

Effect of Frequent Weight Changes in Female Athletes triad of India-A Review

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Abstract

The number of female athletes in the organized sports is increasing remarkable last 30 years worldwide. The female athlete triad is a condition seen with increasing frequency in young athletes and is characterized by the triad of amenorrhea/menstrual dysfunction, disordered eating and osteoporosis and either alone or in combination can cause severe pathologies. The triad is caused by an imbalance between total energy intake and total energy expenditure and can be associated with significant medical morbidity. It occurs very frequently in sports emphasizing a lean appearance. Early recognition and intervention of the conditions are essential. In between adolescent athlete, amenorrhea should be considered an indicator of the potential problem and should not simply be attributed to a consequence of training. The athletes should be evaluated for an underlying eating disorder and tested for osteoporosis and amenorrhea. The Triad may be inadvertent, intentional and psychopathological. Principles of treatment include reducing the intensity of training until menses resume, increasing caloric intake, ensuring adequate calcium and vitamin D intake, encouraging weight-bearing

exercise where appropriate, and consideration of hormone replacement therapy. Prevention, through education of the athletes, parents, trainers, coaches and administrator will help ensure the health and safety of adult female athletes.

Keywords: Athletes, Medical Morbidity, Weight Change, Nutritional Status.

Introduction

For decades, women have participated in amateur and professional women's sports in a wide range of sports. The 20th century saw a tremendous rise in female participation and popularity in sports, particularly in the last 25 years, reflecting shifts in contemporary cultures that prioritise gender equality. There is a steady rise in the number of women who participate in sports or closely watch sporting events. Even though performance and participation levels still differ significantly by nation and sport, women's sports are now widely recognised worldwide (Bannerjee, 2023). Eating disorders can have devastating effects on athlete health and performance. Although females represent approximately 90% of those who seek medical care for an eating disorder, Understanding the epidemiology and pathophysiology of eating disorders allows the sports medicine to optimize their role in screening at-risk of athletes and providing treatment by intervening early and comprehensively. Clinicians can decrease serious health issues and performance consequences of the athletes (El Ghoch et al., 2013). The main aim of this study is to know about the common eating disorders of female athletes in modern sports and how to prevent these serious problems by various pharmacological and other methods.

Weight Changes among the Athletes

For decades, women have participated in amateur and professional women's sports in a wide range of sports. The 20th century saw a tremendous rise in female participation and popularity in sports, particularly in the last 25 years, reflecting shifts in contemporary cultures that priorities gender equality. There is a steady rise in the number of women who participate in sports or closely watch sporting events. Even though performance and participation levels

still differ significantly by nation and sport, women's sports are now widely recognized worldwide (Bannerjee, 2023). The number of women participating in organized sports has increased dramatically over the past 30 years. The female athletes competing in sports where leanness or a specific body weight is considered important are more prone to develop eating disorders than athletes competing in sports. The female athlete triad is defined as the combination of disordered eating, amenorrhea, and osteoporosis. This female athlete triad is a condition seen with increasing frequency in young athletes. The triad is caused by an imbalance between energy intake and energy expenditure and can be associated with significant medical morbidity. This disorder often goes unrecognized in primary stage. The consequences of lost bone mineral density can be devastating for the female athletes. Premature osteoporotic fracture can occur, and lost bone minerals density may never be recognized. Athletes affected by eating disorders commonly suffer from other mental health conditions, including depression,

anxiety, obsessive-compulsive disorder and substance use disorder. In a Canadian study almost half of all patients with eating problems were also found to have mood or anxiety disorders (Baechle et al., 2014). Similarly, in a Swedish study half of patients with eating disorders had depression and one-quarter endorsed substance abuse (APA 2013). Lifetime prevalence of substance abuse in patients with bulimia nervosa is at least 30% (Nattive et al, 2014). Furthermore, among patients with bulimia nervosa, those with comorbid psychiatric conditions were more likely to report suicidal ideation and history of suicide attempts (Swanson et al, 2014). Binge eating disorder has been found to significantly co-occur with depression, bipolar disorder, anxiety, bulimia nervosa, kleptomania and body dysmorphic disorder (Shanmugam et al, 2014). Limited data exists regarding the relationship between eating disorders and comorbid mental health conditions in female athlete. In addition, individuals with type 1 diabetes mellitus are at higher risk for eating disorders later in life—in a German study, one in three females with type 1 diabetes and one in six males with type 1 diabetes had disordered eating and insulin restriction (Javaras et al, 2008).

