

Intrinsic Mastery: Women Scientists In Physical Education

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Although women are no longer formally barred from participating in science, prevailing social attitudes change much more slowly. Women have been conducting research in the field of exercise science since the early twentieth century and yet the impact of that research, and their role as researchers, has yet to be investigated. This paper looks at the scientific research programs several women established in exercise science and the milieu within which they conducted their programs.

The role of women in science has recently been the subject of a number of insightful studies. Margaret Rossiter in *Women Scientists in America, Struggles and Strategies to 1940* (1982) found that women's "historically subordinate role" in science could be illustrated by the strong resistance which women encountered in the late nineteenth and early twentieth centuries, a reaction in part to the expansion of women's role outside the home. Women sought to gain entrance to the same graduate schools as men for training. When they were unable to find career positions in academia following the completion of their degrees, they developed other "niches" to continue their research. G. Kass-Simon and Patricia Fames state in the "Introduction" to their volume of essays *Women of Science: Righting the Record* (1990), that for women in science to be remembered their work must be believed to have had such an impact on scientific thought that exclusion was not possible. Additionally, women's research on issues that fell within women's traditional, socially defined roles, was found to be considered less important than the basic and applied research of male scientists.

Recent histories which investigate the development of scientific research programs devoted to studying the effects of exercise on the human body have had as their central focus the male scientists and physicians who established and defined the scientific agenda of the field of physical education. Jack Berryman's insightful history of the American College of Sports Medicine, *Out of Many, One* (1995), gives one of the most complete pictures to date of women exercise scientists including Josephine Rathbone, one of the founding members of the ACSM. Other women were involved in exercise science research prior to the founding of ACSM in 1954. The research of these women was published in journals such as the *American Journal of Physiology*, *the Journal of the American Medical Association*, *the Research Quarterly* and others. What of the societal and institutional milieu within which these women lived and worked? What rationale did these women have for pursuing a scientific research agenda at a time when nearly every other woman in physical education was focused on the educational and recreational benefits of sport and physical activity?

Women exercise scientists sought challenging tasks to study. They chose research problems which were of interest to them and toiled to find solutions on their own. Although women were not extensively represented in the field of exercise physiology, a woman, Frances A. Hellebrandt, had one of the largest research laboratories in exercise physiology in the United States in the 1930s. Her laboratory at the University of Wisconsin was second only to the Harvard Fatigue Laboratory in publications in scientific journals during her tenure. Although both the Harvard Fatigue Lab and the University of Wisconsin Lab dissolved following WWII, the Harvard Lab had a greater impact because many of its former members including D.B. Dill, Sid Robinson, Ancel Keys and others were able to establish laboratories at other universities or within government agencies. The women whom Hellebrandt trained found no such opportunities. Male leaders of physical education, such as Edward Hitchcock and Dudley Allen Sargent, did much to develop the science of anthropometry, but it was women who were leaders in the research on posture. Measuring posture and the effects of changing posture were considered the purview of female scientists. The importance of training a successful cadre of graduate students is vital to the continuity of any research program. Many women, including Ruth Glassow at the University of Wisconsin and Anna Espenchade at the University of California, Berkeley, trained scores of students in Kinesiology (Biomechanics) and Motor Development.