Is the genetically-modified athlete on the way?

A

To become an Olympic champion, athletes have always needed dedication and perseverance, as well as natural ability.

In the past, athletes would spend hours training in the gym and would make sure they ate all the right foods. However, neither they, nor anybody else, felt the need to analyse their genes to test whether they were likely to succeed in their chosen sport. This may well be about to change. Our understanding of the connection between our genes and sporting performance is growing and this understanding may soon radically transform the way we select and train the athletes of the future.
B

Research has shown that, in many sports, genes are as important as hard work. The ‘right’ genes can, for example, affect our cardiovascular capacity – the heart’s ability to deliver oxygen to the muscles – and they can also affect the muscles’ ability to turn oxygen into the fuel needed for muscles to contract quickly and powerfully. Any athlete with these genes has an advantage over people who don’t have them because they allow them to train longer and harder, to recover from exercise more quickly and to produce power more efficiently. Scientists have identified a variant of a gene called ACTN3 which is associated with the presence of a muscle protein found only in particular muscle fibres. It is effectively a ‘power gene’ which enables sprinters to react explosively and to start running very quickly. Any 100-metre sprinter with this gene clearly has a distinct advantage over an athlete who doesn’t have it. In fact, many would now argue that it is essential to have this gene to win gold in a sprint event.

C

The importance of the genetic component in sporting ability has many implications for the future. Currently, we’re used to the idea of encouraging every young person to have a go at different sports. Kids find out what they’re good at and what they enjoy. But what if sports clubs screened kids to see whether they were genetically disposed to particular sports? As a society, we would uncover talent quickly and put young athletes with genetic potential on the right path to athletic achievement, but, individually, finding out, at a young age, that we were never going to be good at a chosen sport would be very demoralizing. It also undermines much that is positive about sport, such as the fact that it is about enjoyment and challenge and testing personal limits. Sport should not be about trying to achieve genetic potential.
D

Even more disturbing is the possibility that some countries might consider using our rapidly growing knowledge of how genes work to engineer the make-up of a young athlete’s genes in order to turn them into a ‘superman’ or ‘superwoman’. Scientists might, for example, inject a gene into an athlete’s cells that increases muscle growth, making him or her faster and stronger. As yet, there is no evidence that this has happened. However, the technology is in place to modify genes and research has been carried out on mice that shows how effective genetic modification can be. A major concern is that nobody knows what the long-term consequences of altering genes might be for humans. It could result in all sorts of appalling health problems.

E

So, what of the future? Will top athletes be selected at a young age because of their genes, and will it become commonplace to modify an athlete’s genes? Both are worrying scenarios. If selection were to happen, especially at a young age, sports would stop being about personal achievement and mental endurance and would become games for super-humans. If modifying genes were to become an accepted part of elite sport, the pressure on athletes and sports bodies to alter people’s genes would be overwhelming. It is a disturbing thought. The age of the genetically-modified super-athlete may soon be upon us.