

Biological Maturity and Perceptions of Talent

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The South West Talent Development Centre is a joint initiative between the University of Bath and Sport England. Its objective is to maximize the potential of people from the South West to progress to elite levels in sport by providing support to and building the capacity of National Governing Bodies to implement their talent pathways in the South West.

Talent: Power or ability of mind or body viewed as something divinely entrusted to a person for use and improvement - Oxford English Dictionary

Faster, Higher, Stronger - the Olympic motto is an elegant summation of the key attributes we associate with and admire in the performances of the most accomplished athletes. Their performances are also displays of great technical skill but it is the physical properties embodied in the motto that we most often see as the gifts from which their talent has arisen.

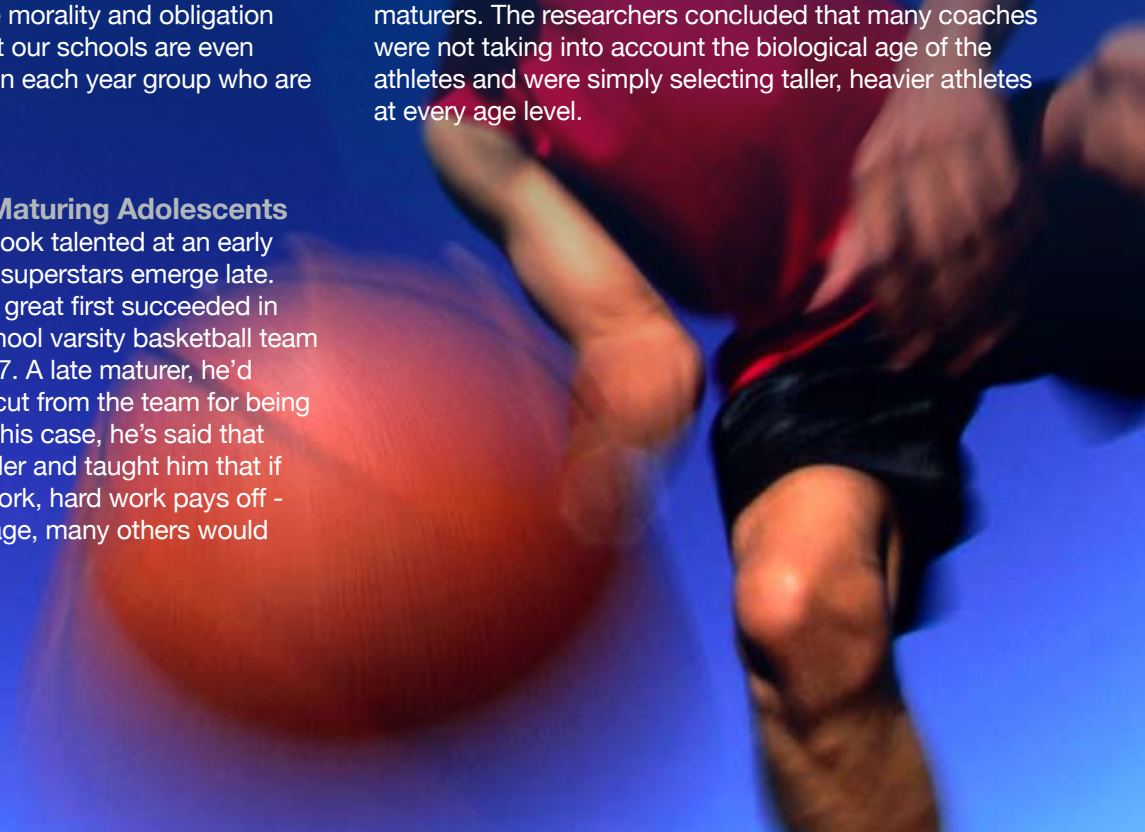
We are culturally primed to look for evidence of innate gifts in our young lest talent go wasted. The Western concept of talent originated as a medieval metaphor for the Biblical Parable of the Talents (Matthew 25: 13-30). In the parable a man leaving on a long journey, divides his Talents amongst his three slaves according to their abilities, a Talent being a unit of weight used to measure wealth in the ancient Near East. He expects them to use his wealth to generate a profit for him and on his return he finds that two of the three were industrious and have doubled his wealth while the third buried his Talent in the ground and returns only what was entrusted to him; the master rewards the first two and punishes the third. That we talk about 'the gifted and talented' or about 'God-given gifts' is a legacy of this biblical lesson. Our modern concept is still loaded with the morality and obligation of the parable so much so that our schools are even mandated to identify children in each year group who are talented athletes.

