

**This document provides links to the science, supporting articles, useful resources and product websites, aligned to the relevant sessions within the course.**

## **1.1 Falling To The Level Of The System:**

James Clear's quote comes from his book [Atomic Habits](#).

Emma's paper '[Invisible Sportswomen](#)' examines the research gap in sport and exercise science, and she discusses this paper on [The Followers podcast](#).

Research about the 3% of US college coaches who felt like they trained their athlete with female physiology in mind is by [Marsa Daniel](#) and [Sam Moore](#) came from the 2021 [Female Athlete Health Conference](#).

## **1.2 Leaping Into Brave Space:**

Emma discusses her 'ecosystem' model more [here](#).

Simon Sinek has a great TED talk about '[Starting with Why](#)'.

[Google investigated high performing teams](#) and found that psychological safety was the most important variable connected to team effectiveness,

Amy Edmondson coined the term Psychological Safety, and she talks [here](#) to the Harvard Business Review about what it is, why it is important and how you know if your team / culture or organisation has it.

The LEAPS model of communication comes from George Thompson and Jerry Jenkins book '[Verbal Judo: The gentle art of persuasion](#)' which is reviewed nicely [here](#) (chapters 21 and 22 are about LEAPS).

## **2.1 The Menstrual Cycle:**

The prevalence of women (up to 90%) reporting menstrual symptoms, and the number in whom it is severe enough for a clinical diagnosis of Pre Menstrual Syndrome, is reported in this [paper](#).

The data that 88% of active women say their symptoms impact their performance, and 80% have never had education about their cycle and exercise come from a large

[study of 14k women by the cycle tracking app FitrWoman and fitness platform Strava](#).

[A study of over 1100 female athletes](#) found that, even today, female athletes and their coaches rarely talk about the menstrual cycle, although female athletes would be willing to do so. In [this research](#), the most common barriers to speaking to staff were male staff and club culture.



# References

The [Better for Women](#) report by the RCOG collected insights on several womens health topics, including womens experiences of the menstrual cycle.

A woman's capacity to perform is not limited directly by the hormones of the cycle. This [research review](#) showed that fitness and performance metrics such as aerobic fitness, strength, power or speed are unaffected by the hormonal fluctuation of your cycle.

The impact of compassion has been studied more in healthcare than ins sport. Compassions is described in [this paper](#) as the ability to express empathy, provide emotional support and a willingness to understand and relieve another's distress and suffering.

We cover the science behind the influence of cycle phase on how women feel physical and emotionally, and how that might impact their training and performance in our book [The Female Body Bible](#), in Chapter 2, page 63 'Training around your cycle'.

SSTiF training: [In one study](#), maximal strength increased by 40% with the SSTiF approach, compared with a 27% increase when that pattern was flipped. In [another study](#) maximal leg-strength improved over 30% in the SSTiF training versus 13% in the regularly-spaced training programme.

## **2.2 Tracking The Menstrual Cycle:**

Although tracking of wellness, sleep, and training loads are popular practise in women's sport, [this study](#) showed that only about 20% of athletes track their cycle in any detail.

Hormone monitoring gives an in depth look at cycle health. It can be done via saliva samples, with a service like [Hormonix](#).

## **2.3 Managing Periods in Sport:**

Here are links to the products we talk about in the video:

[Fab Little Bags](#) for the convenient and sustainable disposal of period products.

[Nixi Body](#) period underwear with sport in mind.

High street period underwear from [M&S](#) and [Primark](#).

Period swimwear from [ModiBodi](#), and period proof bikini bottoms from [Primark](#).

[Netu shorts](#) with period leak protection (available soon).

## **2.4 Developing Cycle Resilience:**

Further reading on strategies to manage menstrual cycle symptoms can be found in:

[The Female Body Bible](#) (Chapter 3, page 49 'Menstrual Cycle Symptoms Busters').

[Period Power](#) by Maisie Hill.



# References

[The Period Repair Manual](#) by Lara Briden (and on her [website](#)).

[The Female Factor](#) by Dr Hazel Wallace.

## **2.5 Hormonal Contraception in Sport:**

[In a Danish study](#) 60% of athletes who used hormonal contraception were doing so for 'menstrual management', that is, making their cycle more predictable for the convenience of sport.

