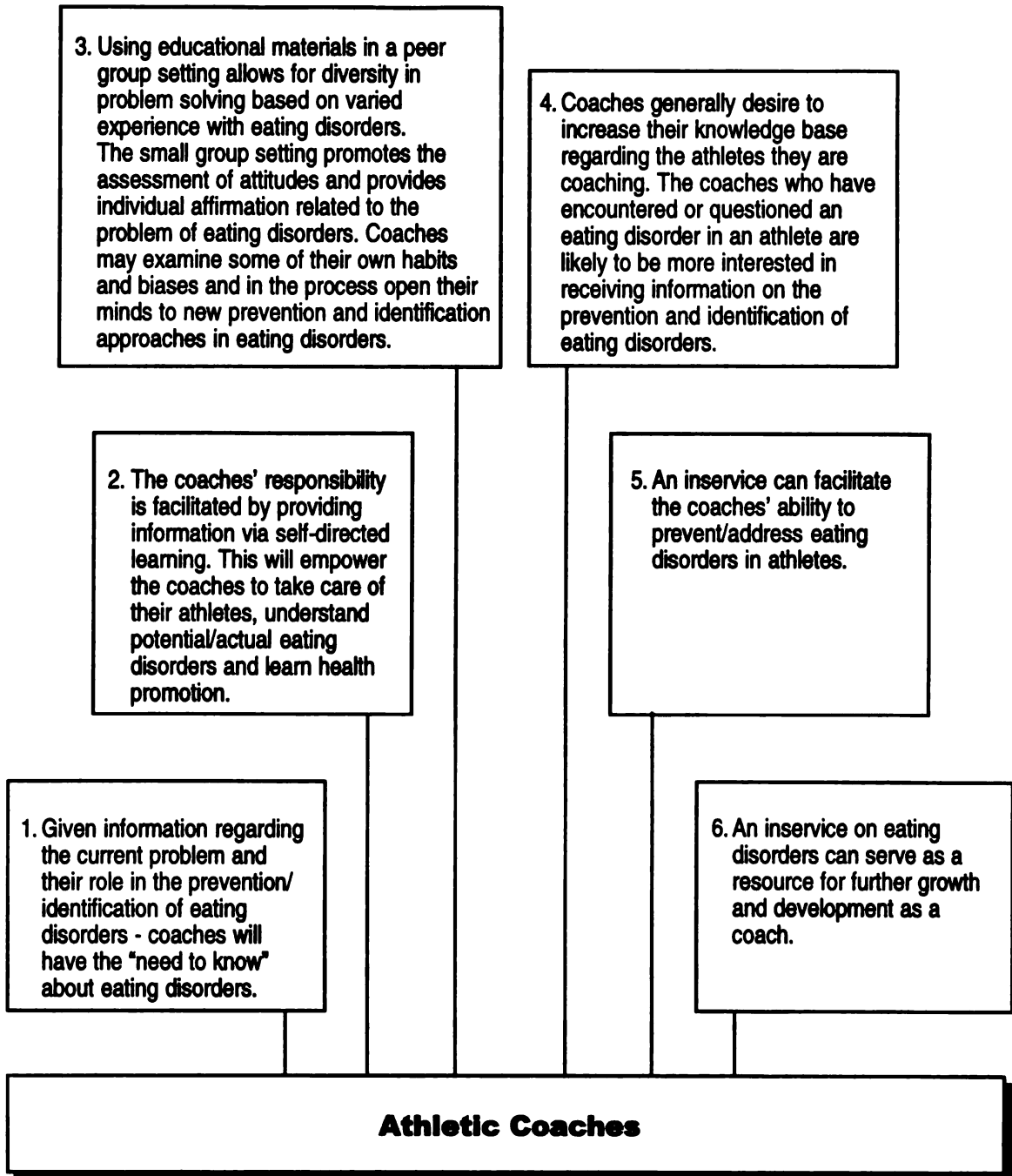


Figure 2 - Knowles' (1990) Adult Learning Principles Applied to Athletic Coaches

Knowles' principles of the adult learner state that:

1) Adults "need to know" the importance of why they need to learn something before undertaking to learn it.

This "need to know" is a perfect opportunity for the advanced practice nurse to utilize focused educational materials. The coaches who are educated on eating disorders and their prevalence among female adolescent athletes should identify themselves as a key provider in the prevention and identification of eating disorders.

2) Adult learners have a self-concept of being responsible for their own decisions and lives. With this self-concept is the need to be seen as self-directed. Creating an environment conducive to adult learning requires the educator to provide a transition from "...dependent to self-directing learners" (Knowles, 1990, p. 59). The advanced practice nurse can facilitate this responsibility by providing athletic coaches with an educational inservice which empowers them to take care of their athletes, understand potential/actual eating disorders and learn health promotion techniques. The inservice can facilitate self-direction by encouraging the coaches to investigate specific areas of interest or concern with their own athletes.

3) Each adult is a rich resource of accumulated experience. Using educational materials in a peer group setting allows for diversity in problem solving based on varied experience with eating disorders. The small group

setting promotes the assessment of attitudes and provides individual affirmation related to the problem of eating disorders. This affirmation is directly linked to a realization about the importance of the coach's role in the prevention/identification of eating disorders. Coaches may examine some of their own habits and biases and in the process open their minds to new prevention and identification approaches in eating disorders.

