

Talent inclusion: An imperfect solution to genetic testing in sport - Response to commentaries

Alexander B. T. McAuley^{*1}, Joseph Baker², Kathryn Johnston², Ian Varley³, Adam J. Herbert¹, Bruce Suraci⁴, David C. Hughes¹, Loukia G. Tsaprouni¹, Adam L. Kelly¹

¹ Faculty of Health, Education and Life Sciences, Birmingham City University, Birmingham, United Kingdom

² Faculty of Kinesiology and Physical Education, University of Toronto, Toronto, Canada

³ Department of Sport Science, Nottingham Trent University, Nottingham, United Kingdom

⁴ Academy Coaching Department, AFC Bournemouth, Bournemouth, United Kingdom

* alex.mcauley@mail.bcu.ac.uk

COMMENTARY

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ABSTRACT

We are extremely grateful our esteemed colleagues Craig Pickering, Duarte Araújo, Keith Davids, and Kevin Till have read and offered insightful reflections on the target article “Talent inclusion and genetic testing in sport: A practitioner’s guide”. We take the opportunity in the present article to respond to the three commentaries provided by these authors. In our target article, we highlighted at this moment in time, there is unequivocal disapproval in the scientific community with regards to the implementation of genetic testing in sport. Despite an insufficient evidence base, however, various stakeholders (e.g., athletes, support staff) have used, and will likely continue using, genetic tests. We offered potential explanations regarding the allure of genetic information to sports stakeholders before suggesting some imperfect solutions in terms of increasing genetic literacy, promoting talent inclusion, and following a minimum set of best practice guidelines.

Keywords

athlete development, genomics, high performance, polymorphism, talent identification

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Introduction

In total, three commentaries were published on our target article “Talent inclusion and genetic testing in sport: A practitioner’s guide” (McAuley et al., 2023). These included:

- a. A pragmatic approach to genetic testing in elite sport – are we there yet? (Pickering, 2023),
- b. Towards talent inclusion: The ecological ground of performance and potentiality (Araújo & Davids, 2023), and
- c. Genetic testing: A good use of resource in talent identification and development? (Till, 2023).

In general, the commentaries were complimentary to our target article, and we thank the authors for their insightful reflections. For instance, Araújo & Davids (2023, p. 1) stated “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”, whereas Pickering (2023, p. 2) affirmed “This article, and the evidence presented within it, provides a useful and pragmatic first step for practitioners considering the use of genetic testing within their sporting team or organisation”.

From a sports-specific perspective, our target article provided an assessment of:

- a. direct-to-consumer (DTC) genetic testing companies,
- b. scientific evidence in relation to genetic associations,
- c. current application of genetic testing,
- d. allure of genetic information,
- e. importance of genetic literacy,
- f. promotion of talent inclusion, and
- g. best practice implementation guidelines.

Each of the commentaries focused on a select group of these topics and generally agreed with our position and evaluations. However, the authors also made several interesting observations and raised important questions that are worthy of further discussion. In this article, we highlight what we consider to be the most noteworthy themes identified from these three commentaries. More specifically, we discuss the parallels between each commentary and our target article and aim to provide an appropriate response to the points of contention.

Allure of genetic testing

In our target article, we provided an explanation as to why stakeholders in sport would find genetic testing to be an appealing prospect. Sports stakeholders face increasing and continual pressure due to job demands, inevitably leading to a search for progressive approaches and unique tools to gain a competitive edge, or at the very least, not fall behind contemporary advances of their competitors. Till (2023) agreed that, in their quest to achieve success, those involved in professional sports organisations will seek 0.1% of an advantage over their competitors and even try magical solutions. Due to this intense desire to succeed, however, stakeholders in sport are vulnerable to a tendency to over-value misinformed appeals made by predatory companies. As Araújo & Davids (2023) suggest, this may be a particular example of the always latent Fear of Missing Out (FOMO) effect within high-performance sports environments, with regards to increased informational opportunities or advancements in technology that could enhance organisational performance.

An interesting insight was also offered by Pickering (2023) regarding the motivation behind practitioners choosing to implement genetic testing. The author recalled that during their time working at a DTC genetic testing company, some practitioners mentioned that they were not primarily interested in the results of the test, rather, the primary purpose of the test was to instil a belief in athletes that the prac-

tioners would leave no stone unturned in pursuit of success. Moreover, Pickering (2023) also recalled a practitioner commenting that they believed athletes would use genetic tests themselves, irrespective of the practitioner's or organisation's current stance on the matter. This meant that at least if the practitioner arranged the testing, they would have more control of the process and potential repercussions. On this aspect, we agree with Araújo & Davids (2023) suggestion that misleading marketing influences appear to have created pressure on sports organisations to demonstrate they are up to speed with developments in the field, even if such innovations are based on unfounded information.

