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Promoting the Health of Student Athletes

Participation in sports has climbed dramatically over the past 15 years. Students may participate in recreational, club, or competitive athletic activities even before they enter kindergarten through their high school years. There are numerous opportunities for both girls and boys to engage in a wide variety of sports. With this participation, there are many benefits, but there are also health risks to consider. School nurses are advocates for student health. They have an important role to play in advising students, parents, staff, coaches, administrators, and the community about what can be done to promote the health of young athletes.

Parents are encouraging their children at younger and younger ages to become involved in organized sports, including soccer, dance, softball, and gymnastics. This encouragement stems from the belief that by enrolling their children in a specific program, they will develop the physical skills and experience needed to become proficient in that sport. In addition, there may be the feeling that this is a normal expectation for children today. However, many children have been enrolled in programs without consideration of their cognitive readiness or developmental level. Children generally express a desire to participate, anticipating fun and the opportunity to play with their friends. They enjoy being part of a team and the action involved. However, many younger children do not have the cognitive maturity to understand the rules or strategy involved in many sports. Their coping skills may not be developed to the point that they can deal with stress, disappointment, or success or failure. In young school-age children, ages 6–10 years, the focus should be on fun, participation, and trying out a variety of sports. The emphasis should be on learning basic skills and teamwork—not on winning. At this age, school nurses can help students and parents find a good fit for the individual child by considering the growth and development of the child and the opportunities available in the community.

As students mature in their physical ability, they are able to refine their skills and handle the stress of team play and competition. Middle-school students are ready for new challenges, both individually and as members of a team. These student athletes may emulate a particular professional sports figure they admire. This may promote the formation of goals for future performance and participation in a particular activity. However, this is a time when competition rather than participation becomes the focus, often resulting in students dropping out of athletic activities because they feel they are not good enough or that participating is no longer fun. School nurses are in a position to give anticipatory guidance to parents and children about the psychological effects on those who are not physically gifted or may not have the

competitive drive or discipline needed to succeed in a particular sport. Of particular concern is that many students, especially girls, drop out of sports at this age level, which may influence their attitude about physical activity that lasts a lifetime (Petlichkoff, 1992). At a time when health professionals are concerned about the lack of opportunities for physical activities for today's youth, school nurses can be resources for other options that give students ages 11–14 an opportunity to be physically active. These options may include lifetime physical activities such as jogging, biking, fitness activities, or skating.

School-sponsored high school athletic activities offer an opportunity for students to develop their skills further and to compete with other schools in neighboring communities. The development of school spirit and loyalty provides an opportunity to promote teamwork and widen the horizons of the student athlete. Participation in organized high school sports gives students the opportunity to refine their skills and gain recognition among their peers. However, the drive to win often overshadows proper training, ignores injuries, and underestimates feelings of frustration and failure for those who may find themselves on the bench or cut from the team. At this level, places for participants in team sports are often limited; therefore, only the most talented athletes secure a place on the team. The emphasis clearly moves from participation to competition and winning. At this age level, the number of students participating in sports continues to decline as the less talented athletes may not make the teams, while others may drop out because of the time required, the intensity of practice sessions, or the stress related to competition, or because they are not comfortable with the pressure to win or the persons running the program.

The American Academy of Pediatrics (AAP; 2001) states: "Participation in organized sports can have physical and social benefits for children." However, the Academy cautions parents and health care professionals about involvement when the demands of the sport exceed the child's cognitive and physical development. It also expresses concern that parental involvement and pressure can be discouraging to the young child. Today, with the concern about the lack of exercise among children and the epidemic of obesity, participation in sports is one avenue to generate interest in physical activity and lifetime involvement in activities that promote health.

In addition to the benefits of involvement in sports, there are potential risks to the student athlete. In younger children, the risk of injury is low. As students begin to engage in competitive sports, the number of injuries rises, especially during practice and competition. Although more injuries occur during practice because the number of athletes partici-

pating is greater, injuries suffered during competition may be more serious. It is estimated that 20% of young people involved in sports are injured each year. The majority of these injuries are bruises; inflammation of bones, joints, or muscles; muscle strains; ligament sprains; or minor bone fractures. For most athletes, these injuries are not serious, and full recovery is expected. For others, an injury may mean a long recovery period, missed practices and competition, or a season-ending injury. The older and bigger the athlete, and the more contact involved in the sport, the greater the risk of injury. Baseball has the greatest risk of serious injury, including injury to the eye or chest from direct contact with the ball. Basketball, soccer, football, wrestling, and gymnastics also have high rates of injury. Fortunately, most sports injuries are preventable (Bennett, 2001).

The school nurse can become involved in promoting the health of student athletes through education and advocacy. A good understanding of growth and development is the basis for care delivered to children in the school. School nurses also should be aware of sports injury trends nationwide and in their school district. These factors will provide a base for planning education programs. School nurses also need knowledge of their target audience—the student athlete. We often associate athletics with the high-profile sports, such as football, basketball, and baseball. However, many students in less visible or popular sports also have health risks relative to the nature of the sport, the age of the participant, or the conditions where practice and competition occur. Today schools are providing opportunities to participate in sports such as soccer, cross-country, crew, wrestling, volleyball, lacrosse, and golf, as well as field and ice hockey. There are opportunities for both male and female athletes to become involved. In addition, other groups, such as cheerleaders (Hutchinson, 1997), dance teams, and marching band (Vepraskas, 2002), consider themselves student athletes because of the demands of their sport. School nurses should have knowledge of the risks unique to each sport and appropriate sports injury prevention strategies.