4) Adults have a "readiness to learn", especially if they perceive this will effect their ability to cope effectively with present life - situations. Coaches generally desire to increase their knowledge base regarding their athletes. The coaches who have encountered or questioned an eating disorder in an athlete are likely to be more interested in receiving information on the prevention and identification of eating disorders.

5) Adults are motivated to learn when they perceive an increase in their ability to perform tasks or deal with problems in their life situations. An educational inservice on eating disorders in female adolescent athletes can facilitate the athletic coaches' ability to address or prevent eating disorders in athletes.

6) Normal adults are motivated to keep growing and developing; however, sometimes barriers exist which block the continuation of learning. An educational inservice for athletic coaches on eating disorders can be a resource which allows for the further growth and development of each

coach. Other considerations for the inservice should be the time and financial commitment involved for the coaches.

Literature Review

Based upon the intent of this project, several areas have been examined through a literature review. These include eating disorders, guidelines for the prevention/treatment of eating disorders, eating disorder prevention programs and female adolescent athletes.

Eating Disorders

The literature review provided an extensive amount of information about eating disorders. In order to remain within the scope of this project the review of literature examines the aspects of eating disorders relevant to this project. This includes the description and classification of eating disorders, prevalence rates and risk factors for eating disorders.

Anorexia nervosa and bulimia nervosa are the two most commonly identified eating disorders. The first documentation regarding anorexia nervosa dates back to 1689, i.e., a condition "referred to as a Nervous Consumption caused by sadness, and anxious cares" (Silverman, 1997, p. 3). The history of bulimia nervosa is much shorter and should be considered an illness of contemporary times. The diagnostic term was coined in 1979 and has specific criteria (Russell, 1997). Bulimia nervosa is closely linked to its "parent condition" anorexia nervosa (Russell, p. 11). Characteristics of these

disorders may include restrained eating, binge eating, fear of fatness, purging and distorted body image (Mellin, Irwin & Scully, 1992).

In order to clarify the characteristics and criteria for eating disorders, the American Psychiatric Association's, Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV; 1994) was reviewed. The criteria for the diagnosis of anorexia nervosa are as follows: (a) refusal to maintain body weight at or above a minimally normal weight for age and height; the DSM-IV (American Psychiatric Association) guideline is weighing less than 85% of that expected as normal, (b) intense fear of gaining weight or becoming fat, even though underweight, (c) disturbance in the way in which one's body weight or shape is experienced, i.e., denial of the seriousness of the current low body weight, and (d) in postmenarchal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles.

The criteria for the diagnosis of bulimia nervosa are as follows: (a) recurrent episodes of binge eating with an episode of binge eating characterized by eating in a discrete period of time an amount of food larger than most people would eat in a similar time period and a sense of lack of control over eating during the episode, (b) recurrent inappropriate use of behaviors to prevent weight gain, such as vomiting, misuse of laxatives, diuretics, enemas, fasting or excessive exercise, (c) the use of binge

eating and inappropriate behaviors at least twice a week for three months to prevent weight gain, (d) body shape and weight overly influence self-evaluation, and (e) the disturbance does not occur exclusively during episodes of anorexia nervosa.

Another very important set of diagnoses are the eating disorders "not otherwise specified" (American Psychiatric Association, 1994, p. 550). These diagnoses are for a group of individuals who have eating disorders, but do not meet the diagnostic criteria for anorexia nervosa or bulimia nervosa. It is important to understand that the term, "not otherwise specified", does not connote eating disorders of minor clinical significance (Walsh & Garner, 1997).

The prevalence of eating disorders is widely addressed in the literature. Shisslak, Crago and Neal (1990) report an extensive literature review which indicates eating disorders are increasing among adolescents (Killen, Taylor, Telch et al., 1986; Mitchell & Eckert, 1987). Lionel W. Rosen, MD, professor of psychiatry at Michigan State University in East Lansing says "...eating disorders are being found more and more in younger people" (Wichmann & Martin, 1993, p. 128; Thompson & Sherman, 1993). A 1992 study of 494 adolescent females, nine to 18 years of age reported that dieting, fear of fatness and binge eating in 31% to 46% of nine year olds and 46% to 81% of ten year olds (Mellin, Irwin & Scully, 1992). As is the case with

many studies, one wonders about the respondents' truthfulness about disordered eating and weight loss practices. Eating disorders are complex and secretive in nature; therefore insuring accurate prevalence rates and research studies are difficult (Dick, 1991; Thornton, 1990). Researchers continue to study the onset of these disorders in young children.

Eating disorders reveal a complex topic for discussion due to the multiple factors which produce an eating disorder. The literature clearly states females are most often affected by eating disorders (American Psychiatric Association, 1994; Dick, 1991; Johnson, Sansone & Chewing, 1992; Thornton, 1990; Worsnop, 1992). According to the American Psychiatric Association, "More than 90% of cases of anorexia nervosa occur in females" (p. 543) and "...at least 90% of individuals with bulimia nervosa are female" (p. 548).

Adolescent females appear to be especially vulnerable due to peer pressure and bodily physiologic changes which promote increased body fat (Kilbourne, 1994). According to the DSM-IV (American Psychiatric Association, 1994) the mean age at onset for anorexia is age 17 and may peak bimodally at ages 14 and 18. Bulimia begins in late adolescence or early adulthood.

