

Women's Training

Moving beyond the normal 'shrink it and pink it' approach

So much of the sports industry is based on research done on men, and women, at best get a 'shrink it and pink it' approach, rather than evidence-based advice developed specifically for them.

This handout summarises key issues specific to women's training and diet, as well as practical take-aways.

- Actions you can take are indicated with an arrow like this!
- If you prefer, you can [view a Facebook Live recording](#) of this information.



Why do we need to talk about this?

- It's a big issue: 1 in 3 women have missed work as a result of their menstrual cycle
- 72% of women have never received education regarding exercise and menstrual cycle
- Seen as taboo, but if we don't talk about it, we don't know how to address it - knowledge is power
- Lack of research - Most medical research done on men, women of 'child bearing age' were excluded
 - So for example we end up with drugs that have adverse effects on women because they've not been tested on them, the different in symptoms of a heart attack in women, or increased prevalence and delay in recovery from concussion are not widely known, even by doctors.
- The situation is improving, major funding organisations now ask researchers to consider gender/sex, or justify focusing on a single sex (EC since 2003, in US since 2015)
- Worse in sports science, estimates of women making up only 3-30% of subjects
 - It's harder to run research on women – women have a different response to exercise, nutrition etc, throughout their cycle

But this is an explanation, not a justification, and actually highlights exactly why it's so important to address how these things affect women at all stages of their cycle

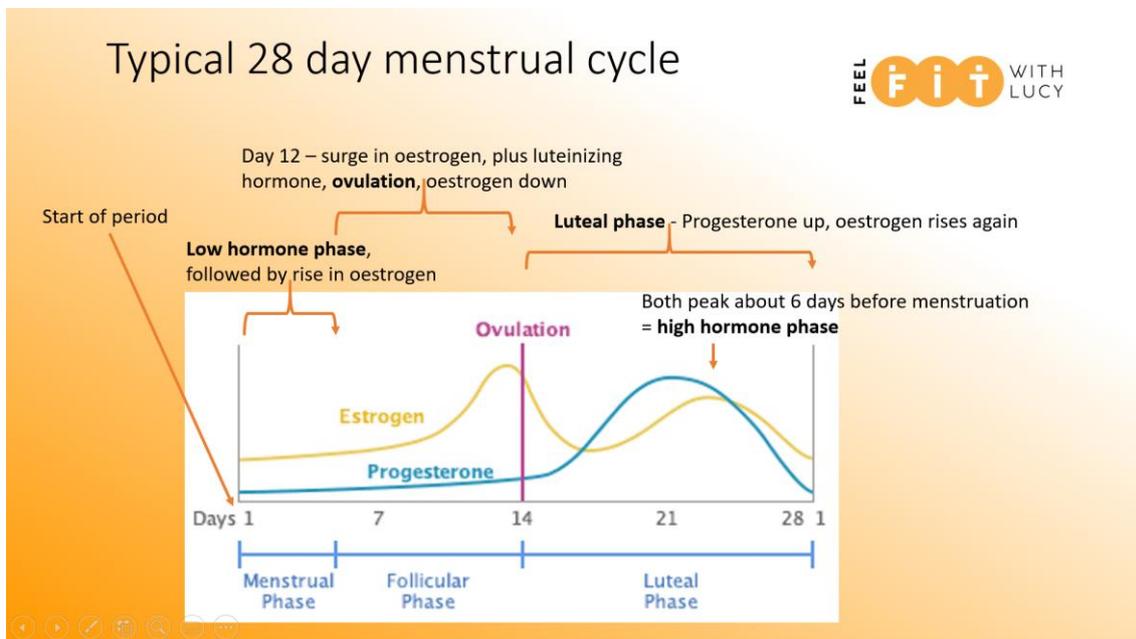
The menstrual cycle

- Note if you don't have regular periods or are on the pill not all of this will be relevant. Please see later slides on both of these issues
- Not everyone will experience all these effects. And my intention in sharing this is not so you develop a 'chip on your shoulder' about the issues your menstrual cycle gives you, but so that you are aware and can take action to address any issues.

