

## **“No place” for genetic testing to spot young sporting talent or boost performance**

*Evidence far too weak to back use of these commercial tests, says consensus statement*

No child or young athlete should be subjected to genetic testing to spot sporting talent or boost performance, concludes an international panel of experts in a consensus statement published in the ***British Journal of Sports Medicine***.

The scientific evidence on the effectiveness of these commercial tests is simply far too weak to back their use, says the panel of 22 experts in the fields of genomics, exercise, sports performance, disease, injury, and anti-doping.

While the science of genomics has advanced rapidly over the past decade, the ability to interpret the meaning of genetic test results is still at a relatively early stage, says the statement.

But that has not hindered the growth of DIY ‘direct to consumer’ genetic tests, which claim to be able to talent spot children’s athletic prowess or tailor training to maximise performance, it says. Anyone willing to stump up the cost and send a sample of spit or a mouth smear for lab analysis can request one of these tests.

This burgeoning market has prompted fears that the current limited level of knowledge on the genetics of sports performance is being misrepresented for commercial gain, it says.

To inform the consensus statement, the panel looked at the availability of DIY genetic tests. It found 39 companies marketing tests associated with sport or exercise performance or injury—almost twice as many as in 2013, when a similar review found 22.

Since 2013, 14 of the original 22 companies have ceased trading, meaning that 25 companies have entered the market within the past two years.

Claims included: ‘Personalise your training based on your sports genetics,’ ‘Gives parents and coaches early information on their child’s genetic predisposition for success in team or individual speed/power or endurance sports,’ and ‘We use your DNA results to help you lose fat, get lean, build muscle, get fitter.’

For over half (54%) of the 39 companies, it was impossible to find out which gene sequences and variants would be tested, because this information wasn’t provided. For the remainder, the average number of variants tested was 6, but ranged from 1 to 27.

But the absence of any good scientific data to guide selection of which variants to test undermines the value of multiple testing, says the statement.

The most popular genetic variants tested were ACTN3 R577X and ACE I/D, both of which have been relatively well studied. While there is some evidence to suggest a link with enhanced physical performance, it is very weak, rendering the predictive value of these tests “virtually zero,” says the statement.

Of further concern is that several companies use the results to market additional products, such as training advice and nutritional supplements, for which the evidence is again limited, it says.

The statement emphasises that the speed of change in gene sequencing technology has far outpaced regulation, or universally accepted guidelines. And legislation varies widely among countries—the UK has none, for example.

And it points out the importance of counselling before any genetic test is taken, particularly as this may have implications for health or life insurance—but which is not part of the package offered with these tests.

Furthermore, the sensitive nature of an individual’s genetic information should be subject to the highest level of security and confidentiality, says the statement. But it is not at all clear what happens to these data when one of these companies goes under.

“While further evidence will undoubtedly emerge around the genetics of sport performance in the future, the data are currently very limited,” says the consensus statement.

“Consequently, in the current state of knowledge, no child or young athlete should be exposed to [direct to consumer] genetic testing to define or alter training or for talent identification aimed at selecting gifted children or adolescents,” it concludes.