

This factsheet is one of a series, produced by sports coach UK and the Women's Sport and Fitness Foundation (WSFF), aimed at coaches who coach women or who are interested in coaching them in the future. Each factsheet provides insight into the female athlete and her needs, and guidance as to how better to coach and support her.

Although the information contained within this factsheet has been academically evidenced, sports coach UK recognises that it is a generalisation. All people are individuals and it is for you, the coach, to contextualise the following information to your own coaching environment.

This factsheet is designed to provide an introduction to the physiology of female athletes and the impact this may have on sport performance.

Puberty

Until puberty, girls and boys do not differ significantly in most measurements of body size, composition and physiological responses to exercise, although there is great individual variation. This, in itself, can have a huge bearing on athletic performance both physically and psychologically, especially as the majority of competition is based on the age of the athletes and not their stage of development.

Young people who develop earlier than their peers often leave their sport at around the age of 14 or 15, as the average and late maturers catch up. This is due to frustration because, up until this point, they have always relied upon their advanced developmental age for success and, as a result, many do not develop the necessary skills or fitness to continue to excel in their sport. The coach's role in managing the challenges faced in guiding athletes through puberty is therefore key.

The actual process of puberty takes about four years for both girls and boys; though it begins, on average, two

years earlier in girls. At puberty, due to the influence of increased oestrogen and testosterone, body composition begins to change markedly. In addition to the onset of menstruation, oestrogen causes increased fat deposits in females, particularly in the hips and thighs, and an increased rate of bone growth. As well as the physical change, girls will go through emotional changes; hormones sometimes produce mood swings that can vary in intensity. Feelings of depression or irritability alternate with periods of relative calm. It's not unusual for girls to feel a certain amount of stress over the rapid changes their bodies are undergoing, and this sometimes leads to periods of insecurity as well.

As coaches, you cannot predict the impact puberty may have on the young female athlete and should consequently be cautious in your approach to talent identification.

Menstruation and the female athlete

Assessing and taking into account the impact the menstrual cycle has on female athletes is something often overlooked by coaches for a variety of reasons.

- Embarrassment on the part of the coach and/or fear of embarrassing the athlete
- An assumption that the athlete would mention it if it were a problem
- Being unsure whether it is either appropriate or necessary to raise the topic
- A lack of confidence or knowledge about the potential impact of the menstrual cycle on athletic performance
- Fear of causing offence, especially for cultural reasons
- Some coaches have simply never thought about it.

In reality, while many women experience little difference in terms of performance during their menstrual cycle, it can present challenges for those who are affected by it and their coaches.



For some, the premenstrual stage may be accompanied by the following symptoms: mood changes; fluid retention; breast tenderness; abdominal pain; headaches; and fatigue. There may also be a reduction in both aerobic capacity and strength during this phase (known as premenstrual

syndrome [PMS]) and into the menses stage. However, it is important to note that state of mind and attitude can exaggerate these symptoms/effects and we cannot assume all female athletes experience all (or any) of these.

Dietary advice for athletes suffering from PMS:

- Reduce intake of refined sugar, salt, red meat and alcohol
- Eat fish, poultry and green leafy vegetables
- Reduce intake of coffee, tea, chocolate and cola drinks
- Reduce intake of fats, particularly hydrogenated fats, such as those found in spreads or some cakes and biscuits
- Increase intake of fibre in the form of green leafy vegetables and fruits.

In addition, a multivitamin supplement and evening primrose oil may also be taken to assist with alleviating PMS.

Ideas for the coach

In relation to younger athletes, the issue of menstruation could be dealt with as an issue of social and physical health, perhaps through a club's athlete-centred care strategy with the support of a female coach or team manager.

For older athletes, where PMS may be perceived to be more of a performance issue, again, the coach could work with an intermediary.

Group sessions could be set up for younger female athletes to share and discuss concerns.

It may also be useful to recommend that the athlete logs their cycle and associated physical and emotional changes against their training to establish any patterns.

Where coaching is not club-based, a buddy system could be established or a suitable intermediary identified to support the athlete and address any concerns she has that she does not feel comfortable discussing with the coach.

Obviously, in cases of severe PMS, the athlete should always be advised to seek appropriate medical attention and to consult with her doctor.