Tracking

- It's important to track so that you can see how your body changes through your cycle over time. You'll need to do it through a few cycles to understand the differences. If coached, discuss with your coach.
- Things to look for include: resting heart rate (HR), HR for key sessions, HR variability, and the impact on key training sessions at different times of your cycle

- If you use Training Peaks, you can record on there so you/your coach can track against training¹
- But far more useful to **you** is the FitrWoman app which gives you a range of information about how your physiology, training and nutrition changes through your cycle²



Menstrual / Early Follicular phase

- Menstruation symptoms: lethargy, cramps, heavy legs, lack concentration
- Exercise usually helps (78% of women say exercise reduces symptoms, but go on feel, reduce intensity)
- Reduced neuromuscular control
 - Add some activation work in your warm-up
- Iron requirement is increased due to blood loss (more later)
 - Include more iron-rich foods (but not post training, limited absorption)
- Blood loss can also exacerbate dehydration
 - Ensure hydration
- Once symptoms pass, best time for most training. Better adaptation to strength and higher intensity training
 - Add to training plan in these weeks
- Better spatial awareness
 - Good time to try new skills, more technique work
- More joint laxity as oestrogen levels rise – more susceptibility to soft tissue injuries, esp ACL
 - Ensure good warm up, think about additional precaution if you're at/your sport is high risk

¹ Training Peaks tracking is wholly inadequate, I can track sleep in 5 different ways, track my right wrist and left wrist?? But only flow for menstrual cycle, join me in telling them so! <https://help.trainingpeaks.com/hc/en-us/requests/new>

² Another campaign! Ask them to sync up with Training Peaks so that the information you enter is visible there - fitrwoman@orreco.com

Luteal phase (days 15-28)

- Progesterone and oestrogen both high, peak about 6 days before menstruation
- Reduced ability to burn carbs (you store glycogen in case pregnant): better at fat burning
 - Shift your training from high intensity to lower intensity endurance training (which is more based on fat burning)
 - Fuel your sessions with more carbs for high intensity (your metabolism may be higher as well so you might also need additional calories)
- Higher rates of muscle breakdown
 - Ensure you're taking in adequate protein
 - Protein quality is important – consume leucine (muscle building amino acids) or BCCAs (which include leucine)
 - Leucine might also help with mood swings and lethargy (reduce central nervous system fatigue)
- Change in fluid retention: bloating
 - Avoid processed foods and sweeteners - can increase water retention
- Change in blood pressure, increased heart rate (at rest and during exercise)
- Reduction in plasma volume
 - Effectively less blood to go around, exercise will feel harder, be kind to yourself if you can't hit the intervals you could last week
- Spatial cognition harder in high hormone
- Core temp elevated plus more sodium released: risk of overheating
 - Ensure adequate hydration and electrolytes (avoid hyponatremia)
 - Take cooling measures, both during exercise and sleeping

Pre-menstrual phase

- Often worst symptoms in the week before menstruation, when hormones decline
- **Headaches** – due to change in blood pressure in the days before period
 - Stay well hydrated
 - Eat foods high in nitric oxide: beetroot, pomegranate, watermelon, spinach
- **Cramping** – uterus contracts and chemicals released to shed the lining
- **GI issues** – if body makes more chemicals than need, can affect other smooth muscles like bowels
 - Fruits and veg - anti oxidants, inflammatory response?
 - Probiotics

Stacy Sims' recommendations for PMS in ROAR*: For each of 7 days before period due take:

- 250mg magnesium
- 45mg of zinc
- 80mg of baby aspirin/ white willow bark
- 1 gram of Omega 3 fatty acids (e.g. flax seed and fish oil) each night

- Other suggestions of things that can help symptoms: Vitamin B6 and Star Flower oil
- Disrupted sleep will further impair recovery
 - Focus on sleep hygiene (see [my blog on sleep](#))
- Stress and anxiety can also exacerbate PMS
 - Try activities such as yoga, mindfulness

Adapting Training

- VO2 max and lactate threshold etc don't change throughout cycle
- But pain, muscle turnover, spatial awareness, blood volume, metabolism (carb and fat use) etc all do!
- First 10 days:
 - Best for hard sessions e.g. VO2 max/ high intensity, strength, power, weights
- High hormone phase:
 - Best for endurance (fat burning), ensure additional carbs for hard sessions
 - Schedule recovery weeks (or maintenance) around worst of symptoms
 - You're in a more catabolic phase, so ensure you get enough protein (leucine) after hard sessions
 - Where possible, train in a cool environment e.g. outdoors vs indoors (heat)

