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## ***Our Bodies Are Machines: The Scientific (and Not so Scientific) Study of Athletes in the 1920s and Early 1930s***

During the 1920s, major advances were made in the biomedical sciences as these relate to high performance athletics. The contributions of German physicians, physiologists, and psychologists — especially, but by no means exclusively, as these pertain to “doping” — have been eloquently examined by John Hoberman. Although its focus is not sport, Anson Rabinbach’s *The Human Motor* examines the late 19<sup>th</sup> century contributions the French physiologist Entienne-Jule Marey (who used pole vaulters and other athletes in his studies of animal locomotion and “the economy of work”) and Jules Amar’s early 20<sup>th</sup> century studies of energy expenditure. Historians have given considerably less attention has to developments in English-speaking countries. This paper amplifies some of my earlier work on athletics and exercise science. Its focus is the 1920s and early 1930s and events in the United States and, somewhat less, Britain. Material used in the paper derives from medical publications, popular periodicals such as the *Scientific American* in which distillations of some of the recent findings were presented, sports literature, especially (as appropriate) that connected with the Olympic Games, the personal papers of R. Tait McKenzie, housed at the University of Pennsylvania.

Following World War I, several events converged to advance the “sports sciences”. These included, but were not limited to, advances in biomedical sciences (especially physiology) and the growth of sports in institutions of higher learning. The war itself, especially studies of aviation physiology, provided part of the impetus for subsequent respiratory studies such as those that Wendell Henderson conducted on members of Yale’s gold medal 1924 Olympic crew. The establishment of institutions like The Harvard Fatigue Laboratory drew, in part, from such tendencies and also contributed to the growing trend to link biomedical studies with athletics. The reemergence and subsequent growth of the Olympic Games was a significant catalyst. The formation of the Association Internationale Medico-Sportive (soon renamed FIMS) at the same time of the 1928 Winter Olympics — and the international Sports Congress held at the Amsterdam Games — provided a European focus for physicians and physiologists, especially from German-speaking countries, interested in such matters. The scientific journal *Arbeitsphysiologie* was established that same year.

For the most part, British and American physiologists and physicians took a somewhat different track. Although several were interested in “science”, the legacy of Victorian values (more powerful in England than America) shaped a somewhat different discourse. Physiologist Archibald Vivian Hill (co-recipient of the 1922 Nobel Prize in Physiology and Medicine) used athletes in his studies of lactic acid and muscular exercise. When Hill published *Muscular Movement in Man* (1927) he dedicated the book to the

recently deceased Jordell Professor of Physiology Ernest H. Starling and to “The Athletes at Cornell”, who had served as subjects for various studies that Hill had conducted during his stay at the American university. Advances in the chemistry of nutrition also had an influence on athletic training, although in this instance the findings of science were far less widely and readily adopted by coaches. Although many may not had come in any event, German physicians expressed disappointment that no FIMS congress was organized in association with the 1932 Olympics.