Managing sensitive conversations:

- Pick your moment carefully
- Be clear about what you want to say and ensure it is relevant
- Be sensitive of others overhearing the conversation
- Consider whether the training environment is the appropriate place for the conversation
- Maintain a clear purpose to the conversation and be clear as to whether you are looking to achieve a specific outcome from it (eg whether you intend to raise an issue, resolve an issue or gain some information)
- Use correct language (eg period, PMS) and make sure the athlete understands
- Be honest; if necessary, acknowledge that you feel awkward having this conversation as this may actually lead to a more open and relaxed experience
- Draw on examples of other athletes'/women's experiences of which you may have first-hand knowledge (while maintaining confidentiality).



The female athlete triad

The female athlete triad is a combination of three conditions: disordered eating; amenorrhoea; and osteoporosis. Athletes may have one, two or all three of these problems.

Disordered Eating

Most girls with female athlete triad try to lose weight as a way to improve their athletic performance. The disordered eating that accompanies the female athlete triad can range from avoiding certain types of food to serious eating disorders like anorexia or bulimia nervosa.

Amenorrhoea (absence of menstrual period)

Exercising intensively and not eating enough calories can lead to decreases in oestrogen, the hormone that helps regulate the menstrual cycle. As a result, periods may become irregular or stop altogether. It should also be noted that some girls who participate intensively in sport may never get their first period because they've been training so hard.

Osteoporosis

Low oestrogen levels and poor nutrition, especially low calcium intake, can lead to a weakening of the bones due to the loss of bone density and improper bone formation. Osteoporosis can ruin a female athlete's career because it may lead to stress fractures and other injuries and problems later in life.

Who is most at risk from the female athlete triad?

Those with female athlete triad often care so much about their sport that they would do almost anything to improve their performance. There are added issues for sports that classify athletes by weight, where focusing on weight becomes an important part of the training programme.

Participation in sports where a thin appearance is valued can also put a girl at risk of female athlete triad; gymnastics, figure skating, diving and ballet are examples of sports that value a thin, lean body shape. Some athletes may even be told by coaches that losing weight

will improve performance. Even in sports where body size and shape aren't as important, such as distance running, women and girls may be pressured by teammates, parents/guardians, partners and coaches who mistakenly believe that 'losing just a few pounds' could improve the athlete's performance.

Any weight-loss programme for an athlete should always be managed by a professional dietician or other medical professional.

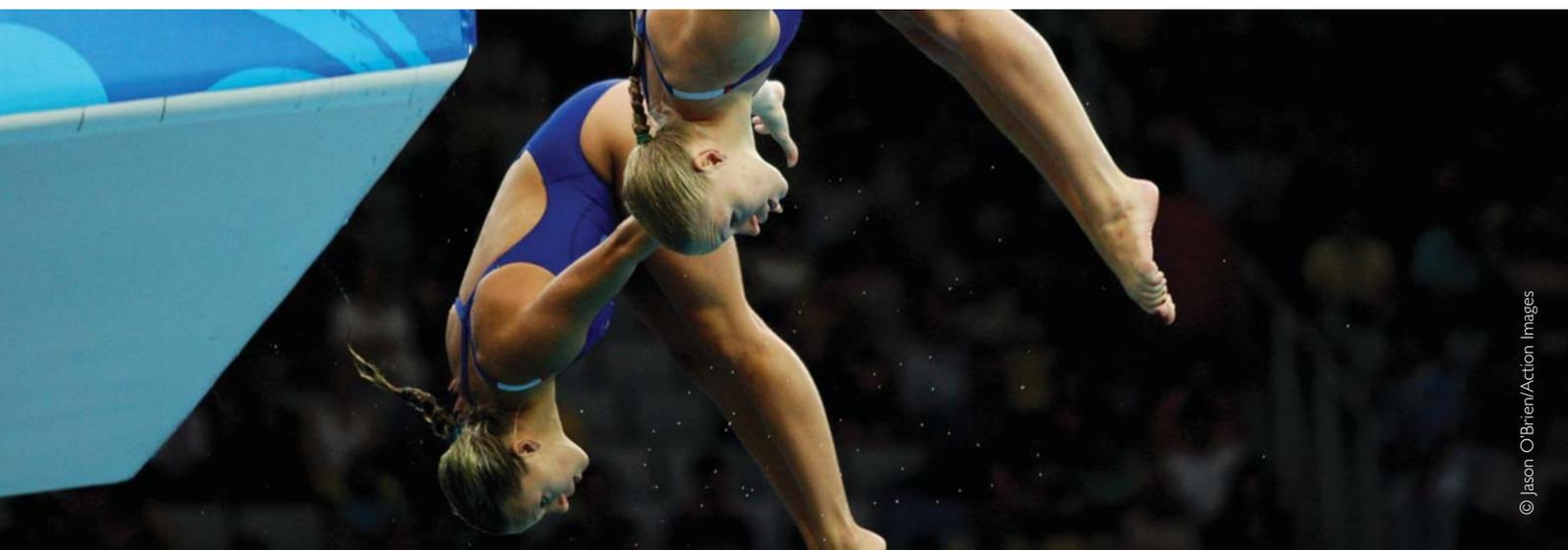
What are the signs and symptoms of female athlete triad?

