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AS OLYMPICS TAKE CENTER STAGE, LEADING RESEARCHERS IN THE FIELD OF PHYSIOLOGY AND EXERCISE RELEASE THEIR FINDINGS

The US Open, World Cup and 2000 Olympics are proof positive that exercise, physical precision and the internal mechanisms of the human body are inextricably linked. This month -- the most intensive month of sports activities this year -- a timely fall conference brings researchers and scientists from around the globe to examine the relationship between exercise and the building blocks of the human machine.

Bethesda, MD—With the Summer Olympics set to begin in Sydney, Australia, the world's elite athletes, both amateur and professional, will take the world stage. Running faster, jumping higher, hitting harder, today's athletes are the beneficiaries of advances in modern-day science, not only from the standpoint of improved athletic equipment and performance-enhancing supplements, but also from increased scientific knowledge of the effects of exercise on the human body.

Experts in the area of physical activity and the body's response to exercise will meet September 20-23 in Portland, ME for the 2000 American Physiological Society (APS) Intersociety Meeting, "The Integrative Biology of Exercise." The conference will feature research presentations and discussions on the latest interdisciplinary findings on physiology and exercise. The American Physiological Society is devoted to fostering scientific research, education, and the dissemination of scientific information. This intersociety meeting is a forum where leading researchers in the fields of biology and exercise can present their findings.

Scientific and medical research being offered at this year's meeting includes:

- **Genetics and Blood Pressure Response to Exercise and Interactions with Body Fat.** It is well documented that some people show more pronounced blood pressure responses to endurance training than others, despite identical training programs and similar initial blood pressure levels. Tuomo Rankinen, Ph.D., of the Human Genomics Laboratory at the Pennington Biomedical Research Center, in Baton Rouge, LA, will discuss current knowledge regarding the role of genetic factors—including DNA sequence variation in the hypertension candidate's genes—in the modification of blood pressure responses to endurance training.

- Short-Term Effects of Growth Hormone on Exercise Capacity and Oxygen Uptake.** As the world watches super athletes take part in the Summer Olympics, attention will also be focused on the potential use of growth hormones, a doping agent in sports. To date, little is known about the short-term effects of growth hormone, but a research study on the effects of growth hormone on exercise capacity with 30 young volunteers in a double-blind randomized placebo-controlled study has been conducted. Lead researcher Kenneth Caidahl, MD, Ph.D., will present findings that indicate that excessive growth hormone intake for four weeks does not improve exercise capacity or oxygen uptake.
- Exercise and Gender.** Gender differences and their effect on exercise are becoming more fully understood. Women, for example, have smaller lung volumes than men, even when corrected for smaller body size and lower hemoglobin levels. Progesterone, a ventilatory stimulant, and resting and exercise ventilation, can vary with the menstrual phase. Pulmonary diffusing capacity has been shown to be lower during menses and the mid-follicular phase of the menstrual cycle than the rest of the menstrual cycle. Anne B. Loucks, Ph.D., of Ohio University will discuss dietary energy requirements in active men and women. M. Harold Laughlin, Ph.D., of the University of Missouri, will present information on the gender-dependent effects of exercise training on certain muscles. Sandra K. Hunter, Ph.D., from the University of Colorado presents her findings on the difference in endurance rates between women and men for certain types of training.
- Exercise and Women Across the Lifespan:** Southern Illinois University's Kay Covington, Ph.D., will reveal the results of a cross-sectional study investigating the relationship between female lifestyle behaviors, health indicators, physical activities and demographics based on data collected from multiple healthcare sites in a Midwest metropolitan area.
- Exercise and Vitamin E.** Bruce W. Craig, Ph.D., from Ball State University, will discuss research findings which indicate that three weeks of vitamin E supplementation can significantly reduce both the oxidative and mechanical damage induced by resistance training.
- Exercise and the Elderly.** Recent data suggests that physical activity is associated with maintaining the basic components of physical and goal-oriented functions in healthy older people. Loretta DiPietro, Ph.D., of the John B. Pierce Laboratory and Yale University, will discuss physical activity and physical function in the elderly.
- Exercise and Patients with Heart Failure.** In spite of having a poor cardiac reserve, patients with heart failure respond favorably to exercise training. Timothy R. McConnell, Ph.D., of the Geisinger Health System in Danville, PA, will explain how respiratory muscle training, combined with exercise training, may further improve exercise tolerance in patients with heart failure.

- **Exercise in Microgravity.** Most of us exercise here on Earth; astronauts exercise in space for the same reasons: to help maintain their cardiopulmonary capacity, neuromotor function, and musculoskeletal mass. During short-duration space flights, moderate levels of in-flight exercise reduce the post-flight changes in the cardiovascular responses to standing and cycle exercise. Suzanne M. Schneider, Ph.D., of the NASA Johnson Space Center in Houston, TX, will discuss the aerobic and resistive exercise program designed for crew members on the International Space Station. She will be joined by James A. Pawelczyk, Ph.D., an astronaut and faculty member at Pennsylvania State University.
- **Exercise-Induced Asthma in Children.** Exercise-induced asthma (EIA) is characterized by a narrowing of the airway which occurs typically after exercise. Recent reports have noted high levels of exhaled carbon dioxide (CO₂) at the end of exhalation (“PETCO₂”) in children with EIA. Dr. Richard G.D. Roberts, of the Department of Respiratory Medicine at the Royal Children's Hospital in Australia, will present findings from a research study that show that PETCO₂ is not a reliable indicator of the severity of EIA in children.
- **Exercise and Cancer.** Carolyn Ann Dennehy, Ph.D., of the Rocky Mountain Cancer Rehabilitation Institute in Greeley, CO, will discuss the physiological manifestations of prescriptive exercise on cancer treatment-related fatigue. Her research strongly suggests that prescriptive exercise intervention reduces fatigue in cancer patients and improves energy and flexibility while reducing the perception of fatigue. In another presentation, James Barnard, Ph.D., of UCLA, will present study findings that indicate that men undergoing a very low-fat, high-fiber diet and exercise regimen have serum changes that reduce androgen-dependent prostate cancer cell growth.
- **Where Do We Go From Here?** Kenneth M. Baldwin, Ph.D., of the Department of Physiology and Biophysics at the University of California, Irvine, will offer a general overview of future research trends and challenges.

The American Physiological Society is the world's most distinguished organization for scientists who specialize in researching and understanding the functions of all species from the molecular level to the most complex. Founded in 1887, most members hold doctoral degrees in physiology, medicine or related professions, and include Nobel Laureates and members of the National Academy of Sciences.

Members of the media are invited to attend the APS meeting in Portland, ME. Authors of the scientific papers as well as other researchers are available to speak to the press. For further information contact Donna Krupa at 703.527.7357; cell: 703.967.2751; or at DJKrupa1@aol.com. Or log on to the APS website at www.faseb.org/aps today.