[Clinical trials](#) show that up to 80% of women find pain relief from significant period pain after starting the pill.

[A study](#) of over two hundred women suggests that taking the pill can cause high levels of stress hormones to continually circulate in a woman's body (for as long as she's on the pill).

[In a study](#) of Olympic athletes taking the pill, 36% of had markers of systemic inflammation that were three times higher than in non-pill takers.

[This study](#) showed how the type of pill a woman uses might affect her adaptation to strength training.

[A large study](#) showed that women are more likely to suffer depression if they use Hormonal Contraception.

[The Low Down](#) is a great online platform to find out more about every single type of hormonal contraception, hear about other users experience and even book consultations with doctors who can help women understand the best type of HC for them.

Further reading: [How the Pill Changes Everything: Your Brain on Birth Control](#) by Professor Sarah Hill.

## **3.1 The importance of a sports bra:**

[In a study](#) of over 500 athletes, 63% reported breast pain that was associated with the time of their menstrual cycle and 33% said the pain worsened during exercise.

[This study](#) carried out at the London Marathon found that 32% of the participants had experienced breast pain, and 17% said it had impacted how much they could train.

Data from over 41,000 women, analysed by Boux Avenue lingerie experts, found that only 19% are wearing the correct size bra, leaving 81% sometimes unwillingly, sporting an ill-fitting bra. 26% of women were wearing a cup size too big. The study was covered by [The Independent](#).

[This article](#) from Booby Doo 'busts' some myths about sports bra's.

The Breast Health Research Group at The University of Portsmouth have provided a lot of the science about the impact on performance when we don't wear a correctly fitting sports bra. You can check out the biomechanics behind it all in their research [here](#) and [here](#).

[This study](#) showed that breast size affects participation in physical activity, with larger breasted women doing 37% less intense exercise.

[Read about](#) the only bra that Serena Williams wears and follow [Ellie Cardwell's](#) review of sports bras on her Instagram account.

### **3.2 Finding The Right Sports Bra:**

The 5-point fit method (and extra fit tips) from the researchers at Portsmouth, [in this article](#) with CoachWeb.

[This video](#) within The Sports Edit article nicely describes why we need a sports bra and describes how to go through the five-point-fit.

[Boob Or Bust](#) is a great website with lots of fitting and measuring advice, helpful tips and recommendations.

[BoobyDoo](#) is an excellent online shop for different sports bra brands, with online fitting, and some useful videos and articles about getting the right sports bra.

[PeBe](#) make sports bra's designed based on the research of breast biomechanics and specifically for changing bodies, larger breasts and teens. They offer online and [in person fit clinics](#).

[Maaree](#) make sports bras for larger breasts and offer online fitting.

### **3.3 Breast Injury:**

[This research](#) looked at the prevalence and causes of breast injury in sport, and was reported in [The Guardian](#).

[Boob armour](#) protective inserts absorb impact, prevent immediate injury and alleviate long term breast trauma in women participating in sport and exercise. Their website also has some great articles about breast injury and breast health in sport.

### **3.4 Kit Conundrums:**

Read [here](#) about the inclusive kit charter developed by GB hockey player Tess Howard, designed to ensure that kit works for everybody in sport.

[This article](#) focuses on the Australian New South Wales netball team offering an excellent choice of kit for their players; a great example to share with your club or organisation if they need some inspiration for a kit overhaul!



# References

## 4.1 Womens' Relationships With Food:

[A research study](#) of hundreds of male and female university students found that many more women had tried a low-fat or low-carb diet, and more women thought it was important to limit the amount of fats and carbohydrates they ate.

[The Australian Institute of Sport](#) have compiled some considerations for body composition testing – factors that should preclude, and that may preclude women from being tested.

[This blog](#) from female athlete health expert Stacy Sims describes why fasted training doesn't work, and isn't healthy for active women, and [an article](#) on the same topic from Trail Runner Magazine.

[This is the research](#) that explored carbohydrate loading and found it wasn't an effective intervention in females.

1 in 10 sports supplements could contain a banned substance, which would mean an athlete fails an anti-doping test, even though they were unknowingly contaminated. [Informed Sport](#) is a testing process for banned substances in sports supplements. For those athletes who have to adhere to anti-doping regulations, looked for the informed sport logo.

