

## Transcript

### Recovery: the next frontier in sporting progress?

#### LANCE WALKER:

No matter how good your training is out here on the pitch, it's only as good as your ability to recover from it. And I've grabbed a hold of that, that recovery is no longer just this passive thing that you do in between training sessions. That there's actually recovery training.

[MUSIC PLAYING]

#### DR PHILLIP BELL, PHD:

As an athlete, you want to train as intensely and as you can to be able to get fitter, faster, stronger, and the idea of the recovery strategy is to allow you to do that. There is a range of recovery techniques that are used in sport currently. Some particularly popular modes, cold water immersions, compression garments, various nutritional antioxidant type strategies, neuromuscular electrical stimulations, there's lots of different things out there.

Essentially what they're all trying to do, is influence and modulate the stress response to exercise. So things like inflammation, oxidative stress and muscle damage, by trying to influence these stress responses to exercise we're trying to either reduce the damage response through exercise so we can come back and recover faster, or we're trying to accelerate the recovery of these damage responses.

[MUSIC PLAYING]

#### LANCE WALKER:

What's normal? Well, the normal line of return back to normal is this. Can we steepen that? Are there modalities that we can use to tip that line up like this, and that squeezes down the timeline? So now instead of 72 hours to recover from a really heavy strength training session, which we've seen historically, wow, are there some things we can do with kinotherapy? Is there some things we can do with some of the old school, dry needling?

Is there some things we can do or not do with stretching? Is there some things we can do with compression therapy or cryogenics? Is there some things we can do with the central nervous system in terms of mood and changes? I mean, think of all the crazy things that, can we potentially steepen that return angle? Now what does that allow me to do? Train more intense, and be able to train in more density.

[MUSIC PLAYING]

#### LINDSEY ANDERSON:

So they had a hard training day today, but we still have another training day tomorrow. So we need them to start their recovery immediately, so by the time they come tomorrow within 24 hours, 12 to 24 hours, they're ready to training again.

[YELLING]

So the contrast baths, we're going between 56 degrees and 104 degrees. They're going to spend a little bit more time in the cold tub. They're only going to spend a minute in the hot tub. And they're going to alternate going back and forth. And what that does, is it creates this natural pump. So you've got this constriction of the muscles when you're in the cold tub. And then they relax when you're in the hot tub. And then they constrict again when you're in the cold tub. You create this natural pump. But it's also helping to regenerate the nervous system.

Then we're also going to use the NormaTec boots and get that even more compression. So we're working out all those byproducts that have now built up into their muscle in reaction to their training, or as a product of their training. And so by actively recovering both in a passive way, we're just getting the body revved up to start its recovery.

[MUSIC PLAYING]

**TYLER JEWELL:**

I think the recovery techniques are constantly improving and changing. I mean, as well as the training techniques and the nutrition. And we go down to what's happening in the blood levels of the athlete. And of course, we look at CK, which is a precursor for muscle breakdown. And if an athlete has high levels, then we know OK, maybe today's not a good day to push the training session.

[MUSIC PLAYING]

A lot of the things here, we're really pushing the limit with, and we definitely leave a lot up to the athletes. We like to set the buffet, and they either like it and they take what they like and they go from there. And if we wait for a lot of things to be proven, then we're a little bit behind the curve. So in some cases, we do take a little bit of a risk maybe where it hasn't been totally proven through research. But at the end of the day, if an athlete believes something is working, it's working.

It's very interesting to think about recovery. In some respects, it could be very important if an athlete were going into a competition. We want to make sure that they're recovered. But in the off-season when they're training, that recovery modality could possibly spoil the adaptation for the athlete. So we are also, sometimes it's good to not go in the cryosauna or not ice or not use the compression pants, and allow that athlete's muscles to get sore. So then they have a better adaptation to the training.

**DR PHILLIP BELL, PHD:**

There's a big head to head on the recovery versus adaptation story at the moment. When we do do exercise, we get these stress responses, and it's these inflammatory and oxidative stress responses that signal to our genes to produce more proteins and adapt it in response to these proteins. Now if we start to try and dampen down these inflammatory responses and oxidative stress responses, are we dampening down the signals to the genes that then express the proteins that then help us adapt?

[MUSIC PLAYING]

What we're trying to do, is take this a level deeper, by looking at what we call the methylation of genes within the DNA. There is a theory that if something like cold water immersion is to be having a negative effect on adaptation, it may be because we are switching off some of these genes that are associated with muscle hypertrophy.

**LANCE WALKER:**

We're close, but we haven't figured it out yet. And wow, what if we could rewrite some of those curves? What if we could rewrite the steepness of return and recovery for different athletes depending on the stimulus? Wow! What if we could do that? What if? And it's exciting, because I think that is, that could potentially be the new frontier, is this recovery regeneration space. Because it could be the limiting factor to how much training and how steep a training we can take on these athletes. Pretty exciting.

[MUSIC PLAYING]