

## **Doing the 'right' training at the 'right' time with a young child can maximise their future potential as an adult**

'Nature versus nurture.' It's a debate that will run forever in all aspects of life. Just what makes a person intelligent, optimistic or gregarious, for example? In sport, as in these other immensely varied aspects of human development, the answer resides within both realms. Genetics are crucial for performance – you won't run a sub 10 second 100m without being born with a high percentage of fast twitch muscle fibre. But nurture is the factor you can do something about. Doing the 'right' training at the 'right' time with a young child can maximise their future potential as an adult

Skill windows (periods of optimum physical development)

There are certain times when a pre-adolescent and early adolescent will quickly and optimally respond to a certain type of training more so than others – this information is presented in Table 1 and Table 2 for boys and girls respectively. These periods are known as 'skills windows', although they are more about physiological outputs rather than specific skill – that's strength, endurance and speed.

Boys' skill windows reside between the ages of 9 and 12 and for girls between 8 and 11.

Why is it important to develop these physiological elements of sports performance at these particular times?

Research indicates that during these periods a child's body is developing the right enzymes and hormones, for example those that maximise the development of a particular aspect of physiological performance. It is argued that if speed is not trained during the appropriate skill windows then the child will never, as an adult, be able to run as fast as they could. A 26 year old may run 10.4 sec for the 100m – this is a good near top international time. This performance may be a response to the appropriate training and the 'right genes' – nature. However, had they trained their speed physiology when they were 7-8 and 11-14, they might have developed into a 9.8 second world-class sprinter – nurture. Doing this could have optimised the ability on the part of the sprinter to be able to move their legs and arms as quickly as possible (elite male sprinters will achieve nearly five strides a second). It's argued that if this is not done during the appropriate skill windows, then whether it be speed or another skill, the adult will never be able to achieve their true physical potential. This is something to ponder on.

What should you be coaching young athletes during the skill windows?

Activities must above all be fun and not overly technical, particularly for the under 12 year olds. Drills and practices must be selected that develop foundation skill and physiological development. The former Eastern European countries used to follow such a practice. They ensured that all their young people were – to coin a phrase that is in current training parlance – 'physically literate'. All children would be able to run effectively and jump and throw basically. These fundamental skills could then be developed in later life and targeted at certain sports – the Eastern Europeans would have various tests that they would use to identify potential athletes for certain sports.

Growth spurts

As a coach to young athletes you also need to be mindful of growth spurts in a young athlete's life when they will be less coordinated, due to the way their body and limbs are rapidly growing. It's often recommended that records are kept of the child's weight and height on a monthly basis, in order to determine when these are occurring – although in most cases it will be obvious. It is crucial that you as coach realise that the child you are working with has not suddenly become a 'bad' player or athlete – rather they are trying to coordinate a body that in some cases has a bit of a mind of its own. Limbs that were once able to move with relative precision now become gangly, rangy appendages that don't. As a coach you must watch your language, be very encouraging at these times and don't admonish. You should also try to select appropriate training exercises.

#### A note on endurance

You'll see in Table 1 that, for boys, there is only an aerobic window that begins at the age of 13 and lasts through to the age of 18, and that there is no mention of anaerobic fitness. The reasons for this are complex and beyond the scope of this article. However, very basically, young children should have near boundless energy, as anyone who has had children will know. This means that as they age their bodies will naturally increase their endurance capacity aerobically until around 13. Additionally their bodies will not have the right enzymes, for example, to improve their anaerobic capacity – these 'become available' in adolescence, when structured anaerobic training becomes an option. It also appears that their muscles contain a greater number of slow twitch endurance fibres, again up until adolescence, when those of the fast twitch (speed and power producing) variety begin to develop – these fibres are needed for anaerobic activity.

#### The skill hungry years

Between the ages of 8-12 a child is ripe for the learning of skills (and knowledge). Teach the right skills at this time and the child will become a physically gifted adult, but teach them wrongly and it will be at best a difficult struggle to unravel them in future to produce optimum performance. 'Stem skills' are what you should be emphasising. These, as the name suggests, should provide the stems from which more advanced skills can be learned. For example, to produce optimum adult sprint speed, the use of the arms in a harmonious action with the legs should be encouraged; while for acceleration, the pushing action of the legs could be introduced. What you should not do is introduce hugely complex skills, as the child will not be big enough, strong enough or mentally ready to perform them. For example, the key to jumping is an effective take-off, where the 'free' (non take-off) leg is driven forcibly up to a thigh parallel (or near) parallel to the ground position and the take-off leg is fully extended behind the athlete to propel them upwards and/or forwards. These are the stem skills that should be taught. No mention should be made of a hitch kick, long jump or Fosbury flop high jump technique, or similar, until the child is of appropriate age, strength and size. Get the stems right and optimum performance of a derivative, more complex sporting movement will follow.