Factors being considered in greater detail are the influences of advertising and the societal pressures placed upon women to be thin (Herzog & Copeland, 1985; Kilbourne,

1994). According to Kilbourne, the role of women in society is changing as women are encouraged to be autonomous and independent to be successful. In conjunction with this message is that women must be "in control". Kilbourne states, "One way to do this is to present an image of fragility, to look like a waif. This demonstrates that one is both in control and still very 'feminine'" (p. 403-404). Messages sent related to weight are often so subtle they may go unnoticed. Kilbourne (p. 395) states "The current emphasis on excessive thinness for women is one of the clearest examples of advertising's power to influence cultural standards and consequent individual behavior." She further suggests battling the "thinness" message by observing how changes were made over time regarding cigarette smoking and alcohol use.

Another factor influencing the development of eating disorders is the involvement of recreational activity. This factor is two-sided since athletes often feel pressure to lose weight in order to increase their ability to perform (Sundgot-Borgen, 1994). Secondly, the use of excessive exercise (American Psychiatric Association, 1994) is a characteristic of eating disorders. However, this excessive exercise may be justified by the conditioning and training required of the sport in which the athlete is involved. Other factors related to eating disorders are depressed symptomatology, restrictive families and impaired psychological development (Herzog & Copeland, 1985).

There are limitations to the studies done on athletes about eating disorders. According to Brownell (1994), diagnostic criteria have not been used, appropriate control groups are rare and usually athletes (most often female) in a single sport have been studied. As a result the prevalence rates of eating disorders in athletes are not consistent (Brownell; Thornton, 1990). Wilmore (Thornton), reported on two national studies which suggest that eating disorders in athletes are as high as 25% and as low as 1%. However, one element is conclusive, eating disorders are common in athletes and a concern for the athletic population (Brownell; Dick, 1991; Skolnick, 1993; Thornton).

Guidelines for the Prevention/Treatment of Eating Disorders

Several different sources were investigated for established guidelines regarding the prevention and treatment of eating disorders. These sources included: (a) Healthy People 2000 National Health Promotion and Disease Prevention Objectives (U.S. Department of Health and Human Services, 1991), (b) the recommendations from the CDC (1996), and (c) the Michigan Program for Athletic Coaches' Education (Seefeldt & Brown, 1995) provided by the Michigan High School Athletic Association.

The U.S. Department of Health and Human Services (1991) includes health promotion objectives for nutrition in their objectives for healthy people in the year 2000. However, there is no information about eating disorders or the need to alter their incidence/prevalence. Therefore, a need

exists for research in the area of nutrition, specifically aimed at eating disorders. Nutrition research is needed to determine "The etiology, epidemiology, prevention and treatment of eating disorders such as anorexia nervosa and bulimia nervosa" (U.S. Department of Health and Human Services, 1991, p. 132).

The CDC (1996) include the following recommendations for a school-based program to promote healthy eating: (a) a school policy on nutrition, (b) a sequential, integrated curriculum; (c) instruction for students, (d) a school food service integrated with nutrition education, (e) staff training, (f) family and community involvement, and (g) program evaluation. In these guidelines, "...nutrition education refers to a broad range of activities that promote healthy eating behaviors" (CDC, p. 1). One area identified in the school-based health program is for faculty and staff. "Provide staff involved in nutrition education with adequate preservice and on-going in-service training that focuses on teaching strategies for behavioral change" (CDC, p. 9).

The CDC (1996) recommends the following guidelines be used when developing effective training programs: (a) design the program "...to meet the specific needs of the teachers" and base the program at the "...teachers' level of nutrition knowledge" (p. 15), (b) "model behavioral change techniques and give teachers practice in using them" (p. 15), (c) provide multiple sessions "...so that teachers

can try out the newly learned techniques...and report on their experiences to the training group" (p. 15), and (d) "provide post-training sessions so that teachers can share experiences with their peers" (p. 15).

Based upon conversations with athletic coaches and the director for the Michigan High School Athletic Association this author found that athletic coaches in the State of Michigan are not required to attend classes/programs which address common issues in coaching athletes. However, the Michigan High School Athletic Association does offer the Michigan Program for Athletic Coaches' Education (Seefeldt & Brown, 1995) which many coaches in the State of Michigan voluntarily attend. This program consists of four sessions that are three hours each. The first session addresses the rules and procedures of the Michigan High School Athletic Association, legal responsibilities of the coach and insurance for athletes and coaches. The second session addresses prevention, the care and rehabilitation of athletic injuries, weight training, conditioning principles and contraindicated activities for young athletes. The third session presents information on the pre-participation physical exam and medical records, the role of the coach, planning for the season, the requirements for effective instruction of athletes, and the evaluation of coaching. The last session provides information on motivating young athletes, effective communication, maintaining discipline and personal/social skills (Seefeldt & Brown).

A review of the content of the Michigan Program for Athletic Coaches' Education (Seefeldt & Brown, 1995) provides minimal information for coaches on eating disorders. The section, Nutrition for the Interscholastic Athlete, contains a brief sub-section on weight control including weight loss and gain. Coaches are encouraged to "tactfully" approach the parents of athletes they feel are excessively over- or underweight "...to suggest that they seek medical attention for their children" (Seefeldt & Brown, p. 8-11).

This author noticed that this program contains an entire section on chemical health education and that eating disorders were viewed as a serious threat to good health, i.e., similar to alcoholism and other drug addictions (Seefeldt & Brown, 1995). The use of laxatives, diuretics and diet pills for weight control was discouraged due to chemical imbalances which occur and the potential for development of eating disorders (Seefeldt & Brown, 1995).

