Training with the Video iPod

BY **KAREN CLARK LE POOLE**

Olympic athletes constantly seek excellence, and new research shows that combining hard science and a fun toy can get them one step closer to that ultimate performance.

A recent sport psychology study by Dr. Hap Davis, Swimming/Natation Canada, and the Canadian Sport Centre Calgary concluded that using a video iPod as an enhanced form of visual imagery can improve performance.

"We looked at functional brain scans or fMRIs (functional magnetic resonance images) of elite athletes while they viewed a video of a recent, personal competitive failure," says sport psychologist Dr. Davis. "We found these athletes became upset—so upset that within only eight minutes their brain blood flow patterns looked no different than what you find in a depressed person."

Tests conducted with the fMRI reveal that athletes can switch parts of the brain on and off.

Davis says two parts of the brain are critical to an athlete's performance: the motor cortex and the prefrontal cortex. Each helps an athlete go fast or execute skills. Each was essentially shut down.

The athletes then spoke fifteen minutes with a sport psychologist watching the video of the failure and planning how to improve the performance before going back into the fMRI machine to watch the video again.

The results were groundbreaking and have received international attention in sport, cognitive neuroscience, academic journals, and the popular media such as *The New York Times, Science* magazine, CBC National Television, and National Public Radio.

"An athlete can essentially learn to switch the motor cortex and prefrontal cortex back on—it's not enough to say, 'I can do better,'" says Davis, who has worked with athletes such as Olympic gold medallist Kyle Shewfelt, the Calgary Flames, and Swimming/Natation Canada. "We now have evidence that deliberately reviewing a video with the intention of improving a poor performance, or repeating a good one, is a powerful way to warm up the brain and get the body ready to compete."

The fMRI research is the first-ever of its kind and drew on the world's top neuroscientists from Simon Fraser University, Emory University, the University British Columbia, and the Mayo Clinic. The study also received $110,000 in private donations from Calgary businessmen Brett Wilson, Chairman, FirstEnergy Capital Corp.; Scott Haggins, CEO, Cedarglen Homes; Dave Munro, CEO, Gienow Windows and Doors; and Ian DeBie, CEO, Endaleo Energy Corporation.

The research could potentially have a significant impact on Canada's athletes and the medal count at future Olympic Games.

"Too many athletes get upset with a setback and then quit," says Davis. "Canada cannot afford this unnecessary drain of its talent pool. These are concrete suggestions for reversing this trend, applicable to athletes at all ages and levels of performance."

Members of Canada's National Swimming team are currently using this enhanced form of visual imagery with

positive results. Two-time Olympian and five-time World Championship medallist in swimming Rick Say uses his video iPod as a training tool every day: "In Canada we've been stuck doing the same old things and trying to catch up with the rest of the world. The (video) iPod is a leading-edge technology, and we're looking at how it applies to sport and to swimming, and the power of a visual mental picture to stimulate your mind in a positive way."

According to Say, visual learning is one of the best training techniques: "You can really fine-tune the details of building a race and become a better athlete."

The video iPod is also an affordable technology to own and operate, making it financially accessible to athletes and teams. And Davis says an athlete can do this enhanced visual imagery independently, just about anywhere: "The portability of the video iPod means athletes can do this mental training on the bus after practice, on a trans-Atlantic flight, or in a ready-room right before they compete. It is strong visual stimulation that can keep athletes thoughtful and settled and help block out distraction."

The study is now undergoing peer reviews for publication, and more exciting research on the firing of the motor cortex and pre-frontal cortex is in progress.

"What we'll do is get athletes to throw medicine balls, to jump, and to sit on exercise balls to see how this helps them manage their brains when they feel overloaded," says Davis.

For now, this landmark study is a reminder that simple technologies can improve an athlete's mood, stimulate their mind, and get them motivated and primed to compete.

"Potentially, we imagine that by Beijing many Canadian athletes will use this enhanced form of visually imagery," says Davis. "It can help them get the performance they want at the 2008 Olympics."

Karen Clark Le Poole, 1996 Olympic silver medallist in synchronized swimming, is now a freelance journalist who has worked for CBC TV Network Sports, the Calgary Sun*, and the* Calgary Herald.