

A Study On Improvement In Adolescence Speed

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Abstract—The speed in adolescence is considered a very important parameter for the development of skills, for this we list the main methodology, starting from the definitions, up to the practice that will be the object of our study of profundity.

Keywords—*adolescence, speed; improvment*

PURPOSE OF STUDY: Research the various methods aimed at improving the speed in adolescence, in this period of age, unlimited training of the so-called conditional and coordinating aspects of speed is possible. The methods and contents of the training correspond, almost, to those of adults and are distinguished only from a quantitative point of view.

RECENT FINDINGS: In physics, velocity (from the Latin *vēlocitās*, in turn derived from *vēlōx*, ie 'fast') is a vector quantity defined as the rate of change of a body's position as a function of time, that is, in mathematical terms, as the derivative of the position vector with respect to time.

When not specified, "velocity" refers to instantaneous velocity, a term used to emphasize that speed is defined instant by instant and depends on time. It has the dimensions of a space divided a time, so in the International System of Units it is measured in meters per second. Sometimes, by analogy with the English language, the term velocity is used to indicate the velocity in absolute value, regardless of its position (that is, the velocity vector module). In fact, speed is indicated in English with speed and velocity in a vector sense with velocity.

We want to research in this parameter, the fundamental growth of biomechanical and motor development in adolescents, starting from the basics.

Every motor scheme should already have been acquired during the growth and training of the child, so as to ensure that all primary structures have already developed

Rapidity should be trained early enough so that the genetically determined space can be expanded before the complete development of the CNS is completed.

The speed and the capacities that determine it must be developed by differentiating between them. First of all, with appropriate contents and methods, its basic assumptions are formed (support time, frequency), then the complex ones. Only at the beginning of the training session are the complex training of the speed and the specific acceleration capacity of the sports discipline come to the fore.

If we consider that the development of the elementary assumptions of speed, expressed by the speed quotient, takes place essentially from 6 to 10 years and from 14 to 16 years, above all in these sensitive phases a multilateral coordinative running training must be carried out.

Children are interested in the fun, the game, and for this reason the training must be rich in variations and multilateral. Multilateralism is intended to mean a multilaterality aimed at optimizing speed programs relevant to the sprint.

To avoid the early formation of a motor stereotype, maximum intensity must be integrated into the training process, in ways that are as varied and multilateral as possible.

The duration of the exercise should be programmed in such a way that the speed does not decrease towards its end due to fatigue.

The length of the distances depends on the training objective: if you have to train the acceleration capacity, you must choose a distance that corresponds to the individual performance level in this capacity (from 25 to 35 m); if, on the other hand, the stretch of the maximum speed must be trained, which in children is between 20-30 m, after a jump start you have to run about this distance. If instead, the training aims to train resistance to speed, adequate distances will be chosen, which slightly exceed the race distance.

The pauses between the repetitions of the loads must guarantee an optimal recovery of the performance capacity. According to Levi-Gorinewskaja, in the fourth year of life, in the development of the running movement, only 30% of children can detect good coordination of the movements of the lower and upper limbs. This percentage rises to 70-75% at five years, and at over 90% at six years. One can therefore act in such a way that, through a multilateral offer of exercises, the aspect of rapidity is also taken into account and the coordinating bases for the future are laid. Since between the fifth and the seventh year of age there is a notable improvement of the running movements, which is also visible in an improvement of the speed of travel, during this period of time it is worth increasing the amount of speed exercises. Research has shown that children who are in pre-school age already get contact times, or frequencies, that are close to those of prominent athletes. This should stimulate to train these elementary assumptions of the

performance, already in this period, through playful forms adapted to age.

The frequency and the speed of the movements undergo their maximum thrust of development especially in the first school age. In this age group, the final anatomical and functional maturation of the cerebral cortex takes place. Rapid training in childhood and adolescence leads to an improvement in the speed of reaction and the shortening of latency time. In this period of age, with simple means of general training, such as circuit training and suitable running games, all parameters of rapidity and rapid force can be improved, as is clearly demonstrated by the researches of Diekmann, Letzelter (1987) and Steinmann (1990).

Training programs should not, however, be limited to reaction and acceleration exercises, but should place multilateral demands on the neuromuscular system of children.