Data on athletes with type 1 diabetes and eating disorders is unknown. Gastrointestinal conditions such as chronic constipation, gastro esophageal reflux disease (GERD), coeliac disease, lactose intolerance, delayed gastric emptying, gastroparesis and superior mesenteric artery syndrome may all occur as a result of eating disordered behavior. Among female athletes with eating disorders, especially those with restricted dietary intake, a commonly recognized consequence is the Female Athlete Triad. The Triad describes three distinct but inter-related conditions including low energy availability, menstrual dysfunction and low bone mineral density (Citrome et al, 2015). Low energy availability (whether inadvertent, intentional or psychopathological), can result from low energy intake relative to high energy expenditure during training and is the underlying factor contributing to negative effects on reproductive and skeletal health (Leombruni et al, 2006). In many several studies Athletic performance suffers as a result of eating disorders (Nattive et al, 2007). Female athletes with anorexia nervosa and a body mass index (BMI) <16.5, and those with bulimia nervosa purging four or more times per day should be categorically restricted from participation in sport (Javaras et al, 2008). Additionally, low energy availability leading to the loss of fat and lean body mass, electrolyte abnormalities and dehydration all contribute to poor sport performance (Loucks et al, 2007). A study of junior elite female swimmers, found that those with energy restriction and ovarian suppression had poor sport performance compared to cyclic swimmers. Even among high school athletes, those with disordered eating behaviours were more than twice as likely to sustain a musculoskeletal injury during their competitive season. Amenorrhea that is related to athletic training and weight fluctuation is caused by changes in the hypothalamus. These changes result in decreased levels of estrogen (Mc Elory et al, 2015). Amenorrhea in the female athlete triad may be classified as primary or secondary. In patients with primary amenorrhea, there is no spontaneous uterine bleeding in the following situations: (1) by the age of 14 years without the development of secondary sexual characteristics, or (2) by the age of 16 years with otherwise normal development. Secondary amenorrhea is defined as

the six-month absence of menstrual bleeding in a woman with primary regular menses or a 12-month absence with previous oligomenorrhea. Osteoporosis is defined as the loss of bone mineral density and the inadequate formation of bone, which can lead to increased bone fragility and risk of fracture. Premature osteoporosis puts the athlete at risk for stress fractures as well as more devastating fractures of the hip or vertebral column. The morbidity associated with osteoporosis is significant, and lost bone density may be irreplaceable (El Ghoch et al, 2013). Very few researches show that female athletes also suffer with Urinary incontinence. Female athletes had never discussed their condition with a health professional. In the focus group, all athletes described preventive urination to avoid urine leakage. It was mentioned that UI affected their performance and made them feel uncomfortable and frustrated (Arcelus et al, 2011).

Prevention

Prevention may be done by various way.

Medication Use

Medications are often prescribed to patients with eating disorders to treat co morbid conditions such as depression and anxiety, or to manage physical complications. Target symptoms should be established with the patient and regularly monitored. Only two psychotropic medications have US Food and Drug Administration approval for the direct treatment of eating disorders – fluoxetine for use in patients with bulimia nervosa, and lisdexamfetamine for use in patients with binge eating disorder. However, there is considerable off- label use of psychotropic medications ranging from antidepressants, (Rosling et al, 2011) anxiolytics, antipsychotics and antiepileptics in an effort to curb eating disorder behaviour and treat comorbid symptoms of depression and anxiety, obsessive compulsive behaviours, thought disorder and sleep disturbance. Patients may also benefit from additional medications, vitamins and supplements to treat health consequences of eating disordered behaviours. This includes the use of potassium replacement for hypokalaemia resulting from self-induced vomiting; hormone therapy for

female patients with clinical indications for replacement, and medications aimed at addressing impaired gastrointestinal motility (Winstead et al, 2006). Sports medicine physicians should be aware of the unique interaction between medications and sport participation. For example, medications that induce orthostatic hypotension should not be prescribed to a gymnast who experiences many changes in posture and position. Likewise, sedating medications may not be tolerated by student athletes attending school, practice or trying to complete evening homework tasks.