In conclusion the publication, Healthy People 2000 National Health Promotion and Disease Prevention Objectives (U.S. Department of Health and Human Services, 1991) supports the need for the development of intervention programs on eating disorder prevention and their subsequent evaluation for effectiveness. The CDC (1996) provides support for the education and in-servicing of coaches on nutrition and eating disorders and the Michigan Program for Athletic Coaches' Education (Seefeldt & Brown, 1995)

reflects a lack of information on eating disorders being provided to coaches currently.

Eating Disorder Prevention Programs

While the literature encourages the use of in-service training for coaches (Baer, Walker & Grossman, 1995; Dick, 1991; Shisslak & Crago, 1994; Thompson & Sherman, 1993), there is a paucity of information in the area of eating disorder prevention programs targeted at junior and senior high school athletic coaches. However, three eating disorder prevention programs currently exist at the college level which include the athletic coach.

The University of Texas at Austin has implemented a prevention program for all female student athletes (Thompson & Sherman, 1993). This program is composed of several components, e.g., ongoing nutrition inservices for all female athletes, a group eating disorders education session, and targeted education inservices for the student athletes including transfer students and the athletic coaches. Professionals with a variety of expertise including physicians, nutritionists and psychologists contribute to the success of this program. Secondly, this program has an ongoing educational series for athletes and coaches.

The University of Cincinnati has also incorporated a team response to the prevention and treatment of eating disorders in athletes (Baer et al., 1995). A team of professionals involved with the athletes is responding to those athletes who have been identified as "eating

disordered". Preventive measures "...to support health and physical performance and to decrease the incidence and severity of disordered eating" (Baer et al., p. 316) are being implemented for all athletes and coaches; a series of educational sessions are included. This program (a) promotes activities to decrease the potential for eating disorders prior to their occurrence, (b) provides coaches with current information regarding the identification of eating disorders in their athletes, and (c) fosters the return of healthy eating habits in the presence of an eating disorder.

The National Collegiate Association for Athletes (NCAA) has produced a three part video series for college athletes and athletic departments (NCAA, 1991). The NCAA (1991) acknowledges that this video series may be used by high school athletes/coaches as well.

Following is an overview of the information covered on each video. The first video addresses the definitions of anorexia and bulimia, prevalence rates and the characteristics/warning signs of these disorders. Consequences related to eating disorders are shown. The second video addresses the effect of nutrition and weight on athletic performance. Proper nutrition is discussed with an emphasis on how this must not be sacrificed in order to achieve a difficult weight goal. The final videotape addresses why those who are influential with athletes need to be well informed about eating disorders.

The underlying causes of eating disorders, warning signs and planning for action are discussed for coaches, medical personnel and administration.

The majority of all prevention programs do concentrate on junior high students at age 11, approximately grade 6, through senior high students, approximately grade 12 (Killen, Taylor, Hammer et al., 1993; Levine & Hall, 1991; Neumark-Sztainer, Butler & Palti, 1995; Shisslak, Crago & Neal, 1990). These school programs are including prevention of eating disorders in their curriculum. Levine and Hall (1991) have published a five day lesson plan on eating disorders for grades 7 through 12, which emphasizes psychosocial rather than individual factors in the development of the disorder. Some of the goals of the curriculum are: (a) to heighten awareness of how thinness is idealized in our society and body fat is viewed negatively; (b) to provide information about fatness, such as genetic determinants and set point theory; (c) to encourage respect for different body shapes and sizes, (d) to point out the negative effects of dieting, (e) to describe the warning signs of eating disorders, and (f) to discuss ways in which eating disorders can be prevented. In general, prevention programs for elementary through high school students appear to be lacking and programs which specifically target coaches of this age group are needed.

The number of eating disorder prevention programs which have been evaluated for their effectiveness is also

minimal. According to Shisslak and Crago (1994) only three studies have evaluated the effectiveness of eating disorder curriculums. One study was conducted by Killen (1993) and his associates. This study focused on sixth and seventh grade girls in four California middle schools. The girls were randomly assigned to receive either the prevention curriculum or control classes. The program had three major components: (a) to instruct on the harmful effects of unhealthy weight regulation, (b) to promote a healthy weight through dietary principles and regular exercise, and (c) to develop skills to resist sociocultural influences toward dieting and thinness in women. The evaluation consisted of measures administered before the curriculum began and at four intervals throughout the two years after completion. The evaluation included self-report measures, anthropometric measures and clinical intervention. The analysis of the results focused on changes in the scores of the intervention and control groups and changes in the scores of students who were determined in the pre-testing phase to be at risk for eating disorder development. Both the intervention group and the high-risk intervention group showed an increase in knowledge about eating disorders, however, there were no significant differences between the intervention and control groups in eating attitudes, dieting, and body mass index (BMI). Similarly, the high-risk groups did not show any differences in eating attitudes and dieting. There was only a slight difference

which was significant for the BMI. Follow-up evaluations showed no significant differences between the intervention and control groups based on the variables measured.

Thus, the prevention intervention approach of this study failed to make a difference. The researcher suggested it may be more cost-effective to target high-risk students for prevention or to include an intensive intervention for high risk students while still providing information to all students. Another issue identified was the effectiveness of a short term intervention as compared to a yearly or continuous intervention.