Periods are a good thing! (despite this focus on some of the less desirable side effects)

- Don't focus on negative impacts or be limited by them, be aware and work with your body to overcome
- Having a period is a sign that everything is in order, if things are out of balance, your body protects against pregnancy. The menstrual cycle, and associated hormone release, is essential for bone health
- If you don't have periods:
 - Speak to GP
 - A common cause is insufficient energy, see REDS later
 - Take additional measures to protect bones (see later)

Contraception

- Using the pill to 'restore' periods is not addressing core issues – it's a withdrawal bleed, not true period
- Most contraception is hormone based, so could potentially increase impacts in some areas (ditto taking medication to delay periods around key races)
- Despite being so widely used by many women, including c. 50% of elite female athletes, there's very little research on impacts on training and performance
- Decision clearly goes beyond just sports performance, get professional advice and don't take it lightly

Other issues specific to, or more common in women

Menopause

- Affects women around 48-55 years old, peri menopause 5-10 years before
- Affects different women in different ways, and this can change over time, making 'diagnosis' hard, some GPs only offer quite limited support

- Big fluctuation and decline in certain key hormones
- We can't train and eat the same and expect same results as before if our hormones are different

It's a completely normal process that every woman will go through to some extent. Let's be aware, be kind to each other and reduce the taboo

Training and diet through menopause:

- **We become more insulin resistant:**
 - Triggers fat storage as belly fat (and associated increased risk of coronary heart disease) (NB stress has the same impact, and when stress is combined with changed hormones, the impacts can be amplified)
 - Sugar surge/ carb crash cycle, we become fatigued and hungry
- Consume lower GI carbs (less 'pure carbs' especially processed carbs, more veggies and wholefoods)
- Increase proportion of fats, protein in diet
- **Increased muscle breakdown**
 - More catabolism, less responsive to resistance training and eating protein
 - Resulting in reduced power plus weight gain (resulting from slowed metabolism)
- Increase protein, plus more resistance training, power training, bones

Hot flushes: Oestrogen regulates fight or flight hormones. If it goes off kilter through menopause, it can result in us feeling panicked and hot sweats, red face etc. Plus often post-menopausal women sweat less and are less thirsty: dangerous and limits performance

- Pre cooling + ensure hydration with electrolytes (don't just drink to thirst - often too little, too late)

Sleep: Progesterone and oestrogen help us sleep, so sleep is affected as they reduce, plus fluctuating body temperature keeps us awake

- Sleep hygiene - <https://www.feelfitwithlucy.co.uk/post/maximum-vs-marginal-gains-sleep>
- Valerian root (tea or capsules – 400 mg), ice cold tart cherry juice half hour before bed
- Black cohosh – relieves menopausal symptoms incl hot flushes (and therefore sleep) , supplement or tea

Bloating and GI issues: Often get worse during menopause

- Cut triggers – inflammatory foods, sugar substitutes such as sorbitol
- Protect gut microbiome (also helps because of its key link to mood as well)

Memory, mood and mojo: Depression, forgetfulness, feelings of panic/anxiety (cortisol), brain fog

- Sleep hygiene, BCCAs pre/post exercise to cross blood/brain barrier and support central nervous system

Pregnancy

- Beyond the scope of this handout. Just a few key points:
- Exercise is encouraged (unless serious medical restriction)
- Listen to UP TO DATE medical guidelines (these have moved on a lot, so a lot of your conceptions, or those of people giving you 'friendly advice' might be out of date).

