

**MEMORIAL RESOLUTION OF THE FACULTY
OF THE UNIVERSITY OF WISCONSIN-MADISON**

ON THE DEATH OF PROFESSOR EMERITA FRANCES A. HELLEBRANDT, M.D.

Dr. Frances Anna Hellebrandt was a woman pioneer in exercise physiology, physical medicine and rehabilitation. Her love of scientific inquiry led to national acclaim for her many contributions to the study of the physiological mechanisms that control and regulate movement. Much of her research was focused on the use of "muscle overload theory," a principle currently applied in physical medicine to elicit normal movement patterns in patients with neurological disorders. She died on February 2, 1992 in Columbus, Ohio.

Dr. Hellebrandt was born on August 26, 1901 in Chicago, IL where she attended Farragut School and Harrison Technical High School. Her father was an emigrant from Czechoslovakia, a physician "who learned his English from *Gray's Anatomy*." As an undergraduate at UW-Madison, she was enrolled in physical education, a program that sparked her interest in the study of movement. Facing deficiencies in the liberal arts, balanced by A's in biology, she was determined to take all the science courses she could. Later she wrote about this and said, "something in the intellectually invigorating atmosphere of Wisconsin in the early twenties had rekindled my spirit and given birth to a habit of mind that kept asking: Why? So What? How come?" She was an undergraduate assistant in the anatomy department from 1925 to 1928. Her written challenge to her basketball teacher about the "Training Rules" then in vogue, led to a diet and exercise research program in the first laboratory in Lathrop Hall. She completed the bachelor's degree in physical education in 1928, became an instructor in physiology the following year, and because she had excelled in all the sciences, she completed the Medical Degree in 1929. Post-graduate and specialty training were received at the University of Minnesota (polio), Northwestern University and Mayo Clinic (P.M. & R.), and at Children's Rehabilitation Center in Baltimore (Cerebral Palsy). Additional study and research in exercise physiology was with the Clinic for Sportsmen, Department of Internal Medicine, Charles University, Prague, Czechoslovakia.

After serving a general internship at the State of Wisconsin General Hospital, she joined the faculty of the Medical School and assumed responsibility for the exercise physiology laboratory. She was an inspirational teacher for students in both physical education and physical therapy as she opened their minds to the function of the human body, which, in her words, "was so beautifully and wonderfully made!" Her work ethic, attention to detail, and enthusiasm for her subject was a model for many students. She was an assistant professor of physiology from 1930 to 1936 when she was promoted to associate professor. From 1942 to 1944 she held the titles of associate professor of physical medicine and research associate in physiology.

In 1944, she left UW-Madison to become professor of physical medicine and director of the Baruch Center of Physical Medicine and Rehabilitation at the Medical College of Virginia. In 1951, at the University of Illinois, she was professor and head of the Department of Physical Medicine, and chief, physical medicine and rehabilitation, Research and Educational Hospitals until 1955 when she retired.

In 1957, Dr. Hellebrandt was invited to return to UW-Madison as a visiting lecturer in the area of motor development. The following year, she was a WARF research professor, and subsequently, professor of medicine and education as an Easter Seals research professor. As the recipient of grant funds from the Easter Seals Research Foundation, she chose Wisconsin as the location for her research in exercise physiology and physiology of motor learning. It was at this time that she established the Motor Learning Research Laboratory, designing the space to be reclaimed from a balcony, which overlooked the gymnasium in Lathrop Hall. She again built ties with the Anatomy Department and the Medical School, and directed this lab until 1964 when she again retired. Her work here employed the ergographs, which

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she had carefully developed earlier in her career. They were used in conjunction with photographic and electromyographic techniques for disability evaluation and muscle training. Her studies of the overload principle, using measured stress to evoke graded neuromuscular responses, resulted in the description of the expanding patterns of muscle participation and compensatory mechanisms when stresses were sufficiently severe to induce breakdown in performance. The ties to the Medical School were lost when she retired, but the attitude of scientific inquiry and academic discipline persisted in the lab for the years to come.

Dr. Hellebrandt's scientific contributions can be noted in over 150 papers published in at least 35 professional journals. Most of these papers dealt with fundamental problems in exercise physiology, motor learning, and human posture. About 20% of her papers were in physical medicine and rehabilitation, and others were in physical education and physical therapy education/administration. Described in the literature are a number of instruments which she researched and developed including an electrodynamic brake bicycle ergometer, devices for the graphic registration of shifts in the center of gravity during standing, devices for determining the height of the center of gravity, and various ergographs for the wrist, finger, thumb, elbow and shoulder joints.

Her professional service included the range of her interests. She made many contributions to community health and welfare, and served as a resource person to educational conferences of the American Physical Therapy Association. Of note was her service as consultant to the Committee on Exercise and Fitness of the American Medical Association and the American Association for Health, Physical Education, and Recreation. She served on the Editorial Boards of the Journal of Applied Physiology and the American Journal of Physical Medicine. A special appointment was to serve as Trustee of the Easter Seals Research Foundation of the National Society for Crippled Children and Adults, Inc. Recognized for her outstanding contributions, she received the Anderson Award in 1960 from the American Association of Health, Physical Education, and Recreation.

Dr. Hellebrandt never really retired from her profession. While living in First Community Village in Columbus, Ohio, she remained active in study and in publishing professional papers. She served on a committee for Ohio State University to prepare curriculum materials for their Office of Geriatrics. At the age of 84, she exercised daily by walking for thirty minutes, riding her stationary bike to add a few miles to the 16,000 she had logged over the previous five years, and engaging in a 30-minute period of total relaxation. In a notebook, she recorded her diet being careful not to exceed 1,000 calories daily, and she methodically kept a chart of her weight. Still asking questions and seeking answers, she called for more federal funding to research the physical problems of the aging population. She died at the age of 90.

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