This study adds support for the importance of an educational inservice for athletic coaches on eating disorders. This literature review acknowledges that athletes are a high-risk group of individuals and that coaches who work with these athletes could be considered as an intervention approach. Secondly, utilizing coaches, who most often have a continuous relationship with their athletes, could create a continuous intervention for eating disorder prevention, identification and treatment.

Female Adolescent Athletes

Research on female athletes continues to increase as the number of women participating in athletics continues to rise. A large portion of the current literature focuses on the "female athlete triad" (Skolnick, 1993; Thein & Thein, 1996). This refers to a set of problems female athletes are particularly at-risk for developing: (a) an eating

disorder, (b) amenorrhea, and (c) osteoporosis. Kimberl K. Yeager, MD, MPH, Assistant Director for Public Health Practice, San Diego (Calif) State University Graduate School of Public Health stated at the 40th annual meeting of the American College of Sports Medicine (Skolnick, p. 921) " 'The constant focus on either achieving or maintaining a prescribed body weight goal may put the female athlete at-risk for developing a disordered pattern of eating.' " Dr. Yeager (Skolnick) further stated that the athlete is subsequently at-risk for developing the two associated disorders, amenorrhea and osteoporosis. Individually these disorders are cause for concern and may cause harm; however, combined they may be fatal. Based upon several small studies, Yeager (Skolnick) reported that disordered eating among female athletes may be as high as 62% in certain sports.

In the literature review on eating disorders several risk factors for these disorders were mentioned. Lopiano and Zotos (1992) provide some of the specific risk factors for eating disorders in athletes: (a) performance pressure: athletes are pushed from all directions to compete at their best; (b) coach-athlete relationship: athletes receive some of the pressure experienced by coaches, which may have positive or negative results depending on the athletes' performance; (c) value incongruence: athletes are taught values such as obedience, the need to intimidate or injure opponents which are

dysfunctional in general life; (d) visibility of participation: all actions can be scrutinized by many people; (e) time demands and social isolation; (f) fatigue-related stress: a possible result from excessive training, anxiety and the demands of competition; (g) injury: injuries are common, affect a major aspect of the athlete's life, and may result in depression; (h) academic pressures: athletes are pushed to excel in academia as well as athletics; and (j) stereotyping and discrimination by race and gender: this may enhance pressure and decrease social support. Taub and Blinde (1992) address another interesting risk factor to consider: the personality characteristics of athletes which may predispose them to eating disorders.

Taub and Blinde (1992) compared adolescent female athletes and nonathletes in terms of behavior and psychological traits associated with eating disorders, the use of pathogenic weight control techniques (laxatives, vomiting, fasting, and diet aids), and sport-by-sport comparison to determine if athletes in specific sports were more at-risk. The results indicated that athletes were more likely than nonathletes to have behavioral and psychological correlates of eating disorders, and that there were few differences among the various sport teams.

The coach-athlete relationship is an additional factor to consider in the development of eating disorders in athletes. Two issues related to this relationship are of

concern: (a) the coaches influence with "vulnerable" athletes, and (b) team/athlete performance.

The athlete as stated previously has specific risk factors for eating disorders. Coaches must understand that the athletes with whom they are working are a vulnerable group of individuals. The literature states that most researchers agree "...coaches do not cause eating disorders in athletes, although through inappropriate coaching they may trigger or exacerbate the problem in vulnerable individuals" (Thornton, 1990, p. 119).

Similarly, if team/athlete performance is more important than the health and well-being of the athlete, this is an important concern. Wilmore (Thornton, 1990, p. 119), states "for some coaches there is such ego involvement, so much concern with the team's overall performance and how this makes them look, that personal ambition may also play a role." Similarly, Yeager (Skolnick, 1993, p. 921) stated " 'Athletes appear willing and eager to attempt any measure to achieve an advantage. This at-any-cost approach has been supported -indeed encouraged- by coaches, athletic trainers, and parents.' " Therefore, the literature suggests that coaches may consider team performance, but more likely to occur is "...ignorance about what constitutes a healthy body weight and the method necessary to achieve it" (Thornton, p. 119). The coaches impact on the development of eating disorders in athletes

should be viewed as only one part of a complex, multi-factorial disorder.

The literature supports the need for preventive efforts which target female adolescent athletes. The increase in female athletes, the "female athlete triad", athletes predisposition for eating disorders and the coach-athlete relationship are evidence in support of a prevention focused inservice.

The content for the proposed inservice needs to include five major areas of focus; eating disorders, physical issues related to eating disorders, self-esteem and societal pressures, healthy/normalized eating behaviors and resources for eating disorders.

Discussion

The proposed inservice for coaches about at-risk female adolescent athletes for eating disorders is based on the previous literature review and Knowles' (1990) principles of the adult learner. It includes recommendations related to the optimal time period, location and financial support. The five major areas of content for the inservice are: (a) eating disorders, (b) physical issues related to eating disorders, (c) self-esteem and societal pressures, (d) healthy/normalized eating behaviors, and (e) resources for eating disorders.

Proposed Inservice

According to the literature review, currently athletic coaches in the State of Michigan are not required to attend

classes/programs which address common issues in coaching athletes. However, due to the influence of the coach-athlete relationship and the potential for ongoing preventive interventions by the coach, this inservice is recommended to be mandatory for all coaches. The coaches of all female adolescent athletes should be involved, since as the literature supports, one-sport cannot be singled out as more likely for eating disorder development. Additionally, the CDC (1996) supports staff education on healthy eating and behavioral change techniques.

