

Women in sport

What is the brain to ovary link in relation to female athletes?

Emma Ross:

The hormones of the menstrual cycle, even though they are released by the ovary, are actually regulated by the brain. And it's this brain to ovary signal that can be interrupted when we have low energy availability in the body.

Now, what that means is that we're not getting the right amount of fuel to meet the demands of our training and our life, and that creates low energy availability. And what that means in a woman's body is the brain has to decide what do I not need to be working for life to still be able to go on? And the only system that a woman can lose without it risking her ability to sustain her life is her reproductive system.

So the brain switches off our reproductive system because we can't sustain a pregnancy when we don't have enough energy available to us. And what that does is not just limit our ability to become pregnant, but it also suppresses those really important hormones that are associated with the menstrual cycle.

When the menstrual cycle is suppressed, it means that periods will stop. And actually this is a real red flag for female athletes because when periods stop, it's probably a sign that they're not getting the balance of training, recovery, and fuelling right.

We know that the hormones of the menstrual cycle are absolutely vital, not just for reproduction, but for lots of other systems within our body, like our immune function, our cardiovascular function, our brain function. And so it's no surprise that when the menstrual cycle hormones are suppressed during periods of low energy availability, that interrupts the function of all of those systems.

One particularly important effect of suppression of the menstrual cycle is the lack of oestrogen and its impact on bone health. And so oestrogen plays a really important role in building bone density and bone strength. And so when we don't have oestrogen, we can't build bone strength.

And one of the telltale signs that an athlete is suffering from low energy availability is often bone fractures, because the bone strength has been lost because oestrogen hasn't been there to

help it develop. It's not just the short-term effects of low energy availability that are important. There are also really significant impacts on the long-term health of an athlete.

For example, when we think about bone health, a woman actually lays down all of her bone density and her bone strength before she's 30. And from that age onwards, we're either maintaining or declining in terms of bone strength.

And so we really need to make that peak bone strength as high as possible. And if we haven't got oestrogen helping us do that in our teens and 20s, that can have significant impact on bone health across our life.

The coach can play a really important role here. So ensuring that athletes arrive to training well fueled, ensuring that they are eating the right things after they've been training or performing, because those things are really important for maintaining good energy availability and avoiding the consequences of energy deficiency.