

Amenorrhea and the Overtraining Syndrome

A serious health problem for female athletes

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Many female athletes have menstrual problems associated with training. A recent study (Arch Phys Med Rehabil, May, 2007) showed that 40% of a group of female triathletes had a history of amenorrhea (the absence of menstrual bleeding). Other common menstrual abnormalities include oligomenorrhea (a menstrual cycle between 35 and 90 days), and delayed menarche (onset of first period).

Amenorrhea is a sign of a potentially serious problem for athletes, now and for their future health. The hormonal imbalance causing menstrual dysfunction can adversely affect sports performance. But the long term risks of such hormonal imbalance include infertility, osteoporosis, sexual and adrenal dysfunction.

Overtraining and its associated lifestyle factors, especially diet, contributes to amenorrhea and has been termed the overtraining syndrome. Endurance athletes, those focused on aesthetics, and those involved with high-intensity training and competition are at greatest risk.

In the study cited above, 60% of the group had diets deficient in calories and nutrients, especially protein, healthy fats, and calcium. This is frequently accompanied by excessively low body weight and body fat. Femoral fat stores – those around the hips, buttocks, and thighs are important for female health. While some amenorrheic athletes consume an energy-deficient diet, others consume the same total calories as those with normal menstrual cycles, but eat much less

protein and fat (up to 50 percent less) but higher refined carbohydrates (which alone can contribute to amenorrhea). Reduced fat intake can interfere with calcium absorption resulting in lower total bone calcium. This is typically aggravated by concurrent low dietary calcium intake. In spite of this, blood levels of calcium most often remain normal.

Disordered eating itself is a complex issue, involving a full spectrum of problems from poor eating, dieting, and preoccupation with low fat consumption to clinically diagnosed anorexia nervosa and bulimia. The hormonal equilibrium that regulates reproductive function can also be affected by other psychological factors; the stress associated with competition being a significant variable.

Bone loss is one of the most serious problems associated with amenorrhea and is secondary to hormone imbalance. Overtraining and competition elevate the body's stress hormone cortisol. This overproduction of cortisol "steals" from female hormone production, resulting in lower estrogen, testosterone and progesterone levels. This hormonal imbalance is very similar to the postmenopausal state. When this occurs at a younger age, the body has more time to lose bone mass. Decreased bone density increases the risk of stress fractures, muscle problems and physical fatigue – serious conditions for the athlete now and later in life. Bone loss most commonly occurs in the spine, hip, wrist and foot. Scoliosis (curvature of the spine) is an additional risk of bone and muscle problems.

Further structural problems in the skeleton occur later in life due to osteoporosis. Similar hormonal balances may be seen in men, specifically reduced testosterone which also causes bone loss and increased risk of fractures.

Despite outdoor training, the lack of proper sun exposure places women at further risk of bone loss due to low or deficient levels of vitamin D.

As more women of all ages aspire to strenuous athletics and competition, *preventing* the overtraining syndrome is most important. Young girls under the influence of

coaches, teachers, and famous athletes need to understand that consuming an abundance of healthy nutrients and avoiding junk food and drinks is critical to their success as athletes and their health. Coaches and trainers have a responsibility to help prevent the overtraining mentality that grips budding young athletes. When one recognizes the overtraining syndrome, a comprehensive approach to treatment – including diet and nutrition, balanced training and competition, and stress management – can successfully re-establish normal hormonal profiles and menstrual activity in athletes. A healthier athlete will also compete better, without injury for longer periods.

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