Sports performance and systems theories

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The purpose is to present a brief idea about the understanding of sports performance through the lens of systems theories.

Sports performance is a multifactorial trait resulting from the interplay of individual, environmental, and task characteristics [1]. Due to its complex, dynamic, and multidimensional nature[2], understanding the performance variability among athletes requires the adoption of a holistic perspective, that considers the integration of the levels, interacting at different scales during the performance.

The idea that performance is determined by genes, i.e., that athletes are born to be succeed[3] is one of the most complex and enduring controversial debates in sports science. However, previous studies have shown that beyond athlete's characteristics (such as physiological index and traits, anthropometric variables, training commitment), it should also be considered the pivotal role of environmental constraints when analysing sports performance[4][5].

Indeed, one of the most neglected aspects, when studying sports performance, is the "external environment", which comprises, for example, the financial support, sociodemographic variables, training facilities, and local public policies. In this context, studies have reported an apparent relationship between gross domestic product, population size, and human development index with international sports success[6][7][8], even in sports where the "economic factor" is not usually signaled as a determinant[9][10]. Bosscher, *et al.* [11] highlight that sports success is influenced by a set of variables hierarchically organized into three interacting systems, namely: the "micro-level" (individual characteristics), "meso-level" (public policies), and "macro-level" (sociodemographic characteristics, cultural aspects). Focusing on the "meso-level", a conceptual model composed of 9 pillars was developed, involving factors that can be promoted through public policies in the medium and long term[12]. Such an approach amplified the discussion related to how sports success can be developed. Especially at an international level, the spotlight has moved from "who has more financial resources?" to 1) "how the available resources are oriented for high sports performance?" and mainly 2) "how much, and how is performed the investment of available resources for sport promotion and development?".

Despite advances in theoretical and practical approaches allied with an increased understanding of variables that predict sports success, the answer for the question "what does determine sports performance", still remains unknown, meaning that the unpredictability in sport persists as its striking feature.

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