Polycystic Ovary Syndrome (PCOS)

- Affects about 1 in every 5 women in the UK
- **Symptoms:**
 - Irregular periods or infrequent periods
 - Difficulty getting pregnant as a result of irregular ovulation or failure to ovulate
 - Excessive hair growth (usually on the face, chest, back or buttocks)
 - Unexplained weight gain (eat 'right' but gain weight)
 - Thinning hair/loss from the head
 - Oily skin or acne
- Get tested: No cure for PCOS, but symptoms can be treated so get GP support
- Lifestyle and training can help reduce hormones imbalance
 - Increased insulin resistance
 - Avoid high GI carbs
 - High levels of cortisol
 - Avoid fasted training, too much high intensity

Injuries

- Muscles keep up strong and healthy and help to prevent injury - we start with less and will start to decline from 30
 - Add resistance training (weights or BW), aiming for c 10 reps max effort, lower body focus if training for triathlon or weight loss.
 - Develop strong, stable glutes to help avoid injury around knee where women are particularly prone
 - Posture – avoid old ladies' hunched posture by working on your posture now, it becomes harder and harder to address these issues after 30
 - Cut the sit ups/ crunches – they do nothing for core support (they work outer, not inner core), can accentuate poor posture and can be very bad for your back. Instead focus on anti-extension and anti-rotation exercises such as planks and [Pallof Press](#)
- Women have a 50% higher concussion rate (same sport, rules, equipment) and take longer to recover, but there are no female-specific care protocols (The [2017 Consensus Statement on Concussion in Sport](#) mentions the word "sex" just once, and "gender" is included in one footnote), meaning often GPs, first responders etc medical staff aren't aware of the risks.
 - For more on specific female advice on concussion see <https://www.pinkconcussions.com/>

Bone strengthening

- About 1 in 2 women (vs 1 in 5 men) over 50 will break a bone because of osteoporosis
- Bones constantly remodelling, minor trauma essential - makes them stronger
- Women more at risk because:
 - We have smaller bones and smaller muscles pulling on the bones (the pull creates stress which strengthens the bones)

- Often do less weight training
- Lose oestrogen (protects bones) during menopause (or amenorrhoea): we lose bone mass at <1% pre menopause, 2-3% post menopause
- More likely to follow a vegan or restrictive diet?
- To help build and maintain strong bones:
 - Weight bearing exercise (cycling or swimming is not!)
 - Lifting weights
 - Calcium (especially important to monitor if vegan or restrict dairy), preload before sweating (we lose calcium) during/ followed by impact exercise (e.g. treadmill run or brick session)
 - PLUS need vitamin D to absorb the calcium (sunlight, oily fish, eggs, fortified breakfast cereals)
 - Reduce smoking and regular alcohol

Pelvic Floor Issues

- Men and women can both have pelvic floor and associated issues
- **Symptoms:** leakage (jumping, sneezing, long runs), difficulty emptying, pain with sex, diffuse hip or low back or pelvic pain
- Kegels not always the answer for pelvic floor dysfunction
 - If pelvic floor is simply weak, kegels could help
 - But often issue of discoordination, poor flexibility or inability to turn off
 - Visualise sucking up a milkshake straw, and then releasing to engage
 - Diaphragmatic breathing to encourage nervous system relaxation
- If experiencing symptoms, see a pelvic health specialist/physio

Bike fit (apologies, completely left this off the seminar, despite it being one of my pet subjects!)

- Women are a different shape, not just size, to men, painting a bike pink doesn't magically make it fit
- Don't put up with an uncomfortable saddle. Painful soft tissue is NOT inevitable.
 - Wear cycle shorts (no underwear), check padding isn't worn and sits where you need it
 - Get a saddle that fits you – only buy from somewhere that will let you try it out and return it if it doesn't, you can't tell after 5 mins sitting in a shop
 - Try tilting down the front nose very slightly (few degrees)
 - Ask for recommendations but everyone's different, so it won't necessarily work for you
- Women have smaller hands, before buying a bike check you can reach the brakes on the drops (curved bit of handlebars)
- Shaving and waxing 'down there' can increase chance of saddle sores, plus hair helps reduce friction

Nutrition based issues

For more general info on nutrition, including more detail on the following issues, see my upcoming seminar on **Nutrition to maximise training and performance** - including nutrition advice for healthy eating in general, for specific training sessions, for racing, for weight loss, specialised diets, and more, on Thursday March 12th at midday [Watch live](#) or [watch after the event](#).

