

Original Article

Individual training in the alternating problem 110 m. Hurdles through self control awareness of techniques based on checks perceived during execution

ALECU ȘTEFAN¹, IONESCU-BONDOC DRAGOS², NECHITA FLORENTINA³

^{1,2,3} „Transilvania” University of Brasov

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Abstract

The Athletic Run of 110m. hurdles. falls into performance sports where the execution technique is generally stereotyped and the competition takes place under standardized conditions. The influence of co-ordinating skills and analyzers on motor skills can lead to an optimal technical execution approach in the 110 m fence test, because through self-controlled training, awareness and monitoring by the coach, the memory and motor retention stimulate the progressive acceleration of the run between fences. Kinesthetic, balanced and visual space-time analyzer with repeated and controlled execution contributes to the optimal performance of technical execution.

Key Words: coordinating abilities, mototatic reflex, proprioceptive sense, spatio-temporal orientation.

Introduction

Technical preparation in the fencing test by approaching the coordinating capacity of the athlete in a frame of execution with precision in time and space.

In the preparatory training, the proprioceptive method is used in which kinesthetic space-time analyzers, tactile equilibrium and auditory balance play an important role in the development of individualized coordinative skills, strength and resistance of metabolic mechanisms.

The co-ordinating difficulty of a driving task is determined by its exigencies of motor precision or, in other words, of "precise control of movements" (Roth M., 1989). The more "necessity of precision" is greater, more the focus on the perception of one's own movement and the environment, and the accuracy of those processes anticipating programming, adjusting or self-regulating their own drive. (Koch D, Knopp K, 1987).

Proprioceptors are due to the mototatic reflex and they are constituted by muscle contractions, pressure and traction exerted on the tendons and joints, which are manifested in the specific movements of sporting activities practiced. "The kinesthetic sense provides the tonic reflexes of posture and the coordinated character of the movements of the athlete" (Epuran M., 2013).

Proprioception is defined in Cashmore E. (2008, pp. 346-347) as the "sense of movement" with reference to the stimuli produced and perceived within the organism, including in this category the sensory processes made at the level of kinesthetic, vestibular analyzers, optical, tactile, visual.

Throughout the act and motor activity the sense of movement is involved in providing information on the position, orientation and movement of the body, tension, pressure and traction exerted on the joints, muscles, tendons, etc.

It has been found that specialized sensors in the muscles, joints and connective tissues allow the body to process information from a variety of stimuli and turn them into action with motor response that give the athlete information about the movement and position of the body in space especially on the runners fences.

The information received by the analysts is essential to form a driving skill based on tests, corrections made according to the teacher's instructions and self-monitoring using different objective and subjective information methods (videograms, self-evaluation and correct practice for automation).

The set of analyzers, whose actions start, accelerate, attack, impulse angle, pull the impulse over the fence, land over the fence, go in the second step carefully to the correct and shattering, combine, determining a complex of skills, called coordinating specific specimens of fences that could not be individualized until very recently and whose role is to regulate and organize the movement.

The optical (visual) analyzer is the first of the analyzers to inform about the process of learning and enhancing the passage of fences.

In the case of fence runners, attention is directed to the field of vision of the upper line of the fence lanes on the athlete's lane, especially in the area of the launch from the start and the first fence, using coordinated coordinating skills to achieve rhythm and acceleration progressive between the fences.

In this way the space between the fences and the step over each of the 10 fences is controlled and limited. Control can be done with an ideomotoric program practiced during training, as memory and motor retention results in automated execution.

The stato-dynamic balance (or vestibular)

He informs us about body accelerations, especially head positions in relation to C.G.C. of the body.

The kinesthetic analyzer through which we get the information about the degree of muscle tension has the possibility to adjust it. It lies at the basis of the driving sensations of all body segments, and its operation is determinant in the technical execution of the proprioceptive training of the fencing test.

The above mentioned assumptions about the role of coordinating skills and analyzers on motor capacities can lead to an optimal technical execution approach in the 110 m fence test because repetitive training creates the memory and motor retention that stimulate the progressive acceleration of fence running.

The ability to combine and to engage the movements also includes segmental coordination, in particular the track-to-trunk coordination, specific to athletics. Important for combining the technical sequences in the present case of the studied fence runner, it allows to establish the connections between the driving skills of crossing the fences.

In the face of the above, or made videos of a junior champion runner at 110m.gd. We specify that an individual feature of the athlete (CR) is its size of 1.96m, which requires a very important motor control for the contact and impulse foot, a correct attack with an optimal angle between the chest and the thigh of the attack foot with a passage as high as possible, the height of the CGM must be appropriate to the plane of the fence and to the runway level.