The proposed time-period for this inservice is three-two hour sessions. The CDC guidelines (1996) support more than one session, so that the coaches can try out new techniques and report on their experiences. The exact time the inservice will be offered is flexible and is based on the needs of the coaches' schedules.

The location and financial needs of the inservice are not directly addressed in the literature. For ease of attendance, a classroom at the junior/senior high school would be appropriate. This would reduce cost, as most schools have space available during non-school hours. Based on the CDC guidelines (1996) which encourage education of staff members, i.e., coaches involved in nutrition education and behavioral change techniques, the inservice could be at no cost to the coaches who attend. This author suggests the proposed inservice be incorporated with that which is currently provided by the Michigan High School Athletic

Association. The first step would be to present the proposed inservice to the director of the Michigan High School Athletic Association, other interested members of the association and the athletic directors of a few target schools. Based on the feedback from the trial inservice, appropriate alterations of the inservice could be made. The proposed inservice could then be offered to the athletic coaches of female adolescent athletes at the target schools. Following the trial inservice, testing and evaluation for effectiveness should be done prior to further implementation of the inservice.

Eating Disorders

According to Knowles (1990), adults have a "need to know" the significance of a specific topic, before undertaking to learn it (Principle 1). Therefore, the first section on eating disorders includes prevalence rates of eating disorders in athletes, risk factors of the sport's setting and specific risk factors for eating disorders in athletes. In order for coaches to understand the terms used with eating disorders the diagnostic criteria for anorexia, bulimia and eating disorders not otherwise specified need to be reviewed. A discussion of the signs and symptoms of specific eating disorders would follow.

Based on the literature review of eating disorder prevention programs, information on the prevention of eating disorders in athletes is necessary for the coach.

Therefore, the second part of the eating disorders section addresses preventive interventions aimed at athletes.

Physical Issues Related to Eating Disorders

According to the literature review on eating disorder prevention programs, physical issues related to eating disorders are necessary in the inservice. The prevention programs included information about fatness and the negative effects of dieting. The "female athlete triad" is referred to frequently throughout the literature in relation to female adolescent athletes.

Knowles' (1990) second principle of learning empowers the coach to understand eating disorders. A review of the physical issues is necessary for the coach to obtain this knowledge. Similarly, the fourth principle of adult learning entails a desire by the coach to increase his/her knowledge base regarding their athletes. This is also accomplished when one is familiar with the physical issues of eating disorders. The physical issues to be discussed include: (a) the Five Major Determinants of Body Weight, (b) The Negative Effects of Dieting, and (c) The Female Athlete Triad.

Self-Esteem and Societal Pressures

The literature review and Knowles' (1990) principles of adult learning provide the rationale for including information on self-esteem and societal pressures in the third section of the inservice.

The literature review points out the increased interest in observing the influences of society and the media on the "thin is in" message. This message which prevails in Western society is considered a factor in the development of eating disorders. The pressures placed on women to succeed at home and in the work place contribute to a woman's need for "control". Often this control is achieved through body shape and size. The prevention programs include the idealization of thinness in our society, that body fat is undesirable, the need for respect of different body shapes and sizes, and development of skills to resist sociocultural influences toward dieting and thinness.

Knowles' (1990) third principle emphasizes self examination of habits and biases related to eating disorders, affirmation of a problem and the potential for developing new approaches to eating disorders. This inservice addresses this principle through a video which depicts how the media influences individuals. Following the video, small groups of the coaches will discuss the video and share their personal "accumulated" experiences with eating disorders. Knowles' fifth principle facilitates the coaches ability to prevent/address eating disorders in athletes. Thus, a list of facts on the **Basic Tenets of Health at Every Size** and a list of interventions/ suggestions on **Loving Your Body** are included to promote increased self-esteem thereby preventing eating disorders.

The sixth principle, normal adults are motivated to keep growing and developing, is also encouraged through the use/provision of these interventions to increase self-esteem. Furthermore, a list of resources for additional information on eating disorders is provided which should promote the future growth and development of a coach. The coach is in a good position to continually work on his/her personal ability to increase self-esteem in the athletes.

In summary, the self-esteem and societal pressures section will include: (a) a video, **Slim Hopes: Advertising and the obsession with thinness** (Kilbourne, 1995), depicting media/societal influence on the individual's self image and eating disorders, (b) a small group discussion about the video and habits/biases of the coaches, and (c) two interventions, i.e., **Basic Tenets of Health at Every Size** and **Loving Your Body**.

Healthy/Normalized Eating Habits

The literature review of the prevention programs for eating disorders includes information on healthy eating habits. Nutrition inservices, the return of healthy eating habits in the presence of an eating disorder and promotion of a healthy weight through the application of dietary principles and exercise are examples of how eating habits have been addressed in the literature.

Knowles' (1990) principles of adult learning are met when information on healthy eating habits are included in the inservice. The second principle is met when the coach

learns health promotion approaches. Principle four is attained when the coach has acquired an increased knowledge base, i.e., healthy/normalized eating habits. Principle five, prevention/addressing eating disorders, is also accomplished through this information. Principle six is met when the coach continues to investigate how healthy/normalized eating habits are most effectively explained/modeled to the athletes.

