

Strength Training and Menstrual Cycle

Physiological Overview

- The menstrual cycle refers to the hormonal fluctuations that occur roughly every 21-35 days in women of reproductive age.
- Very simply, it can be split into two phases:
 - The follicular phase - from day 1 of the period to just before ovulation, roughly mid cycle
 - The luteal phase - from mid cycle to the next period.
- Several hormones are involved, but the main focus tends to be on oestrogen and progesterone.
- In the follicular phase, at the start of the period, both oestrogen and progesterone are low. Oestrogen then steadily increases to a peak just before ovulation and then drops over the next 2-3 days.
- In the luteal phase, oestrogen dips after ovulation over the next 2-3 days, with progesterone rising up to peak around day 21-23 and then lowers again to the end of the phase.
- Oestrogen is considered to be anabolic; it has positive effects on muscle-building, repair and regeneration. Progesterone tends to block the effects of oestrogen, so may inhibit its effects on skeletal muscle.
- Some studies have supported that increased training frequency during the follicular phase while oestrogen levels are rising can be beneficial in increasing strength and muscle development. The influence of oral contraceptives has not been fully understood or established.
- The evidence base for the implications for this is NOT robust. There is a lack of large, high quality, unbiased studies investigating strength training in women and menstrual cycles. In addition, the hormonal impact on training can be variable, and does not take into consideration other exogenous stressors that have an impact on training and progress in strength sports.
- The menstrual cycle is particularly sensitive to stress - significant stress can adversely affect the hormone cycle, including delaying or missed periods. This can be caused particularly by heavy or over-training and/or calorie depletion, and can be . Further medical advice should be considered if this is a concern.

Training Considerations

In theory, one could consider increasing the frequency of training during the follicular phase, e.g. 4 sessions during the first half of a cycle, reducing to 2-3 in the second half. However, the practicalities regarding recovery and fitting in training around work/study/family life may make this impractical and the effects on progress negligible. By far the most important factor to consider in this is the perceived effects of the hormonal cycle on the individual athlete.

Premenstrual symptoms can include and are not limited to:

- Low mood
- Anxiety
- Tiredness and fatigue
- Poor concentration
- Poor sleep
- Back pain
- Water retention causing weight gain
- Headache
- Reduced visuo-spatial and cognitive abilities
- Bloating and gastrointestinal disturbance

These symptoms, particularly those with a psychological impact, can have a significant effect on physical performance. It may be worth considering keeping a symptom diary for two to three cycles with respect to how the individual's own experiences affect training and recovery and consider after that how best to train. It may be as simple as continuing to train as normal but being aware the same weight might feel heavier one week compared to the last week and not panicking about losing progress or strength. (This happens with other stressors too, such as sleep, work stress, suboptimal nutrition, etc. and should be part of the conversation between the athlete and coach if reviewing training cycles.) Or, if needed, one could reduce the weight or a back off set for that particular week, or consider alternative exercises or switch to a lighter session, without affecting overall progress e.g. belt squat or leg press if bloating makes wearing a belt for squats is too uncomfortable. The athlete could also consider increasing calories by 5-10%, in addition to paying particular attention to sleep and recovery if needed.

Competition Day Considerations

The competition calendar does not always align with optimal menstrual cycling so it is important to bear in mind how the menstrual cycle might affect the day. If the athlete is close to their body weight category or are considering an acute weight cut, it is important to know how the menstrual cycle might contribute to this as some people can have increased water retention before a period, which can be up to several kilograms. Similar to training, it can be worth tracking bodyweight for 2-3 cycles to understand the impact of hormonal fluctuations across the cycle. Competing if the athlete suffers significant premenstrual symptoms can be challenging but overall focus on psychological wellbeing throughout the preparation (self motivation, objective markers of progress and strength or technique improvement) can be invaluable to push through on the day. Competing while menstruating is not always as bad as it might appear at face value - pain relief such as paracetamol or hot compresses, fluids and nutrition are all useful tools to help on the day. Fellow athletes often have experiential advice, which can be far more useful than any study or analysis.

References

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