ON THE IMPORTANCE OF THE ESTONIAN CONSTITUTIONAL TYPING SYSTEM FOR SPORTS ANTHROPOLOGY

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ABSTRACT

In sports anthropology, two main international schools of constitutional typing are used: on the one hand the Anglo-American tradition of somatotyping, but in the German-speaking world, on the other hand, the checkerboard-type constitution type system (Conrad) has dominated. A unique innovative approach to determining the individual constitutional type was achieved by Helje Kaarma: the Estonian constitutional typing system, consisting of the 5 height-weight class system (small, medium, large, pyknomorphic and leptomorphic). In a series of follow-up studies, Kaarma and her daughter R. Stamm succeeded in establishing this system in sports anthropology. Furthermore, Papers on Anthropology is an important scientific platform for international sports anthropological research.

Keywords: sports anthropology; somatotyping; checkerboard-constitutional typing system; Estonian constitutional typing system; Helje Kaarma; Papers on Anthropology

Sports anthropology as comparative biology of sportsmen and sportswomen deals with the constitution types (somatotypes), the body composition and the proportions of the athletes but also with other anthropological issues [36, 45, 46], such as the evolution of the musculoskeletal system or the cardiovascular system [30, 60].

Sport anthropometry as a key method aims at the metric capture of the morphological features relevant for sports [30].

The corresponding international term ‘kinanthropometry’ is defined as the study of human size, shape, proportions, composition, maturation, and gross
function, in order to understand growth, exercise, performance, and nutrition. Kinanthropometry is the interface between human anatomy and movement [30].

From the very beginning [2], sports anthropology, in addition to the very developed industrial anthropology, was one of the few areas of “applied anthropology”. Primarily, this discipline devoted itself to trying to find the most suitable constitutional type for each sport [24].

So, the constitutional types of the most important anthropological schools were used for sports anthropology. In principle, one can distinguish two main international schools of constitutional typing: on the one hand, the Anglo-American tradition, based on the famous somatotyping of Sheldon [51] with the anthropometrically based continuations of Parnell [27, 28] and Heath & Carter [12].

On the other hand, in the German-speaking world, initially in the territory of the former GDR, propagated by Tittel and Wutscherk [60–62], later in the whole of Germany [1, 6–11, 30, 49, 50] the checkerboard-type constitution type system of Conrad dominated [3, 4].

The determinant for the expression of the lept- or pyknomorphic direction is the Strömgren index (metric index). The plastic index introduced by Conrad serves to determine the hypo- or hyperplastic degree of body development [3, 4].

The Mainz School of Anthropology uses the Cartesian coordinate system of Knussmann [18, 19] with a leptomorphic-pycnomorphic variation vs. a macrosome-microsome variation. This determination system was also used by the sports anthropologists in Frankfurt/Main and Würzburg [5–11, 17, 20, 25, 26, 30–35, 37–44, 47–50].

A unique innovative approach to determining the individual constitutional type was achieved by Helje Kaarma. While the somatotyping of the Anglo-Americans (Sheldon, Parnell, Heath & Carter) was based on a three-pole type system, and the German constitution typifications (Conrad’s chessboard pattern und Knussmann’s Cartesian model) was based on a four-polar type system, Kaarma and co-workers chose a highly innovative new approach: the Estonian constitutional typing system, consisting of five height-weight classes [13–16, 21–23, 29]. There were three classes with harmony between height and weight class: 1 – small (small height and small weight), 2 – medium (medium height and medium weight), 3 – large (large height and large weight), 4 – weight class dominating (pycnomorphic) and 5 – height class dominating (leptomorphic).

In a series of follow-up studies, Kaarma and her daughter R. Stamm also succeeded in establishing the Estonian constitution type system in the field
of sports anthropology (for example volleyball players) and sports science [52–59].

The innovative significance of this work lies in the integration of sports anthropometric and training science parameters in a test battery for the prediction of volleyball performance level.

Kaarma has rightly secured a place in the ranks of the great physique researchers and sports anthropologists with her intelligent new constitutional system. Also, her journal Papers on Anthropology is a wonderful scientific platform for the publication of international sport-anthropological research [5, 10, 17, 20, 25, 26, 31–34, 38, 39, 41–44, 47, 48, 52, 53, 55–57].

I cordially congratulate my esteemed colleague Helje Kaarma on her outstanding scientific achievement on the occasion of the current anniversary – the Centre for Physical Anthropology at the Medical Faculty and at the Institute of Anatomy of University of Tartu has become 25 years old!

REFERENCES


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