Towards talent inclusion: The ecological ground of performance and potentiality – comment on McAuley et al.

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COMMENTARY

Submitted: 8 June 2023

Published: 21 September 2023

Editor-in-Chief:

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ABSTRACT

From a scientific perspective, talent inclusion for the purposes of development is the most promising path for the use of genetic testing, requiring an enhanced scientific literacy of sports organisation decision-makers, making them less vulnerable to the FOMO effect.

The mainstream inflated importance of genetic testing exemplifies an organismic asymmetry. Instead, performance and potentiality should be understood at the ecological level, the organism-environment system level of analysis. Commitment to understanding human behaviour at this ecological scale signifies that performance and potential are not properties located within the athlete (e.g., genes, mental representations), nor within the environment. Rather, it implies the coupling of the performers' unique characteristics throughout development with affordances offered by a performance context.

Keywords

FOMO effect, organismic asymmetry, affordances, athlete-environment system

Citation:

Araújo, D., & Davids, K. (2023). Towards talent inclusion: The ecological ground of performance and potentiality – comment on McAuley et al. *Current Issues in Sport Science*, *8*(1), Article 012. https://doi.org/10.36950/2023.1ciss012

Introduction

The target article contributes to a much-needed clarification about the relationship between the concept of sport talent and genetic testing, providing many pertinent suggestions for developing understanding.

Much of the impetus for implementing genetic testing for talent is based on unfounded information from marketing influences, creating pressure on sports organisations to demonstrate they are up to speed with developments in the field. However, their decision-making process is clearly subject to confirmation bias, because the current consensus in science on a lack of evidence to support the implementation of genetic tests to identify and select talent, individualise training program designs, mitigate injury risk, or enhance overall athlete development (as cogently argued in McAuley et al., 2023).

Surprisingly, despite this substantial body of evidence, there has been a significant increase in the number of direct-to-consumer companies offering genetic testing services to predict athletic potential and performance. This rapid growth has been encouraged by greater consumer accessibility due to decreasing costs of sequencing and genotyping over the last decade. Product appeal has been amplified by social and cultural connotations related to the search for super athletes. This has emerged for a multitude of reasons, particularly commercial gain, substantiating the myth of searching for the ideal genetic profile that underpins performance in different sports.

Sports organisations and other stakeholders are vulnerable to a tendency to over-value these misinformed appeals by direct-to-consumer companies, as McAuley et al. (2023) clarifies. This vulnerability is likely due to the poor scientific literacy of budget holders and key organisational decision-makers. Indeed, this proneness to inflated, unjustified claims is a much bigger problem for society, generally, and not just a specific issue of genetic literacy. This may be a particular example of a FOMO effect - Fear of Missing Out (here, on information or commercial opportunities that could enhance organisational performance) – which is broadly stimulated by advancements in technology. The target article refers to former expert athletes as being used as ambassadors of genetic testing companies and the planting of media articles about organisations purporting to take up genetic testing, stimulating the always latent FOMO effect in elite sport.

McAuley et al.'s (2023) recommendation that genetic testing, if implemented at all, should promote approaches to retain or include the greatest number of athletes is sensible, and may inhibit the scandalously early exclusion of many athletes on nonlinear development pathways. Scientific methods for predicting athlete potential to achieve expert performance, at early stages of development, are not valid. Importantly, this invalidity is founded on current practices described as performance identification, evaluating athletes on existing performance levels, and failing to typically focus on future developmental potential. Such current methods do not heed the documented lack of statistical association between success at junior and senior levels in sport (Güllich et al., 2023) and are susceptible to relative age effects among other contextual biases in selection processes.

These criticisms are worthy of further comment. Understanding the development of expert senior athletes implies understanding and explaining the complexity of human behaviour and sports performance. We have argued elsewhere (Davids & Araújo, 2010) that the first step for such explanations is to move away from an organismic asymmetry which drives this misconception (one major scientific constraint on the inflated importance of genetic testing at this time). This ecological level of explanation (i.e., at the level of the organism-environment system) applies not only to the understanding of behaviour and performance, but also to ideas on potential (great or little) and future developmental potential.