Treatment

In addition to having a fundamental role in the diagnosis of the female athlete triad, the family physician has an integral part in coordinating the management of this condition. While a multidisciplinary approach to treatment has not been studied, many patients may benefit from a treatment plan that involves consultation with subspecialists. Involvement of a psychiatrist or psychologist and a dietician who specialize in the management of the female athlete triad may facilitate prompt improvement. Often, athletic trainers or coaches are the persons closest to the athlete. Their insights and support may be crucial to the success of any treatment plan.

Lifestyle Changes

Optimal treatment of the female athlete triad includes instruction from a dietician to educate and monitor the patient for adequate nutrition and to help the patient attain and maintain a goal weight. The patient, dietician and physician should agree on a goal weight, with consideration for the weight requirements for participation in the patient's chosen sport. A weight gain of 0.23 to 0.45 kg (0.5 to 1 lb) per week until the goal weight is achieved is a reasonable expectation. Helping the patient focus on optimal health and performance instead of weight is important. The patient need not stop exercising completely. Exercise activity should be decreased by 10 to 20 percent, and weight should be monitored closely for two to three months.

Hormone Replacement Therapy

No published longitudinal studies are available on the long-term benefits of hormone replacement therapy (HRT) to slow or reverse the loss of bone mineral density in these young women. Most of the evidence for the use of HRT has been extrapolated from data that support its use in postmenopausal women. Both oral contraceptives and cyclic estrogen, progesterone have been used to treat amenorrhea of the triad. While hormonal therapy will treat the amenorrhea, the ultimate goal is the return of regular menses through proper nutrition, revised training regimens and maintenance of reasonable body weight. One retrospective study of amenorrheic runners compared hormonal therapy with placebo over 24 to 30 months. The regimen included either conjugated estrogen in a dosage of 0.625 mg per day or an estradiol transdermal patch in a dosage of 50 µg per day. Both were given in combination with medroxy-progesterone in a dosage of 10 mg per day for 14 days per month. Patients receiving hormonal therapy showed a significant increase in bone mineral density, while those in the control group showed no significant decreases of less than 2.5 percent. Small studies have also supported the use of oral contraceptives in persons with athletic amenorrhea. Retrospective studies have shown that athletes with a history of oral contraceptive use may have a decreased risk of stress fracture.

Conclusion

Eating disorders are devastating psychiatric conditions. They have an unacceptably high mortality rate and invoke considerable morbidity among those affected athletes. Female athletes are at greater risk for eating disorders given the pressure to achieve a body composition that optimizes their performance. Both male and female are affected but female are more prone. This eating disorder can affect not only their performance but also their poor reproductive health. Other problems like Urinary incontinence are a prevalent condition among athletes that is not openly discussed. However, it causes regular changes in their physical performance and daily life. More research is needed to increase awareness of UI and to design interventions. Athlete medical teams need

to systematically screen athletes (both male and female) as a part of the preparticipation physical evaluation. Once diagnosed, referral to an experienced multidisciplinary team is considered best practice. In addition to the team physician, dietitian and mental health professional, athletic trainers play a key role as the ‘eyes and ears’ of the healthcare team on the practice field and in the training room and of ten times serve as the confidant and support person for the athlete who is struggling with and recovering from an eating disorder.

Sports medicine physicians play a key role in evaluation, diagnosis and treatment, including clearance and return to play. Utilising established recommendations that guide clearance and return to play decision-making can ease difficult decisions, and promote transparency and accountability in support of a healthy athlete.

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