Selection Bias and Early Maturing Adolescents

In many instances those who look talented at an early age often aren't while the true superstars emerge late. Michael Jordan the basketball great first succeeded in gaining a place on his high school varsity basketball team in his penultimate year aged 17. A late maturer, he'd grown 10cm since he'd been cut from the team for being too short the previous year. In his case, he's said that being cut made him work harder and taught him that if you set goals and put in the work, hard work pays off - at such a difficult transitional age, many others would have dropped out.

The prime indicator of biological maturity is the age at which children go through their main adolescent growth spurt which is known as Peak Height Velocity (PHV). Adolescents born in the same year can be up to 4 years apart in biological age depending upon whether they are early, average or late maturers. Late maturing boys like Michael Jordan, are at a physical disadvantage to their early maturing peers for most of their teens because strength and stamina only develop to adult levels after PHV. Sport development systems compound the late maturer's early disadvantage by become increasingly selective just when maturational levels create the biggest differences in physical abilities.

Most coaches know that the adult performances of late maturers often surpass those of early maturers but our subliminal programming to select for superior motor skills at every age can be hard to overcome. A 2004 study (Suslov & Kukalov) on Russian athletes aged 12 to 15 training in regional teams found that about 40% of the sample were early maturers, significantly more than their distribution in the general population, while only 20% of the girls and 26% of the boys in the sample were late maturers. The researchers concluded that many coaches were not taking into account the biological age of the athletes and were simply selecting taller, heavier athletes at every age level.



Motor skills tests can flatter to deceive

In the belief that it is more scientific, it has become fashionable to use motor skills tests (sprint tests, vertical jump etc) to identify those in possession of innate athletic abilities - the so-called gifts that our cultural priming suggests are the precursors of talent. In reality, scant published data exists on the success rates of Talent Identification programmes that use generic motor skills tests to select athletes and what has been published does not demonstrate a convincing causative link between the tests and any reported success stories. To the contrary two recent longitudinal studies conducted by the Wingate Institute (Lidor et al 2007 and 2005) concluded that using motor skills tests to select team sport players was questionable as the overlap in test scores between those athletes who progressed to national teams and those who didn't was so great that they became meaningless.

Motor skills tests are better seen as tests of fitness at a specific point in time rather than of innate ability. Where children and adolescents are concerned, using them as one off selection tests or giving the tests too much weight can lead to the more scientific selection of the wrong athletes with serious long term consequences for the talent pool and for general sport participation rates. Late maturers may be discouraged if they perceive themselves to be less talented than their early maturing peers, while early maturers may themselves drop out if they become discouraged in later adolescence as once maturity levels have evened out, their early advantage in terms of strength and stamina disappears and their performances plateau or decline.

Motor skills tests may identify adults with good general athletic ability but during primary school, those who can run the fastest, jump the highest or furthest or who are the strongest or most co-ordinated are usually just the oldest in the year group (see Relative Age Effect Case Study for further information). The tests can be even more misleading with teenagers particularly when used without consideration for the biological age of each athlete. Likely as not, they will reinforce the bias towards early maturing adolescents resulting in coaching and other resources being concentrated on the wrong athletes.

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Tips for coaches

- If you're coaching an age group, be aware of who the youngest and oldest are within the group and be aware of the biological age of adolescent athletes
- Use motor skills tests to monitor your athletes' progress over time, not to select
- Don't cut anyone - like Michael Jordan, future stars might not be obvious
- Create an environment that encourages participation and experimentation
- Emphasise teaching the skills of the sport not winning
- **The Gift is in the Desire** - Hard work and persistence are the key traits that predict success over the long term

Resources

To learn more about **biological maturity** and how it can be used to optimise the physical development of your athletes consult your governing body's **Long Term Athlete Development Plan (LTAD)**

To learn more about **Peak Height Velocity** and how to calculate it please refer to SportcoachUK's new resource

References:

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