For this section of the inservice healthy/normalized eating habits are reviewed, i.e., (a) a definition of "Normal" Eating, (b) a review of the Food Guide Pyramid, and (c) Strategies for Normalized Eating. The Food Guide Pyramid will be provided as a basis for healthy eating. Detailed diets for athletes based on specific sport involvement will require further investigation on the part of the coach.

Disordered Eating/Nutrition Resources

Multiple resources are available to the athletic coach via the internet, mail or telephone contact. Since the literature review repeatedly emphasized providing current information for coaches on eating disorders, a list of available resources will be given to the coaches at the inservice. Secondly, Knowles' (1990) principles of the adult learner will also be attained with a list of resources for the coaches to access. The list of resources will allow the coach to be self-directed (Principle 2), increase his/her personal knowledge base (Principle 4),

prevent/address eating disorders in athletes (Principle 5) and provide for further growth and development as a coach (Principle 6).

In summary, the proposed inservice is composed of five sub-sections: (a) eating disorders, (b) physical issues related to eating disorders, (c) self-esteem and societal pressures, (d) healthy/normalized eating habits, and (e) disordered eating/nutrition resources. In order to reflect the activities of the inservice within the framework of Knowles' (1990) adult learning principles, Figure 3, is presented as an adapted model. A sample copyrighted packet of this inservice is included in the back cover of this project.

The proposed inservice was reviewed by an advanced practice nurse and two teachers, one of whom is also a coach of adolescent females. The inservice was reviewed for clarity and perceived ease of implementation. Positive feedback regarding the inservice and its content was received from all three individuals. The teacher/coach made some recommendations regarding the questions to be used during the group discussions in order to facilitate an effective discussion.

Implications

Three major areas of implications exist as a result of the inservice for coaches on at-risk female adolescent athletes for eating disorders. They are related to:

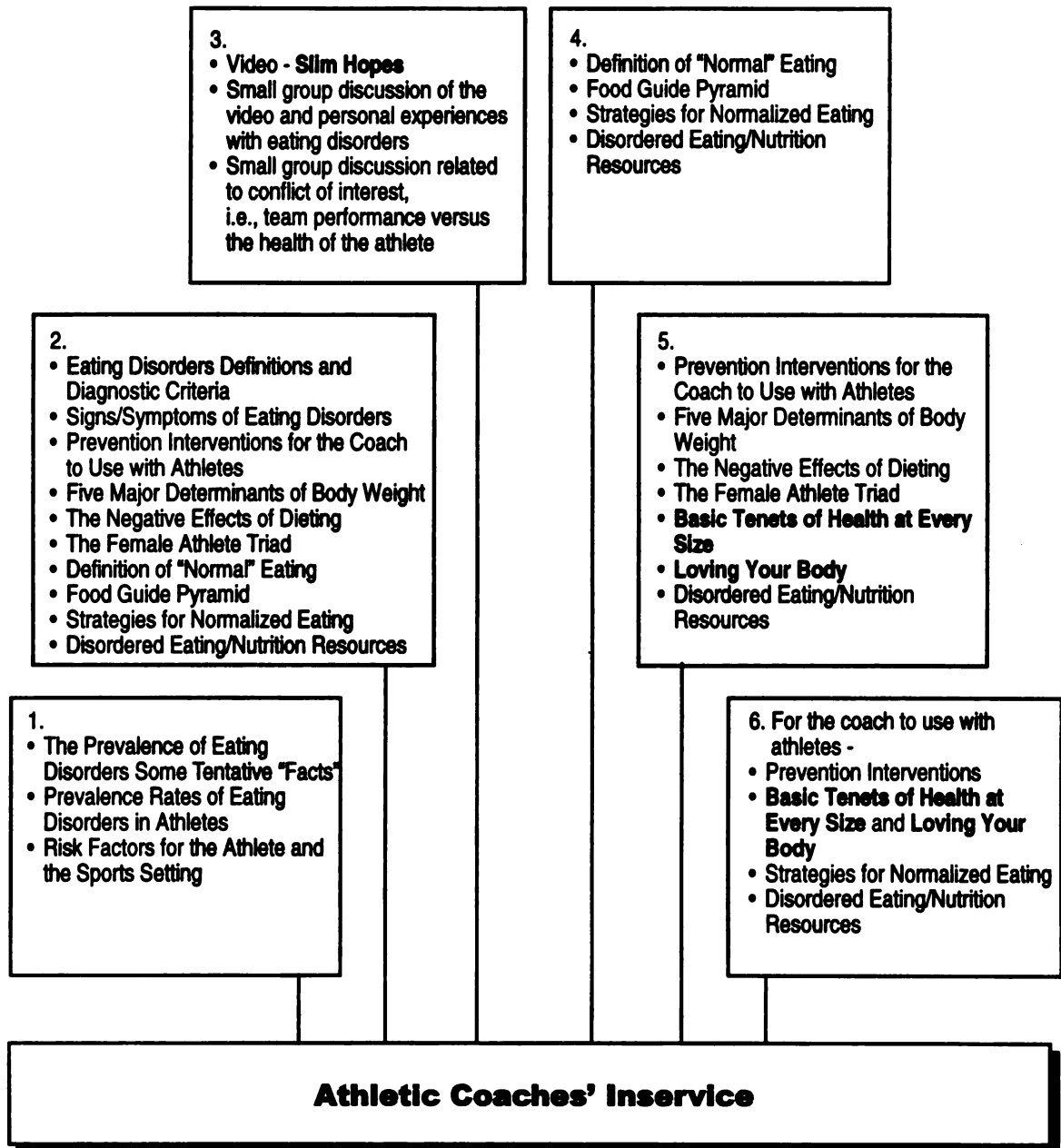


Figure 3 - Knowles' (1990) Adult Learning Principles Applied to Athletic Coaches' Inservice

(a) advanced practice nursing education, (b) research on the inservice, and (c) policy development.

