

From Female Fitness Freaks to Women's Sports Professionals: Navigating Through the Female Athlete Triad

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Abstract

The female athlete triad comprises of three interrelated components, namely low energy availability, menstrual dysfunctions and low bone mineral density. It is commonly observed in highly active female athletes but is not specific to it. Women often due to societal or performance pressure are forced to consider leanness as an index of beauty, femininity and sports efficiency and therefore go to unnatural lengths to achieve the same by adopting severe dietary modifications. It may also result from an inadequate knowledge about diet and nutrition and hence a variety of health issues are manifested. These issues can be managed with timely medical and psychological intervention and contribute towards betterment of health of women in general.

Keywords: Athlete; Sports; RED-S

Introduction

The realm of sports is marked by enthusiastic athletes striving hard for the pursuit of excellence and peak performance. This often stretches to a point where they push their limits to extra ordinary levels which often has many associated ill effects on the athlete's health. Beneath the sea surface of dedicated sports professionals training day and night to give their best, there lies a bigger challenge that often goes unnoticed and is specifically significant in the female athletic population. This issue is not just present in the high performance athletes but is also present in females who are over conscious about their figure- The Female Athlete Triad. It is a complexly interrelated triad of psychological, physiological and social factors which contributes to the development of its three components: Eating Disorders, Amenorrhoea and Osteoporosis. It was first described in 1993 [1] and was defined in 1997 by the American College of Sports Medicine [2]. While three new components were introduced in 2007, Low Energy Availability, menstrual dysfunction, and changes in bone mineral density [3], the International Olympic Committee meeting suggested a more holistic approach towards this issue as Relative Energy Deficiency in Sports (RED-S) in 2014 [4]. It takes into account, various physiological problems arising out of energy deficiency in the sports persons. With this background in mind, we can move ahead towards understanding the female athlete triad/RED-S and its implication in the day to day life of female sports persons as well women who are fitness enthusiasts with unnatural expectations from their bodies.

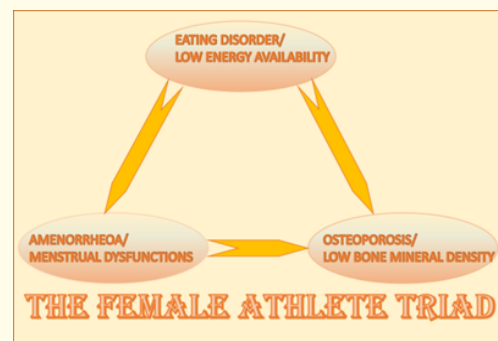


Figure 1

Tracing the roots

There is a complex interplay of historical, sociocultural and scientific elements which leads to the development of the triad. Since time immemorial, a lean female body is considered as the ultimate sign of beauty. With a constant conditioning with such idea, a lean physique becomes an ultimate bench mark for some women for gaining social acceptance. Young women are generally more prone towards developing such body image dissatisfaction where they set high standards for themselves in terms of appearance which they consider as aesthetic. Various social media platforms where physical beauty is celebrated and a proportional popularity is gained in the form of followers etc., has also strengthened this idea. Female athletes on the other hand consider leanness as an index of their ability to perform well in their respective sports. They over strain

themselves in order to bring out their best performance but at the same time are also worried about their physical appearance. Hence, they device some extreme methods to control their body fat which often paves the way to various eating disorders. A 2005 study conducted on Norwegian elite athletes and controls showed that not only athletes but normal active females too exhibited the triad [5]. This shows how important it is to talk about this matter.

Let us now take up the various components of Female Athlete Triad, i.e., eating disorder/low energy availability, menstrual dysfunction and low bone mineral density, in detail.

Eating disorders/low energy availability

With a constant societal pressure of having a lean and aesthetic physique and expectation of high performance, women are often found to cut on calories and impose on themselves certain food restrictions which go on to become eating disorders. It can range from anorexia nervosa (restricting food intake, excess exercise with an extreme fear of weight gain and distorted body image) to bulimia nervosa (episodes of binge eating followed by a compensatory self induced vomiting, laxative use, use of diuretics, fasting or excessive exercise due to guilt, shame and fear of gaining weight) to binge eating disorder and variety of other odd eating practices. With heavy training regimens, the athletes are predisposed towards having a disordered eating behaviour and thereby causing nutritional deficiency. Also in the athletes, due to heavy physical exercises, the calorie intake may not be at par with the energy expenditure. This is also a reason for the low energy availability. This maybe not always be intentional but might be a result of inadequate knowledge about a healthy diet and proper nutrition. This problem occurring in both female athletes and non athletes due to a dissatisfaction towards their figure and reduced body positivity as well as lower calorie intake inspite of higher physical activity, gives rise to the first component of the triad: Low energy availability. Relative Energy Deficiency in Sports (RED-S) considers this as the key reason of various other physical problems [4].