Commitment to understanding human behaviour at the level of the performer-environment system signifies that performance and potential are not properties *located within* the athlete (e.g., genes, bone growth or mineral content or mental attributes), nor within the environment (e.g., affluent societies constructing extravagant sports facilities). Rather, it specifically refers to the coupling of each performer's unique dispositional characteristics with affordances offered by a performance context (Araújo et al., 2023). At a given time, performance is related to the personal characteristics of a specific performer who is acting upon

a sport affordance. The manifestation of performance implies unique constraints related to each athlete (e.g., their motivation), and specific constraints related to the task (e.g., a slippery vertical surface of a mountain). Understanding performance (actuality) implies analysis of the performer realizing a concrete task in a given performance environment. Thus, performance analysis focusing solely on properties within the athlete expresses an organismic asymmetry.

This same rationale applies to potentiality. However, the athlete's potential for acting on (future) affordances available in competition is shrouded in uncertainties and implies opening an additional layer of constraints. Such a layer of constraints is related to all the dynamic tendencies and variations in the athlete's state (e.g., fatigue, enthusiasm, soreness, energy, resilience), observed in relation to the task context (e.g., changes in the weather on a climbing surface, between competing athletes in team games, in the audience). Potentiality is constrained into actuality as competitive performance starts, because the circumstances of competition begin to be specified. Therefore, actual performance is a narrowing down of possibilities in relation to potentiality. Out of many potentially successful paths connecting initial conditions to a performance goal, one path emerges for each individual (as an actuality; Araújo et al., 2023), and itself influences the potential for future possibilities. In short, potential cannot be understood without considering the coupling between all the evolving personal characteristics, including genome and phenotype, with the future characteristics of ecologies of performance environments. This deeply complex analysis cannot be achieved by genetic testing alone, implicating the need to predict future changes in personal dynamics, technological advances and tactical and competitive formats, to name but a few uncertainties.

Moreover, through practice, learning and experience, a person becomes attuned to the environment. According to the ecological dynamics approach, organism and environment are considered a combined whole (Gibson, 1979; Turvey, 2009), such that the organism-in-its- environment (i.e. the organism- environment system) is the preferred unit of analysis for studying performance and potential (Araújo et al., 2023). Performance and potentiality are founded on continuous reorganizations of the organism-environment system, not the simple placement of an organism in a contextual backdrop. These ideas imply that an individual classified as a talent in a given sport may only express potential for gaining expertise. In assessing such potential, we cannot simply rely on measuring some selected properties of the individual, such as genotype and phenotype only. We also need to understand the multitude of rich constraints which characterise the competitive performance environment, and how these properties (continue to) match the skills and tendencies of individuals during development across the life course. If those skills are to be manifested in another performance context (e.g., moving from football to track and field) the trajectory of development is likely to change. With practice, learning and experience the relationship between the properties displayed by an individual athlete and a performance context will change. This type of dynamically evolving relationship does not seem to be currently understood by sports organisations in framing the developmental potential of an athlete. Genetic testing, no matter how accurate in detecting and specifying the presence of a gene, would only express a measure of one single constraint in a highly complex ecological range of nested constraints. As the adage states test is not contest.

In conclusion, talent inclusion for the purposes of development is a concept that should be practised by sports organisations who are serious about understanding and stimulating athlete potential, due to the inherent degeneracy and nonlinearity of humans, conceptualised as complex adaptive systems. Nowadays, too many dreams are shattered and too much money wasted by potential and talent being undeveloped and misunderstood by poor professional practice underpinned by poor scientific literacy in high performance sports organisations.

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Acknowledgements

Funding

The authors have no funding or support to report.

Competing interests

The authors have declared that no competing interests exist.

Data availability statement

All relevant data are within the paper.