

Enabling World-Class Athletes With Disabilities to Go for the Gold

by Mark Willis

When millions of spectators watched the Olympic Games this summer, did it make them think about their own health and fitness? Inspired by the world's finest athletes, some may have decided that it was time to get in shape. Others probably concluded that such physical feats were hopelessly beyond their reach, so why even try?

The inspiration and hard work didn't end with the Olympics closing ceremonies in Atlanta. In August the same Olympic venues hosted the Xth Paralympic Games, the ultimate competition for world-class athletes with physical disabilities. Although the Paralympics didn't receive Olympic-sized media attention, Roger Glaser, Ph.D., director of Wright State's Institute for Rehabilitation Research and Medicine (IRRM), hopes the example of the Paralympics sends a message to disabled people around the world: "Whether you are an athlete or not, exercise can improve your overall health and quality of life."

The Paralympic Games in Atlanta attracted an estimated 1.5 million fans to watch 3,500 world-class athletes from 127 nations. They competed for medals in 17 sports (14 were Olympic sports) such as archery, cycling, swimming, judo, and wheelchair basketball. To compete in the Paralympics, each athlete met strict qualifying standards to be selected for his or her national team. Minor modifications were made to the rules of some sports to accommodate the athletes' disabilities. Athletes were classified according to functional level and competed against others with similar disabilities.

The Paralympic Games were the vision of Sir Ludwig Guttman, an English neurosurgeon who organized the International Wheelchair Games in conjunction with the 1948 Olympics in London. The Paralympic Games were held first in Rome in 1960 and have been held every Olympic year since, usually in the city or country hosting the Olympics. In the beginning, only wheelchair athletes competed, but the Paralympics have expanded to include people who are blind or have cerebral palsy or amputated limbs.

The Paralympic movement is guided by the philosophy that disabled athletes should have equal opportunities to compete in sports. Equal opportunity, however, does not mean following the same exercise and training programs used by non-disabled athletes. Dr. Glaser's pioneering research on the exercise physiology of people with spinal cord injuries (SCI) has demonstrated that muscular, metabolic, and cardiopulmonary responses to exercise can differ greatly between disabled and non-disabled people. "Exercise activities for people with SCI need to be designed to reflect these differences," he says.

The research has had continuous support from the Department of Veterans Affairs for more than two decades. It is conducted at the IRRM as well as the Dayton VA Medical Center and Miami Valley Hospital. "Our research is aimed at improving the physical capability and physiologic responses to exercise of wheelchair users with SCI," Dr. Glaser explains. "We're studying the use of arm exercise techniques for physical fitness testing and training. We're also exploring the use of training techniques that incorporate functional electrical stimulation (FES)-induced exercise of paralyzed leg muscles."

Dr. Glaser served on the Paralympics Research Committee, which oversaw all research proposals involving the athletes. He also presented his research at the Third Paralympic Congress in Atlanta, a global forum on the latest developments in sports medicine, adaptive technology and healthy lifestyles for people with disabilities. Furthermore, Dr. Glaser and a team of Wright State faculty wrote the lead chapter in Physical Fitness: A Guide for People with Spinal Cord Injury, a sports medicine handbook published in conjunction with the Paralympics. Co-authors were Thomas W.J. Janssen, Ph.D.; Agaram G. Suryaprasad, M.D.; Satyendra C. Gupta, M.D.; and Thomas Mathews, M.D.

Dr. Glaser believes the sports medicine developments showcased at the Paralympics can have an impact on the health and fitness of many people with neuromuscular disabilities. "Muscular weakness and the early onset of fatigue can discourage people with SCI from pursuing an active lifestyle," he says. "Their activities of daily living become relatively more stressful to perform and limit the development of aerobic fitness. A sedentary lifestyle aggravates this situation, since muscle strength and cardiopulmonary fitness decrease progressively.

“Our studies on wheelchair users with SCI indicate that those who maintain a more active lifestyle by regularly participating in exercise and sports programs can increase their muscle strength, cardiopulmonary fitness, and physical performance to levels well above those of their inactive peers. In addition to fitness gains, habitual physical activity may also improve an individual’s overall health, psychosocial status, rehabilitation potential, functional independence, and quality of life.” (More information: Dr. Roger Glaser, 513/259-1326)