In this period, only partially can statements be made that go in the same direction as the previous ones. A consensus exists regarding speed of reaction and speed of travel. Latency and reaction times are shorter and, towards the end of this age, they are closer to adult values. In addition, the stroke speed also increases considerably. As numerous transversal research by Lehmann (1993) shows, after a considerable developmental thrust in the age of six to nine years, between ten and twelve years no further improvement of the cyclical and acyclic elemental speed is produced, although the speed of race, as a complex performance, continue to improve. This indicates that, in this period of age, it is only possible to influence the basic assumptions of rapidity, while an increase in the maximum travel speed occurs. The improvement of the complex running speed seems to be, instead, based on other factors, such as force.

Speed training in early puberty

With the onset of puberty, profound changes take place, which also influence the basic and complex basics and performance of speed. During the first pubertal age, the excessive prevalence of excitation processes (at the base for the good ability to learn new movements) is compensated by the increase in inhibitory functions. Therefore, the fundamental central nervous mechanisms are relatively "plastic", that is, they can be influenced by external actions, such as training. Unfortunately, it is often ignored that this can lead to qualitative deterioration. In this "plastic" phase, very intense changes in physical constitution occur.

Therefore, in puberty age all these aspects must be consolidated, which are fundamental for the growth and development of a fundamental motor scheme, the speed.

We want to research in this parameter (speed), the fundamental growth of biomechanical and motor development in adolescents, starting from the bases.

The energetic metabolism that most influences the speed is the anaerobic alactacid (which uses adenosine tri phosphate and creatine-phosphate, supported by anaerobic lactic acid (which exploits anaerobic glycolysis [glucose released by muscle glycogen or obtained by neoglucogenesis], in this case, the performance limiting factors and therefore must be trained are:

Muscle capacity of ATP and creatine-phosphate concentrations

Muscle power, or the activity of enzymes that split the creatine-phosphate and the specialization of muscle fibers Less than the others (in pure speed!), The potential lactic acid; that is the effectiveness of energy production through anaerobic glycolysis (more useful in fast force, in resistance to fast force and in maximal resistance to speed).

RAPIDITY

- rapidity is a general property strictly linked to the nervous system. The speed can be increased in a modest way, not more than 18-20% of the genetic potential. Therefore it can be affirmed that "rapid is born".

- speed is a function of speed, rapid force, resistance and optimal coordination of movements in relation to the external environment in which the action takes place. Therefore the speed is more easily increased compared to the speed since it can act on the improvement of different capacities.

The effectiveness of the action is particularly linked to conditional capabilities. Speed depends on:

- optimal frequency of nerve stimuli and activation of a high number of rapidly shrinking muscle fibers
- ability to quickly use energy substrates
- fiber contraction speed
- optimal decontraction of the antagonist muscles
- balance of muscle strength
- ability to re-use elastic energy (Plyometric muscle action);
- degree of joint mobility and muscle extensibility
- degree of gesture automation and correct mental image-
- (coordination).

EXPRESISON OF SPEED

Rapid reaction: central discrimination and adequate response processing. Therefore ability to start a motor response as quickly as possible after receiving a perceptive stimulus.

The reaction speed is linked to:

- ability to anticipate: based essentially on experience that allows you to predict the right answer to situations not yet started or not yet completed
- latency time: time that elapses between the arrival of a stimulus to the biological structure responsible for receiving it and the beginning of the measurable response in the same structure
- reaction time: time that elapses between the arrival of a stimulus and the beginning of the voluntary response.
- Speed of action: follows the reaction phase to quickly construct a single intentional gesture in its entirety.
- Frequency of movements: speed can be expressed as rapidity of action in the single gesture or as a frequency of movements in cyclic gestures.
- Amplitude of movements: the highest speed is reached towards the end of the joint excursion, therefore the rapid movements must be sufficiently wide.

METHODS OF IMPROVEMENT OF RAPIDITY AND SPEED

The following principles must be kept in mind when applying methods to improve speed and speed:

- Absence of muscular and nervous fatigue. Therefore the exercises for speed and speed should be placed in specifically scheduled workouts or at least at the beginning of a workout dedicated to other motor skills.
- Minimum load and tends as much as possible to zero.
- Maximum muscular and nervous commitment in every repetition of the gesture.
- Recovery between the complete series (at least 3 minutes). The recovery phase must be active (move without causing fatigue) in order to maintain an optimal excitation of the nervous system.
- In the educational progression, gradually move from simple and easy to difficult and complex, from the known acquired and consolidated to the unknown.

CONCLUSION: We have researched the fundamental methodologies of the development of this capacity and we have concluded that it is of great importance that the adolescent constantly practices outdoor sports since his early stages of approach to sports, which constitute a piece of the ground to create what will be the future bases for any type of sport (even if we find morphological biotypes more prone to speed sports and others to endurance activities)

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