These accounts raise important questions for future research regarding why athletes and other stakeholders use genetic tests, but perhaps most interesting, would be *how* athletes respond after being informed of their own (or others) genetic information. As mentioned in the target article, internal beliefs regarding the primary sources responsible for athletic capabilities may have enduring consequences on subsequent actions, behaviours, and decisions during the developmental process. Rigid essentialist thinking or holding deterministic views may have a negative effect on a coach's attentiveness, patience, and time dedicated to the development of the athlete, whereas the athlete's willingness to train, level of effort, and response to failure might be influenced by the test's result. In particular, the reaction of a performer to being grouped or labelled by conventional means (e.g., elite, talented) is already poorly understood (Baker et al., 2024; Johnston et al., 2023; McAuley, Baker, et al., 2022), so the implications of being (prematurely) categorised with another metric (i.e., genetic profile) likely adds fuel to the fire.

Talent inclusion

In our target article, we suggested that one initiative of immediate importance is deterring the use of genetic testing for de-selection/exclusion purposes. There is limited evidence genetic testing is being

implemented in this way (at least at this point in time), however, across empirical research, approximately 50% of surveyed sports stakeholders believe genetic testing should be used for talent identification (McAuley, Hughes, et al., 2022; Varley et al., 2018). From this perspective, we proposed if genetic information is going to be used to make selection decisions, this should only be to promote talent inclusion. We described this concept as approaches that aim to include or retain the greatest number of youth athletes possible within a development system using any conceivable predictive metric. The emphasis for this suggestion was primarily grounded on inhibiting the biased and unsubstantiated early exclusion of many youth athletes on nonlinear developmental pathways (e.g., Kelly et al., 2022), by providing greater opportunities for more individuals to fulfil their potential.

The three commentaries were varied in their views towards talent inclusion. For instance, Araújo & Davids (2023, p. 1) showed great support for the idea, stating "from a scientific perspective, talent inclusion for the purposes of development is the most promising path for the use of genetic testing", also noting that "[talent inclusion] 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" (Araújo & Davids, 2023, p. 12). Whilst Till (2023) did not communicate any particular support or disapproval, Pickering (2023) noted they were struggling with the rationale for genetic testing to be used for talent inclusion, highlighting concerns of:

- a. a lack of a predictive polygenic profile,
- b. a presence of maturation, relative age, and training age effects,
- c. the ethics of testing athletes under the age of 18 years, and
- d. the principle of autonomy.

We agree with all the issues raised by Pickering (2023); however, we would contend that they are problems with the genetic testing of athletes (in particular youth

athletes) as a whole. Our intention of promoting talent inclusion was to make the best of a bad situation, considering the anticipated widespread implementation of genetic testing in sport appears to be unavoidable. Instead of genetic testing, Pickering (2023) advocated for wholesale changes in current identification and development processes to reduce biases and facilitate delayed selection decisions. This corresponds with what we suggested would be a more ideal scenario and is cogently argued for in explicit detail by Araújo & Davids (2023) as well as Till (2023). In this regard, we believe it is important to be aware of the Nirvana fallacy (also known as the perfect solution fallacy), whereby we do not simply reject imperfect solutions that may improve a problematic situation (though not fully resolve it) due to wishful, black-and-white thinking.

Moving forward

In the future, we suggest it is unlikely genetic testing will ever have great utility in sport for identifying youth athletes with the potential to achieve expertise. This is due to a combination of the intricate biological systems at play and unpredictable interactions with environmental exposures over time (McAuley et al., 2021). Araújo & Davids (2023) greatly expand on this complexity from an ecological dynamic perspective, whereas Till (2023) presents a comprehensive list of the immense challenges surrounding developmental processes. A key parallel emerging across all articles, however, was that sports stakeholders appear to have poor genetic literacy and even questionable scientific literacy. As such, there seems to be a consensus between researchers and practitioners in sport that better knowledge exchange processes are required. To address this perceived lack of understanding and provision of adequate sources of evidence-based information, we encourage researchers to design, implement, and evaluate better methods of educational support.

We also proposed a set of best practice guidelines for practitioners if they are going to implement genetic testing. This was generally well received by the

authors of the three commentaries. However, Pickering (2023) noted that whilst this pragmatic approach partially resolves some of the outstanding issues, many unresolved ethical and practical barriers still remain. Again, we concur with these sentiments, as our best practice guidelines were never going to (nor were they meant to) solve all the multifaceted problems that accompany the use of genetic information in sport. The intent was to simply provide a resource for practitioners to reference if contemplating genetic testing so at least a minimum list of considerations would be available. We hope these preliminary recommendations will inspire researchers to develop a more comprehensive framework and gold standard set of best practice guidelines in future, as well as encourage stakeholders to use genetic information more appropriately.

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Data availability statement

All relevant data are within the paper.