Before participation in any sport, a preparticipation physical exam is recommended for younger student athletes and required for those engaging in competitive sports. This screening exam is designed to determine general health status, maturity, readiness for participation, and performance capacity (Mills & Muscari, 1998). Physical fitness may be tested, and limitations for participation may be identified and treated before participation (American College of Sports Medicine, 1994). The American Academy of Pediatrics (2001) recommends that physicians and other health professionals use this exam as an opportunity to assess developmental readiness and medical suitability for children to participate in organized sports, as well as “matching the child’s physical, social, and cognitive maturity with appropriate sports activities.” This is also a good time to talk to parents about the benefits and potential risks involved in sports participation. Finally, strategies to promote health and prevent injuries should be discussed with both the student athlete and the parents.

School nurses are concerned about student health, beginning with playground safety. Nurses are aware of the importance of safe equipment, proper surfaces, and adequate supervision on their school playground (Hudson, Thompson, & Mack, 1999). They also record playground injuries, noting trends that may result in recommendations for play-

ground changes that would promote the health and safety of children. Many of these same principles apply to the prevention of sports injuries.

First, safe equipment is essential for any sport, whether it be gymnastics, football, or track. To ensure the safety of equipment, it must be inspected regularly and used appropriately. In addition, the consistent and proper use of safety equipment, such as shin guards for soccer, face masks for softball, or mouth guards for football, is essential to prevent injuries. School nurses must emphasize to students, parents, and coaches the importance of safe equipment and use of protective gear to promote safety and student performance.

Proper surfaces are also essential to prevent sports injuries. This includes not only gym floors, but also football, baseball, and soccer fields, cross-country running areas, and cushioned landing areas for track and gymnastic events. These surfaces need to be maintained and monitored regularly to ensure student safety (American College of Sports Medicine, 1994).

Along with safe equipment and practice surfaces, students involved in organized sports need adequate supervision by qualified adults knowledgeable not only about the sport, but also about growth and development, potential physical and psychological risks, common injuries, first aid, and injury prevention (AAP, 2001). Many sports offer education for coaches, have standards for competencies, and offer certification for those who meet educational requirements and competencies. School nurses can provide education to coaches on growth and development and injury prevention. They may organize and teach first aid and CPR classes to the coaching and volunteer staff. They can also monitor injury trends among athletes in different sports to determine the safety of equipment and the playing surface, and the adequacy of appropriate supervision during practice sessions as well as competition. Documentation of sports-related injuries provides the data necessary to make recommendations about policy, equipment, and supervision. As student health advocates, school nurses have an obligation to be aware of potential risks to the health of student athletes and to follow up on recommendations that would prevent injuries and promote the health of student athletes.

Another strategy to prevent sports injuries is to ensure that there is adequate preparation for participation. For example, students going out for cross-country need to work up to the rigorous practice regime required in this sport; students involved in cheerleading need the strength and skills required for the difficult and complex stunts commonly performed today. The endurance, skills, and strength needed for sports often cannot be developed the week before the season begins. Many student athletes engage in preseason workouts, summer camps, and training to prepare for athletic participation.

All athletes need to warm up before and cool down after practice and competition. Proper warm-up improves flexibility. Investing time in warm-up and cool-down exercises will reduce injuries and enhance performance. Training for strength and endurance is often sports-specific, but it is also an essential component of sports injury prevention. Recommendations for strength and endurance training are based on age, sex, body composition, and physical maturity. There is concern about strenuous weight-lifting regimes for prepubescent youth. More repetitions with less resistance

(weight) are recommended until sexual maturity (Tanner Stage 5) (Bennett, 2001).

Another component of athlete health promotion is emphasis on good nutrition and appropriate caloric intake to account for the high activity level and long practices. This is particularly important during periods of rapid growth and adolescence. This may pose problems when athletes come to school early in the day, eat an early lunch, and practice until dinnertime. Many athletes require caloric and fluid intake before practice. However, too often the most available foods are found in vending machines that dispense snacks that are high in calories but low in nutritional value.

Of special concern are student athletes participating in sports where weight is a concern, especially when weight is restricted. There has been considerable discussion about the appropriateness of weight restrictions for high school wrestlers. Most state high school athletic associations have guidelines for wrestlers and coaches about safe practices in making weight before competition. The Iowa High School Athletic Association (1998), for example, posts guidelines for safe weight loss and practices that would exclude athletes from participation. These specific guidelines emphasize that not only are some practices unsafe, but that they also are actually detrimental to performance. This association's Web site (<http://www.iahxaa.org>) also provides information on wellness for athletes, including information about substance abuse, strength training, overuse injuries, asthma, and mouth guards, as well as information for parents. In addition, the Web site addresses topics such as being a good sport, character development, and the reality of college athletics. School nurses should use the resources in their state to provide education that is consistent with and complementary to state recommendations for athletic participation.

