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Young Athlete Girls' Triad

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Annotation: Girls and teenagers who exercise regularly can develop a range of diseases, such as eating disorders, menstrual disorders, and bone mineralization. Regular monitoring of the health of our young female athletes is considered important during the transition period of their puberty, during their marriage, so that their quality of life does not decrease due to sports-related diseases. Of course, it is useful for girls and teenagers to play sports. But young girls may have some medical problems because of sports. Female athletes may develop eating disorders, which in most cases depends on a violation of the menstrual cycle (amenorrhea or oligomenorrhea), which subsequently leads to a decrease in bone mineralization or osteoporosis. These 3 situations – eating disorders, amenorrhea and osteoporosis are often combined and referred to as the triad of sporonox.

Keywords: sportswomen, eating disorders, amenorrhea, osteoporosis, sports loads.

In girls engaged in sports, especially adolescents, energy deficiency can develop when the amount of energy (calories) consumed exceeds the amount of energy (calories) received. This deficiency can occur as a result of insufficiently meeting the calorie requirements of training, or they can choose this path at will - due to improving appearance or sports training performance indicators, attempting to further reduce body weight. These athletes often restrict their diet, but they may have other nutritional disorders such as overeating, vomiting, diarrhea, and the use of diuretics and weight-loss medications. In addition to regular exercises, performing forced exercises is another form of high energy expenditure, which often goes unnoticed by athletes' coaches. Improper nutrition negatively affects health and increases the likelihood of illness and various injuries during sports competitions.

Nutritional disorders are often observed in young female athletes. A study of young girls engaged in aquatic sports showed that 60.5% of girls with normal body weight and 17.9% with below-normal body weight tried to lose weight. By reducing food intake, 12.7% of girls used vomiting after meals, 2.5% used laxatives, and 1.5% used diuretics (Benson J., Gillien D.M., Bourdet K., Loosli A.R., 2005). Nutritional disorders are observed in female athletes engaged in all sports.

Sports with a high risk of developing these types of disorders include those that require athletes to be thinner (e.g., gymnastics, ballet, diving, and figure skating) or that thinness is seen to improve sports performance (e.g., long-distance running and cross-country running) or that athletes are categorized into weight categories (e.g., boxing, wrestling, taekwondo, and rowing). Various factors can lead to nutritional disorders in young female athletes, including increasing the effectiveness of sports achievements, attempting to achieve weight limits that do not correspond to their body, social factors (such as idealizing thinness in Western cultures), psychological factors (such as impaired self-control, unhealthy family environment, and very low self-esteem), and personality traits (such as perfectionism, compulsiveness, and striving for high success) (Johnson M.D., 2008).

Improper nutrition can lead to a decline in sports results and an increased risk of injury. Reduced energy consumption and disruption of fluid and electrolyte balance lead to impairments in athlete endurance, strength, response time, speed, and attention. Since the body of female athletes is initially adapted to these changes, the decrease in the above abilities may not be noticeable for some time, and female athletes may consider improper nutrition harmless. Conversely, restricting nutrition and cleansing the body can lead not only to menstrual cycle disorders and irreversible loss of bone tissue, but also to depression, fluid and electrolyte imbalance, changes in the cardiovascular, endocrine, gastrointestinal, and gastrointestinal systems, thermoregulation disorders, including psychological and other medical complications.

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Menstrual cycle disorders in female athletes can manifest as primary and secondary amenorrhea, oligomenorrhea, and lutein phase deficiency. The amount of luteinizing hormone (LH) and the normal course of the menstrual cycle depend on the availability of energy (balance between energy expenditure and energy consumption for exercise). Low energy leads to a hypometabolic state, characterized by hypoglycemia, hypoinsulinemia, hypothyroidemia, hypercortizolemia, and impaired daily rhythm of leptin.

Amenorrhea-associated hypoestrogenism predisposes to osteoporosis. Osteoporosis is characterized by premature loss of bone tissue, inadequate formation of bone tissue, a decrease in its quantity, and disruption of the microarchitecture of bones. Normally, estrogen levels reduce bone tissue resorption (Rosen L.W., McKeag D.B., Hough D.O., Curley V., 2005).

Regular medical examinations of female athletes are an important measure for the prevention of nutritional disorders, menstrual dysfunction, and decreased bone mineralization. Parents, sports coaches, and friends may pay attention to nutritional disorders in girls; in such cases, an immediate medical examination is necessary. When treating female athletes, a doctor, dietitian, and psychologist should work together.

Taking the above into account, we recommend the following measures during the orientation of our young girls towards sports:

1. Girls and adolescents should perform physical exercises and sports training based on their health and capabilities.

2. Dietary practice before engaging in sports; intensity, duration, and frequency of exercises; the history of the menstrual cycle must be studied;

3. If amenorrhea is detected in female athletes aged 14-15, this condition should not be considered a normal reaction to physical exertion. It is necessary to determine the energy needs and expenditure in girls' bodies.

4. It is necessary to hold informational hours among female athletes, their parents, and sports coaches about the possible triad among female athletes.

5. When determining the body weight corresponding to the athlete for this sports load, female athletes and their coaches should not set a fixed indicator, but rather determine the range of weight indicators. An athlete's weight does not fully assess their level of physical fitness.

Compliance with these recommendations will allow our female athletes not only to achieve high results in sports competitions, but also to preserve their health as the successors of our future generation, not to damage their reproductive health, and to maintain a high standard of living.

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