Relative Energy Deficiency in Sport (RED-S)

- Growing recognition as an issue - IOC Consensus Statement 2014, updated 2018
- A progression from the Female athlete triad (which was defined as low energy availability, menstrual disruption and impaired bone health), now recognised as spectrum, starting point is low energy, widened to hormones, not just menstruation (and therefore also includes men)
- Results from insufficient fuelling for demands of training
 - Don't have to be underweight
 - Leads to hormone imbalances, weaker bones and stress fractures, low energy, injuries, illnesses
- Disordered periods/ amenorrhoea is big indicator (but can have REDS whilst still have period)
 - Hormonal contraception masks and does NOT protect against the effects of RED-S
- If concerned, ask GP to check hormonal levels (may follow up with bone density scan)
- Still remains poorly recognised by health professionals, coaches and athletes - Health4performance website has resources for GPs and other professionals

Iron deficiency

- Also check iron levels. At higher risk if
 - Losing blood through (heavy) period (runners often have heavier periods)
 - Hard training - cortisol release which has negative effect on iron absorption
 - On contraception - can interrupt iron absorption
 - Experience exercise-induced anaemia
 - Vegan/ veggie
- One study found 28% of female marathon runners were iron deficient (compared to 11% in females generally)
- If worried of experiencing symptoms of anaemia (fatigue, short of breath, light head, palpitations)
 - Get blood test
 - NB IF supplementing (based on blood tests), it's poorly absorbed, liquid better (e.g. Floradix)

IBS

- Affects 10-15% of population, 2:1 women to male
- See nutrition seminar for more details
- Key to being able to consume nutrition whilst training /racing is to train the gut - practice fuelling, build up over time, in exactly the same way as you do with cardio training

Notes

- Don't change medication / take supplements etc without consulting GP etc
- If coached, speak to your coach before making changes

Further reading/ listening

Given a lot of you have lots of long runs and turbo sessions to get through, I've tried to prioritise podcasts. I've given the names of the podcasts so that you can find them on your preferred podcast app. Let me know if you've got any favourites that I should add to my list.

Specific research on women (or lack of)

- 99% Invisible - #363 Invisible Women with Caroline Criado Perez, <https://99percentinvisible.org/episode/invisible-women/>
- Fuel the Pedal podcast #16 – Melinda Manore, The female cyclist, nutrition concerns and research challenges

Menstrual cycle, hormones, optimising diet and training

- Oxygen Addict #193 Blood, Sweat And Gears - <https://www.oxygenaddict.com/podcast/2017/11/21/draft-tnhtt-z8gjd-zxc8a-efzn>
- Meathead Hippie #120: Women are not small men with Stacy Sims Part 2
- Tough Girl Podcast – Dr Stacy Sims
- Sparta Chicks Radio #099: Dr Stacy Sims on How to Work With Your Body, Not Fight Against It - <https://www.spartachicks.com/099-dr-stacy-sims/>
- Fast Talk, ep. 74: Why women are not small men, with Dr. Stacy Sims - https://www.velonews.com/2019/05/training/fast-talk-ep-74-why-women-are-not-small-men-with-dr-stacy-sims_493960
- (Try anything with Stacy Sims on your favourite podcast)
- Well Far: Miles and your menstrual cycle – how to be fit and fertile with Dr Anita Mitra

Menopause

- Oxygen Addict # 218 - <https://www.oxygenaddict.com/podcast/2019/2/11/218-menopause>
- Fitn'Chips #50 Dr Stacy Sims Talks Menopause <https://www.fitnchips.com/2019/04/dr-stacy-sims-talks-menopause/>

PCOS

- Ben Coomber Radio #282 - Hormones, PCOS & Weight Gain with Claire Goodwin

Bone health

- Physical Performance Podcast #82: Prof. Belinda Beck – Bone Health Expert <https://www.pogophysio.com.au/blog/prof-belinda-beck/>

Pelvic floor

- Fitn'Chips #24: Kim Vopni, The Vagina Coach
- Fitn'Chips #17: Jessie Mundell - Pelvic Floor strategie

Saddle fit, saddle sores

- <https://www.theguardian.com/sport/blog/2016/aug/15/team-gb-cycling-saddle-sore-medals>
- <https://www.philburtinnovation.co.uk/factors-affecting-saddle-sores/>
- <https://www.casquette.co.uk/know-how/2017/4/22/saddle-lore>

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Relative Energy Deficiency in Sport (RED-S)

- Physical Performance Podcast #198: Expert Edition: Dr Nicky Keay, 'RED-S, Hormones health & performance'
- Marathon Talk #501 – Renee McGregor