## 4.2 RED-S:

[This is a useful summary article](#) about RED-S, what it is and what the main symptoms are.

[This study](#) followed the England football team during a training camp and found that most did not consume enough energy, and only one player had enough carbohydrate to meet the demands of her training load.

[This is the review paper](#) explored the types of sports where menstrual dysfunction is most prevalent and could indicate a higher risk of RED-S for athletes in those sports. Prevalence of RED-S in non elite, but active women [is described in this research](#).

The International Olympic Committee have a working group of researchers who study RED-S. Their [latest consensus statement](#) was released in 2018.

[Bobbly Clay's](#) story of RED-S in Athletics Weekly.

[The LEAF-O is an effective screening tool](#) to identify those at risk of RED-S and allow early intervention to prevent from long-term damage.

[A brief overview of the SCOFF](#) questionnaire can be found in PsychTools (a repository of free psychological assessments).

[A spotlight article](#) on Hormonix, the hormone monitoring service, and its utility is identifying athletes with RED-S.

[The Female Athlete Health Report](#) from Kyniska Advocacy and Project RED-S explored eating behaviours, RED-S and menstrual health in over 750 athletes. The report is summarised in an [infographic](#).

[A whole website](#) dedicated to coach, athlete and practitioner resources and advice about RED-S, which includes a [RED-S specialist directory](#), covering UK and USA.

## **5.1 Injury Risk Factors and What We Can Do About Them:**

Time lost to injury or illness really impacts a woman's chances of achieving her goals – doing the prescribed increases your likelihood of success by seven times, according to [this 5-year prospective study](#).

What happens after an ACL injury? Many women don't return to their pre-injury levels of fitness or performance, and many develop osteoarthritis within ten years. These data are summarised on this [infographic](#).

[This research review](#) paper explores why the prevalence of ACL is higher in women, and what factors might be at play.

[The Conversation](#) covers the state of ACLs in women's football in 2023, and the article includes a video of the FIFA 11+ injury prevention programme.

[This research](#) explored how the environment, rather than physical characteristics, can influence injury risk in women.

[This is the research](#) that looked at how integrating conditioning exercises into the warm up 3 times a week could reduce overall and ACL injury risk in females.

You can download [the whole FIFA 11+ workbook](#) from The Coaches Guild, and also find a [printable poster](#).

You can download the England Netball Jump High, Land Strong programme [from their website](#).

[Video](#): 15 minutes sports warm up exercises to prevent injury.

[These](#) are the most current UK Concussion guidelines for non-elite sport. They include how to recognise a concussion, and what to do in the moments following a concussion, plus a stepwise graduated return to play plan for the days and weeks following a concussion. If in doubt, sit them out.

## **5.4 Protecting Womens' Brains In Sport:**

[Pink Concussions](#) details lots of the data on female concussion, why women are more susceptible.

Rezon provides some great data on the impact of brain injury, and who is most at risk on [this webpage](#).

[Some insight](#) into what happens in the brain during sport, particularly the impact of rotational forces. And why sub concussions are important to consider.

Dr Emer MacSweeney delivers a [brilliant TED talk](#) about sub concussions in sport.



# References

[The Guardian](#) cover the issue of brain health in womens sport.

[The Rezon Headband](#) is a kitemarked brain protection device for sport. [Independent studies](#) support its effectiveness.

## **6.1 Bladders and Bowels:**

[The Prehab Guys discuss pelvic floor dysfunction in sport](#), why it happens, who it happens to, and what to do about it in this brilliant article, with video.

There is an [excellent directory of womens health physio's](#) in the UK on the Squeezy app website.

[This study](#) links RED-S with urinary stress incontinence in some athletes.

## **7.1 Creating Environments Where Women Can Thrive:**

[This article](#) describes the master stereotype that women are more emotional than men, and dispels the myth by presenting data from a study which showed women have similar emotional patterns to men.

[This paper](#) gives some insight into how high performing female athletes experience the coach athlete relationship.

[Women often exhibit a different response to threat](#) and stress than men, leaning mor into connections with others, as opposed to fighting or fleeing.

[This research](#) showed that developing self compassion skills is an effective intervention to help female athletes.

[UK Sport](#) developed this resource to support coaches working with female athletes, including some useful reflection and action points.