

# HI-TECH TRAINING

When Canadian athletes line up against the world at the 2010 Olympic Games, they'll have a team of sport scientists and some solid research on their side. After all, if physical conditioning is like one of many legs on a road trip, physiological testing is like the compass that guides training success.

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**S**PORT SCIENTISTS WITH the Canadian Sport Centre Calgary (CSCC) work closely with coaches to help monitor and adjust athlete-training programs. Working out of the University of Calgary-based Human Performance Lab, these individuals provide invaluable information that can increase athletic performance in events where fractions of seconds are critical.

Recently the CSCC received a big boost when Sport Canada made a significant one-time contribution to its training facility. This will enable the centre to replace aging equipment with new state-of-the-art sport science equipment, strengthening Calgary's position as a hub for Winter Olympic preparation for Canadian teams.

"We're always trying to think about new processes and approaches to make Canadian athletes more competitive," says Dale Henwood, CSCC president. "The new equipment will give us better information and detail to make more informed decisions. We made a commitment to the whole area of exercise physiology and individual performance monitoring 10 years ago, so it's great to see Sport Canada support this area of athlete development."

Although the new funding will allow the centre to build on past success, Henwood cautions that it's a long-term process and results don't happen overnight. He sees professional collaboration as key to ongoing athlete success. "Part of the allotment allowed us to bring together applied professionals from across Canada for the first time in 15 years. Seldom do they get a chance to talk with peers from other parts of the country," notes Henwood.

Sport scientists are meeting in March to discuss new ways to share ideas, standardize methodology, and develop a plan of attack for the 2010 Olympic Games. With regional separation being a problem in the past for this group, the future will now see them working for the benefit of Canada and its athletes.

In Calgary, sport scientists will focus their efforts on altitude training research. Altitude training paid off with swimmer Mark Tewksbury's gold-medal win in 1992, and since then has continued to be an important aspect to many training programs, helping the women's hockey team, for example, to prepare for the Salt Lake City Games.

Funding will enable the Sport Centre to purchase the Bayer Advia 120, an innovative machine that measures hemoglobin concentrations in blood. This gets physiologists like Dr. Stephen Norris, CSCC director of sport physiology and planning, excited. "In the past we have been looking at athletes' blood content through a dirty window; this equipment now allows us to wipe that window



Funding from Sport Canada will enable the CSCC to buy new training equipment

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clean," he says. "The Advia 120 measures a comprehensive range of components in blood that allows for a thorough assessment of the health, current trained state, and potential for future improvement in a high-performance athlete."

This same machine has also been put to good use by the International Olympic Committee and World Anti-Doping Agency to detect unnaturally high red blood cell counts in athletes using synthetic versions of EPO. Athletes with more red blood cells can deliver more oxygen to the muscles, resulting in improved performance. What Norris and his colleagues are most interested in is how the hormone can occur naturally through high-altitude training. The machine will help them evaluate training techniques with altitude and monitor Calgary-based athletes to ensure that they are safe to compete.

"Our lack of equipment in the past was a big barrier to keeping up with our international competitors," he notes. "The Bayer machine will keep Canada on pace with other countries and help the centre continue to provide expertise in the area of altitude-training research."

Funding will also be used to purchase one

treadmill and three stationary bikes. A new spectrophotometer machine will help Norris and other physiologists analyze athletes' blood composition while a Cybex machine will enable them to measure force exertion.

Dr. Dave Smith, one of the most respected exercise physiologists within Canada's high-performance sport system, believes that Calgary will play an even more important role in preparing Canada's athletes for the upcoming Olympics. As one of the only centres in Canada to invest in physical testing over the years, Calgary is well positioned to continue as a leader.

During his 20 years in Calgary, Smith has been instrumental in the athletic careers of outstanding Canadians such as Gaetan Boucher, Mark Tewksbury, Curtis Myden, and Catriona Le May Doan. As the director of sport science at the CSCC and professor at the University of Calgary, he helps Canada's elite athletes find out how far they can push themselves. Smith knows that all athletes react differently to training. The secret lies in regular physical testing and monitoring to help coaches plan training programs specific to each athlete's unique needs.

"Simply measuring time and distance doesn't give you insight into how an athlete has achieved performance—we're in the business of understanding how. Our job is to understand each individual athlete and to maximize their potential in Olympic competition," says Smith.

Although sport scientists like Smith and Norris are encouraged by the funding for equipment, they know that it is the people like the coaches, trainers, and sport scientists who will make the biggest difference on Canada's athletes preparing for the 2010 Olympics. **i**