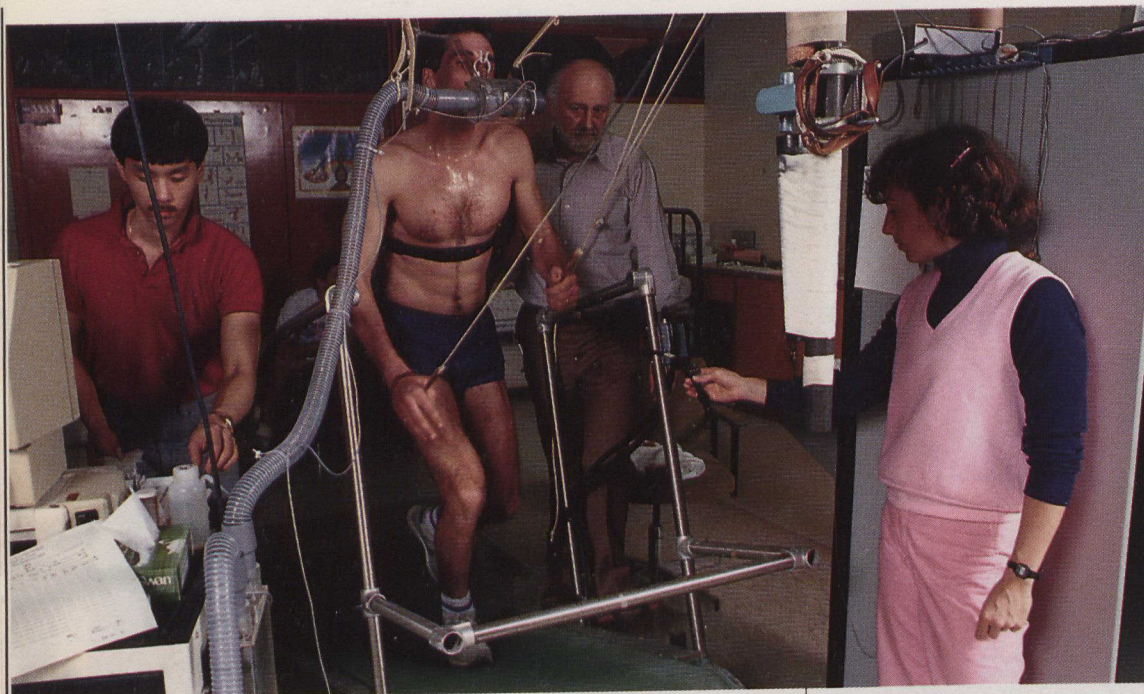


Fine Tuning Athletes: The Science of Sport



Physical tests such as this one conducted by Dr. James Thoden on Pierre Harvey help coaches and athletes develop better training programs.

one part of a wider testing program. Marty Hall, chief coach of the national cross-country ski team, attributes a share of his team's improvement over the past three years to a complete sport science program, which includes testing, physiology, psychology, medicine, and biomechanics. "It's a big puzzle," he says, "but testing is one of the major pieces."

"This is just the beginning of a wave across Canada," says Dr. Thoden. "We're right at the birth of a real boom in the research of amateur sport."

Twenty years ago, science and sport shared a relationship somewhat like awkward distant relatives — each knowing the other existed, yet both preferring to keep a safe distance apart. But in today's high-tech world, it is obvious that science and sport are moving closer and closer together.

One place in particular where sport and science can be seen working in concert is in the laboratory, where the physiological testing of high-performance athletes is an everyday activity.

Physiological testing of Canada's national athletes has been going on sporadically for close to two decades. But in recent years, an effort to standardize procedures and accreditation of 25 research laboratories across the country have helped establish Canada as a world leader in sport science.

The move to a more systematic testing dates back to 1983, when the Canadian government's Sport Canada funded the Canadian Association of Sport Sciences (CASS) to develop an appropriate accreditation process for test facilities. Eighteen months later, CASS had produced a written guide to the physiological testing of elite athletes, and had accredited 25 centres.

Since then, athletes from about 45 sports have undergone a range of standardized physical tests, covering everything from height, weight and fat, to aerobic power and flexibility. In each case, the tests are designed to reflect the physical demands of the particular sport, with scientists working alongside coaches and athletes to develop appropriate procedures. The Ottawa laboratory has developed specific tests for water polo,

speed skating, downhill skiing, fencing, hockey and volleyball, and recently conducted measurements with Canadian canoeists, cyclists, cross-country skiers, and figure skaters.

According to Sport Canada's Director General, Abby Hoffman, the demand for physiological testing is at an all-time high. "Coaches are getting better at using sport science information," she says, "and sport scientists are getting better at deciding what will be useful for coaches and their athletes." Dr. James Thoden, director of the athlete test centre at the University of Ottawa agrees, noting that, "We're using modern technology to get at types of measurements of athletes that were never done before."

While physiological monitoring is expensive for many sports, some national teams include it as just

Canadian Dolphin Swim Club Head Coach, Tom Johnson, who tests his athletes at the University of British Columbia with Dr. Ted Rhodes, recommends at least some form of testing to all his athletes, even to those who are not eligible for funding and must cover the costs themselves.

Considering today's interaction between the centres and the national sport organizations, the amount of progress made over the past few years is clearly impressive. "This is just the beginning of a wave across Canada," says Dr. Thoden. "We're right at the birth of a real boom in the research of amateur sport."