In addition to good nutrition, adequate hydration is essential to athlete health, especially when temperature and humidity are high (Vepraskas, 2002). Remember, even though it may be cool outdoors, when practice and competition take place indoors, the temperature in these venues may be higher for active students. Student athletes need to replace fluids regularly during workouts, practice, or competition. Water breaks should be incorporated into practice sessions and monitored by coaches, with the knowledge that adequate hydration not only promotes the health of athletes, but also enhances their performance and endurance.

Another concern of school nurses is injuries to student athletes and recommendations about when it is safe to return to practice or competition. Strains and sprains occur frequently with older students as the level of performance and intensity of competition increase. Overuse injuries are becoming more common as students specialize in one sport, such as tennis or softball, which requires repetitive motions; these student athletes often practice year-round for their sport, adding to the stress on muscles and ligaments. It is difficult for students and coaches to follow recommendations to cut down practice or miss competition during a short season. Students prefer to compete with pain rather than miss the BIG game or meet—and it seems that all games and meets are big!—rather than consider the long-term effect on their health or ability to perform. School nurses need to work with students, parents, and coaches to protect the health of their student athletes and prevent re-injury by ensuring that athletes do not return to practice or competition too soon after an injury.

Another concern that has surfaced more recently is the use of nutritional supplements and performance-enhancing drugs. Although these substances are classified as nutritional supplements and therefore are not regulated by the Food and Drug Administration, they may be dangerous in the hands of students or coaches whose goal is added strength and peak performance rather than the long-term health of athletes. There is no evidence that these supplements enhance performance, and there have been no studies on the long-term effect of these supplements. There is also no literature to support the safety of their use in growing adolescents. There may be an initial weight gain when taking creatin, for example, but this weight gain may be due to water retention rather than increased muscle mass. Although some coaches argue that creatin is a natural substance found in the body, the doses recommended are not natural and may be potentially harmful (Iowa High School Athletic Association, 2000, 2001). Until there is more evidence about the safety and efficacy of nutritional supplements, many state high school athletic associations have taken the position that coaches are not to endorse, recommend, or dispense nutritional supplements to student athletes. Of greater concern is the use of anabolic steroids. The American Academy of Pediatrics (1997) condemns their use and provides information to health care professionals about the dangers and use of these drugs for performance enhancement. School nurses need to be informed about the wide range of supplements available (go to your local health food or nutritional sport shop) and their claims. Then they will be in a position to educate coaches, students, and parents about these products.

A final concern is the long-term effects of intense training on the female athlete (AAP, 2000; Smith, 1996). Females who participate in certain sports, such as dance, gymnastics, swimming, and cross-country, are at greater risk for experiencing a cluster of symptoms now known as Female Athlete Triad. The components consist of (a) disordered eating, (b) amenorrhea, and (c) osteoporosis. Disordered eating may take many forms, from occasional restriction of food intake to anorexia nervosa or bulimia nervosa. Amenorrhea is usually due to a decrease in estrogen, which can lead to a decrease in bone mass and cardiac problems in the future. Osteoporosis is exacerbated by inadequate nutrition and lack of estrogen and may contribute to stress fractures in female athletes. Athletes may think that weight loss will make them more attractive and enhance their performance, but there is evidence that the opposite may be true. Poor nutrition increases the risk for injury and may result in decreased endurance, strength, speed, and ability to concentrate (AAP, 2000). School nurses need to identify female athletes at risk and educate coaches about the risks involved. Female athletes should be monitored by their physicians to evaluate nutrition status, normal growth and development, and menstrual history. The long-term effects of eating disorders and osteoporosis are a serious health concern for women during their reproductive and older years.

Good health and sensible training and competition are essential to the physical and psychological health of student athletes. Who is better positioned than school nurses to provide health education for students, families, coaches, and the community about athlete health? School nurses are also tireless advocates for the health of children. Being informed about strategies to promote the health of student athletes of

all ages who participate in a variety of sports is essential. The *Nursing Interventions Classification* (NIC) provides a concise list of activities for their intervention, Sports-Injury Prevention: Youth (Iowa Intervention Project, 2000, pp. 609–610). This list of activities gives school nurses ideas to consider as they advocate for healthy practices and environments for athletes in their school setting. Being involved in sports provides a valuable opportunity for our youth to develop physical, social, and leadership skills. It also gives them an opportunity to have fun, work together as part of a team, and develop a lifetime interest in physical activity so necessary for health. By becoming involved with student athletes and athletic programs, school nurses can ensure that these goals are achieved.

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Bill of Rights for Young Athletes

- Right to participate in sports.
- Right to participate at a level commensurate with each child's maturity and ability.
- Right to have qualified adult leadership.
- Right to play as a child and not as an adult.
- Right of children to share in the leadership and decision making of their sport participation.
- Right to participate in safe and healthy environments.
- Right to proper preparation for participation in sports.
- Right to an equal opportunity for success.
- Right to be treated with dignity.
- Right to have fun in sports.

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