Amenorrhoea/menstrual dysfunctions

Amenorrhoea is the absence of menstruation in women of reproductive age whereas oligomenorrhoea is irregular menstrual period with menstrual cycles occurring at intervals of more than 35 days. Functional Hypothalamic Amenorrhoea (FHA) is a chronic condition of anovulation and stoppage of menstrual bleeding due to a decreased GnRH drive and consequently a reduced LH and FSH levels not sufficient enough for ovulation [6]. Nutritional deficiency is one of the key reason for the activation of the HPA Axis and thereby a subsequent reduction in GnRH drive and LH pulsatility [7]. Therefore, in female athletes with more energy expenditure than what they consume through diet and also in women with eating disorders, be it of restrictive or purging type, FHA and other menstrual disorders like oligomenorrhoea is especially observed. A simple overview of this can be visualized using Figure 2. Men-

strual disorders not only take a toll on a woman's reproductive health but also her mental health is compromised as well. In a society like ours where a woman's femininity is celebrated, a woman who started unhealthily cutting on her calories to achieve a figure to be shown as mark of her femininity, menstrual problems cause further more dissatisfaction with her own self. Her confidence is shattered.

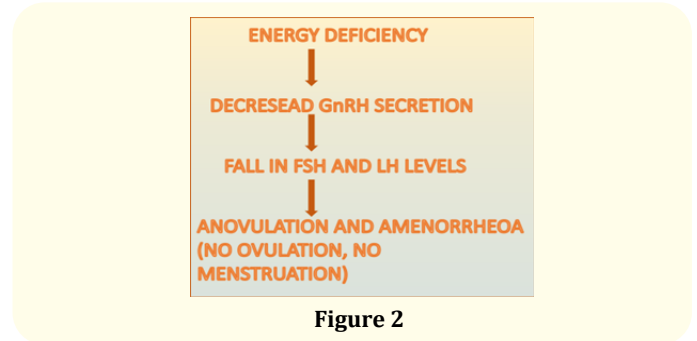


Figure 2

Osteoporosis/low bone mineral density

Osteoporosis is a skeletal disorder where the bone strength is compromised and the person is predisposed towards having fractures. In the light of the female athlete triad or the RED-S, when the other two components of the triad is present, reduced bone mineral density may also be present. Since nutrition and food intake is compromised, there may be decreased intake of calcium causing this. But another key factor in this scenario is the decreased estrogen levels which increase bone degrading (osteoclastic) activity causing a low bone mineral density. Weak bones are particularly unfavourable for the athletes as there are high chances of stress injuries during the sports. Even if the woman is not involved in sports, lower bone strength does affect her life as she becomes more prone to fractures. Since, there is absence of ovulation, the progesterone levels also decrease. Progesterone has bone forming effect and as a result of that, the growth and formation of new bone is hampered [8]. This idea is summed up in Figure 3.

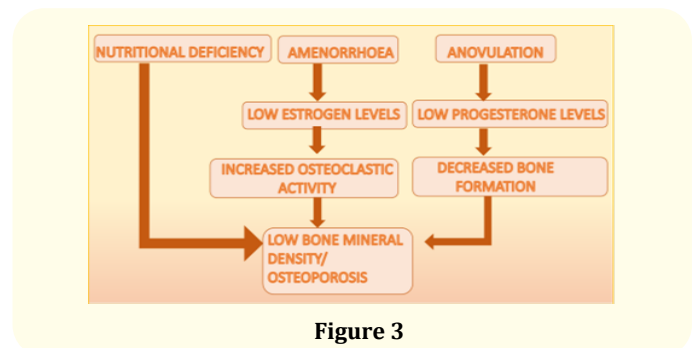


Figure 3

Reduced bone strength can have serious impact on the career of the female athletes. This in particular is more harmful in case of adolescents and young adults who are in their peak phase of bone formation as this may affect their bone health and cause problem throughout their life [9]. The key to manage this is to search for the

root of the triad and have a holistic treatment approach ensuring that the calorie intake is made sufficient which in turn will be effective for mitigation of menstrual dysfunction and subsequently, the issue of osteoporosis can be managed and the woman can be brought back to health.

Winning over the female athlete triad

As prevention is always better than cure, understanding that our body needs care is the key towards living a healthy life. Women should ensure that they stop judging themselves based on their physical appearance and succumb to societal pressure to achieve an unrealistic body or having unrealistic expectations in terms of performance. Stretching things beyond a healthy limit and comparison of ones own self to others without recognizing their potential as well as limitation is harmful to both their physical as well as mental health. A healthy balanced diet proportional to the level of physical activity as prescribed by a nutritionist and regular health checkups by a physician is the key towards leading a healthy life. The coaches should be well aware of the health status of the athletes and have a healthy approach towards training so that their performance is improved and health is taken care of. Seeking help from a healthcare professional as well as sharing problems with near ones will also help to manage the psychological problems associated with dissatisfaction with body image. A timely intervention can help to manage eating disorder as well as menstrual, bone and other disorders arising due to low energy availability and nutritional deficiencies.

Conclusion

The Female Athlete Triad/ RED-S requires a systematic and planned management approach so that the quality of life of both the female athletes and normal active women is enhanced. A positive body image and a healthy diet is the key to mitigate the problem of the female athlete triad and also other diseases arising out of low energy availability. A combined effort from the female athletes (and also women who are worried about their appearance), the coaches, nutritionists and ofcourse the doctors can not only improve the quality of life of women but also contribute towards betterment of society and the art of sports.

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