

Sports psychologist and dean of kinesiology helps turn mind into matter – and medals

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Références directes au biofeedback et au neurofeedback en surbrillance jaune.

Penny Werthner teaches athletes to balance anxiety and avoid mental exhaustion

By Don McSwiney
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Dean of Kinesiology Penny Werthner couldn't compete in the 1980 Moscow Olympic Games due to the Canadian boycott, but has been working as a sports psychologist with Canadian athletes in Sochi, helping them find the focus they need to perform under pressure.

Most people think about their thoughts as intangible, elusive and difficult to control or corral. Penny Werthner, dean of kinesiology and one of the nation's top sports psychology consultants, begs to differ. "Basically I teach athletes how to self-regulate themselves physiologically and neurologically," says Werthner. "The way I explain it is like training the brain the way you train the muscles in the body."

Werthner was an Olympian herself, representing Canada in the 1976 Summer Olympics and winning bronze medals in the women's 800m event at the 1971 and 1979 Pan American Games. Ironically, she was prevented from competing in the 1980 Moscow Olympic Games due to the Canadian boycott, but 34 years later, Werthner was part of the Sochi Games, helping downhill skiers Manny Osborne-Paradis and Erik Guay to balance their anxiety – or arousal in psychological terms – to avoid mental exhaustion before their events even started

"Physiologically," explains Werthner, "what we're teaching them is how to activate and deactivate. How to manage their arousal levels and be calmer. Slow things down and go into recovery state."

Using biofeedback to control the body and calm the mind

Werthner achieves this by using bio-feedback loops that help athletes to visualize and control their mental state and thought patterns using indicators such as breathing, heart rate, peripheral body temperature, electro dermal response (which measures skin conductance) and muscle tension, measured by electromyography. Even though athletes often talk a good game about controlling their mental state before a competition, Werthner says most of the time they really need help. "They're not as effective as one would think in most cases," says Werthner. "I was surprised at how poor nearly all the athletes I've worked with since Torino were at managing themselves, with a couple of exceptions."

Using neurofeedback to record brain frequencies

Werthner also employs neurofeedback sessions using electroencephalography to record the athlete's brain frequencies. Essentially when athletes are more stressed, they record higher beta frequencies. The trick, as Werthner explains, it is to use the biofeedback loop training to control the

physiological response and then to control thinking. “When you get nervous and anxious and you worry about things, that's higher beta. That is going to happen. We can't eliminate that. What we want is to teach them to be able to manage it and recognize when they're there.”

Werthner's method of teaching athletes these tricks involves hooking them up to a series of electrodes, which provide a visual representation of their thoughts on a computer screen. A yellow sailboat moves along when an athlete is focused and concentrating. When they lose focus and other thoughts intervene a competing purple boat takes the lead. The ability to capture focus at the right time and to ignore background chatter when it counts is the essence of performance on demand, and could be the difference between a podium finish and an also ran.

Knowing not just how but when to focus is key

The skill of shifting mental states between being focused and letting go of focus is the skill that Werthner tries to teach athletes. “If alpine skiers are on top of the hill and they're 15 or 20 minutes out, or an hour out of competition, they don't want to be in that focused state. So many athletes think that's where they need to be. If they do that, by the time the gates go down they've got nothing left for the competition, because it takes so much energy to be in that state.”

Werthner says that all the gadgets and sophisticated feedback games are simply a continuation of the work she has done her entire career. The ability to visualize brain waves and to receive concrete measurements of an athlete's physiological state, have simply helped to speed up the learning curve.

Level of stress hard to fathom

For her part Werthner says that people need to have a lot of sympathy for athletes who sometimes fail on the world's biggest stage. “Unless you've actually stood up there, at the world level, you don't appreciate how big that pressure is,” says Werthner. “Now everybody talks about it, but years ago, when I first started doing things with the Canadian Olympic Committee, I said, ‘The Olympics are *really* stressful.’ That was back in the day when you were trying to pretend they weren't stressful. I said, ‘They are. They're hugely stressful, and we need to say that, and then we need to help athletes develop the mechanism to manage that stress.’”