Advanced Practice Nursing Education

Two issues related to advanced practice nursing education should be addressed as a result of this inservice development. First, advanced practice nursing education should include detailed information on eating disorders. This is essential for the role of the advanced practice nurse in primary care and the community setting, i.e., school involvement. Second, advanced practice nursing education should provide information on the development and implementation of educational inservices. This could include information on Knowles' (1990) principles of adult learning, as this would provide an appropriate framework for the rationale and design of an adult inservice. This would empower the advanced practice nurse to develop and implement an inservice based on the needs of his/her individual practice setting.

This inservice is a model which could be presented after minor changes in the content to other groups, i.e., the Parent Teacher Association, coaches and athletes of all sports, teachers at a junior/senior high school. The content and implications of this inservice provide further opportunities for implementation. Post-training sessions could also be offered to the participants of the inservice, in order to promote the sharing of their experiences with peers.

Research on the Inservice

This inservice provides many opportunities for further research. First, the inservice needs to be implemented and evaluated. The evaluation should include the effectiveness of the inservice, the effect on the role of the coach, and what actions resulted from the inservice.

In order to research the effectiveness of the inservice multiple factors may be assessed. Assessment of the coaches' knowledge about eating disorders in athletes prior to and following the inservice would reflect the knowledge acquired as a result of the inservice. The athletes of these coaches could be assessed for eating disorders and compared to a group of athletes whose coaches did not attend this educational inservice. This would require evaluating the athletes on specific factors related to the coach-athlete relationship. The effectiveness of the inservice may also be evaluated by assessing what the coaches did with the information they received about eating disorders in athletes. Furthermore, testing should include varying time intervals between the three proposed inservice sessions in order to assess which is the most effective time interval for the sessions.

The role of the coach in preventing/addressing eating disorders is a primary focus in the inservice. Research on the effect of this inservice on the role of the coach is necessary. This is closely related to the actions taken by the coach following his/her participation in the inservice.

Policy Development

The development of this inservice focuses on an area for policy development which could promote the implementation of this inservice. Currently the State of Michigan does not require specific classes/in-services for coaches of athletes. Considering the literature review and the potential effect coaches have upon athletes, the inservice could be mandatory for athletic coaches in Michigan. The development of such a policy could be implemented by the advanced practice nurse. In order to facilitate the incorporation of a mandatory inservice, the advanced practice nurse needs to educate members of the Michigan High School Athletic Association, principals, and athletic directors at the junior/senior high school levels. As a specialty group in the Michigan Nurses Association, advanced practice nurse members could bring this issue to the attention of the Michigan High School Athletic Association in order to facilitate its inclusion in the Michigan Program for Athletic Coaches' Education (Seefeldt & Brown, 1995).

This inservice supports the goals of the Michigan Nurses Association. The first goal of the Michigan Nurses Association (1997) is the advancement of nursing's agenda for health care delivery. Which means facilitating the role of the nurse in a "restructured" health care delivery system which promotes health promotion and disease prevention. The Michigan Nurses Association (1997)

encourages the nurse to seek mechanisms to move from acute to community-based care and to promote the utilization of advanced practice nurses. The implementation of this inservice would promote community-based nursing care and the utilization of advanced practice nurses.

Implications from this inservice involve the advanced practice nurse in advanced practice nursing education, on-going research directed at the inservice and policy development and implementation. In doing so multiple roles of the advanced practice nurse are utilized through the use and implications of this inservice. First, the advanced practice nurse is an educator, providing information on eating disorders and the importance of prevention and identification of these disorders in female adolescent athletes. The coach may consult with the advanced practice nurse regarding specific signs/symptoms of a particular athlete as to whether this is a concern which may require further action. The advanced practice nurse is promoting leadership for the role of nursing and its utilization in the community. The advanced practice nurse is also advocating for the health and well-being of athletes through the use and implications of this inservice. In summary, multiple roles of the advanced practice nurse are evident through the development, implementation and implications of this inservice.

Summary

Athletic coaches are a primary link to the prevention of eating disorders in athletes, yet few educational inservices exist to educate coaches about eating disorders, their identification and preventive activities. The Healthy People 2000 National Health Promotion and Disease Prevention Objectives (U.S. Department of Health and Human Services, 1991) and the CDC (1996) support the need for the development, education and in-servicing of coaches on nutrition, eating disorders and prevention.

Thus this project focused on the development of an educational inservice for athletic coaches on the prevention and identification of eating disorders in female adolescent athletes.

The framework for this inservice was Knowles' (1990) principles of the adult learner; these principles are applied to athletic coaches, the target audience for this inservice. This framework which focuses on adult learners is essential for the success of the inservice.

This inservice provides athletic coaches with current information on the prevalence, prevention and detection of eating disorders of at-risk female adolescent athletes. In conclusion, the development of this inservice has implications which reach beyond this scholarly project. These implications involve advanced practice nursing education, further opportunities for research and policy development.

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At-Risk Female Adolescent Athletes for Eating Disorders:

An Inservice for Coaches

By Liesl Zylstra



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