If a girl has risk factors for female athlete triad, she may already be experiencing some symptoms and signs of the disorder, such as:

- weight loss
- no periods or irregular periods
- fatigue and decreased ability to concentrate
- stress fractures (fractures that occur even if a person hasn't had a significant injury)
- muscle injuries.

Girls with female athlete triad often have signs and symptoms of eating disorders, such as:

- continued dieting in spite of weight loss
- preoccupation with food and weight
- frequent trips to the bathroom during and after meals
- using laxatives
- brittle hair or nails
- dental cavities (girls with bulimia often experience tooth enamel being worn away by frequent vomiting)
- sensitivity to cold
- low heart rate and blood pressure
- heart irregularities and chest pain.



Depending on the sport being coached there are also other considerations for the coach of female athletes:

- Female athletes who participate in sports involving jumping and making swift changes of direction have been found to have twice to six times the risk of injury compared with male athletes participating in similar sports.

The injuries are not predominantly a result of contact between players, but more often in response to jumps, hard landings, sudden pivots. Exercise scientists have been unable to provide a single reason as to why females have more injuries; however, a variety of theories have been given, including: differences in training and/or coaching of male and female athletes; variations in ligament laxity; and anatomical differences (eg women having wider hips than men and the effects of hormonal changes during the menstrual cycle).

Specifically in relation to knee injuries, recent research (Sports Injury Bulletin, 2010) has suggested that the higher prevalence of injury in female athletes may simply be down to female athletes' tendency to land from jumps with straighter knees than males and that the imbalance between quadriceps and hamstring strength is more marked than in men. Both of these are issues that can be addressed through training.

- A woman's lung capacity is, on average, 25–30% lower than a man's. Men can process more oxygen, giving them an advantage when undertaking aerobic training.
- The average female heart is 25% smaller than the average male's. Consequently, male hearts are able to pump more blood with each beat. The larger size of a man's heart also means a lower resting heart rate (on average, 5–8 beats per minute slower than a woman's), which is also apparent when they are training at a submaximal level.
- A man's body is on average 10–15% larger than a woman's and 30% stronger; particularly in the upper body. Some women have a lower centre of gravity than men and may, therefore, have to overcome more resistance than men in activities that require movement of the lower body.

Think: Treat the athletes you work with as individuals



For further information on any of the issues covered here, please refer to the resources below or contact your governing body of sport's Coach Education team.

A call to action

Think about how you could change your approach to your coaching sessions. You don't have to be able to identify with everything on this factsheet, but the differences you will achieve from changing a minor part of your coaching methodology could bring great results.

There are five other factsheets in the series. Each one explores a different area surrounding women in sport, which may help inform your approach to your current coaching practice. The factsheets are:

- Coaching Myth Buster
- Female Psychology and Considerations for Coaching Practice
- Developing Female Coaches
- Coaching Female High-Performance Athletes
- Socially Inclusive Coaching.

For further information about the series, please email coaching@sportscoachuk.org

References

Inside Track (2010) 'Women on Track: Should males and females be coached differently?', www.theinsidetrack.org.uk/womenontrack/

Sports Injury Bulletin (2010) 'Female athletes' knee injuries prevention', www.sportsinjurybulletin.com/archive/female-knee-injuries.html