Video recordings were made in which the following parameters were obtained, as we can see in the following pictures. The first image marked A represents the initial technical execution, the second image marked B, represents the final technical execution after a period of technical training monitored by coach correction and self-control based on the space-temporal, kinesthetic and touch-stimulus proprioceptive stimuli, and (verbal communication of the coach) of the ability to combine and couple the movements through segmental coordination, spatio-temporal orientation and the ability to adapt to the rhythm in relation to space and time. All the corrections have been made in a training period starting in November and finishing with the main national championship competition.

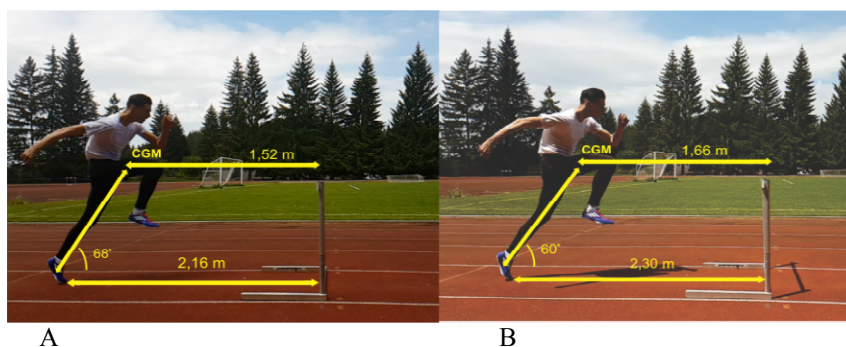


Fig.1. The technical execution A compared to the technical execution B

In the figure above (Fig. 1) we observe that the technical execution A compared to the technical execution B has the following parameters:

- The distance from the impulse point to the fence plane is 2.16m. initially and 2,30m. final distance favoring the shattering.
- the original impulse angle is 68°, compared to 60°
- the CGM distance to the fence plane is 1.52m. initially, compared to 1.66m. final, which shows an improvement in the more pronounced CGM shift.

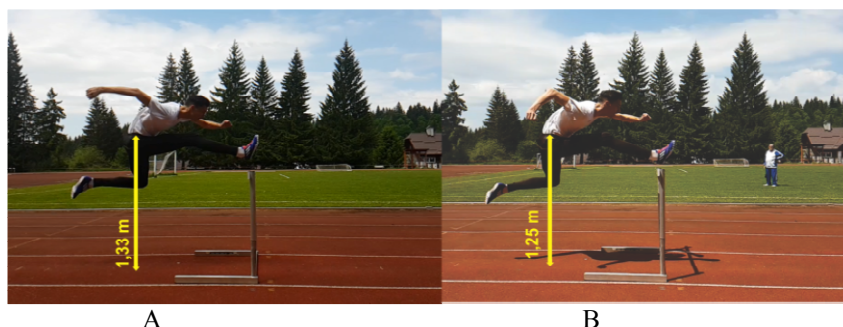


Fig.2. The vertical height of CGM

- the vertical height of CGM is 1.33m, compared to 1, 25m, which we will find that it approaches the model parameters of a world recordman of the sample (Fig. 2).

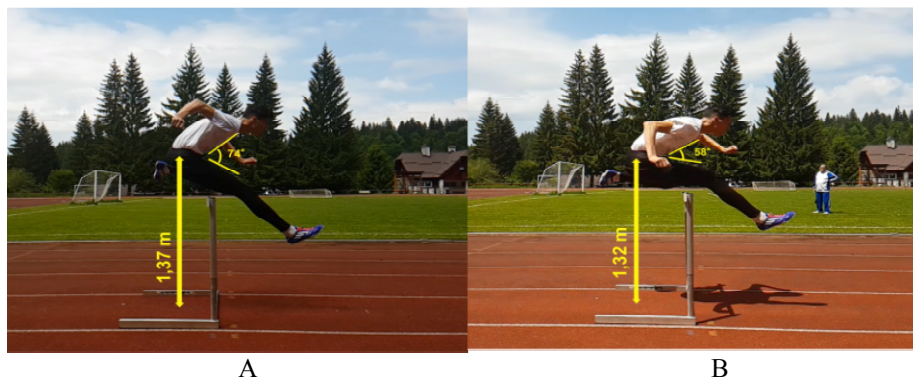


Fig.3. Slope of the CGM

- in Fig. 3, it is found that over the slope of the CGM fence is the initial height of 1.37m. to 1.25m, which indicates that the passage is more severe in the end.

- the athlete corrected his chest-to-fist angle in the overhead fence position from 74° to 58° in the end, which means a correct segmentation, which favors the speed of the passage.



Fig.4. Finger landing

- Finger landing is correct from the point of view of the angle of the landing leg at a distance of 1.62 m. initially, theoretically correct from the point of view of the model versus 1.43m. final, which denotes optimization in terms of speed and time gain.

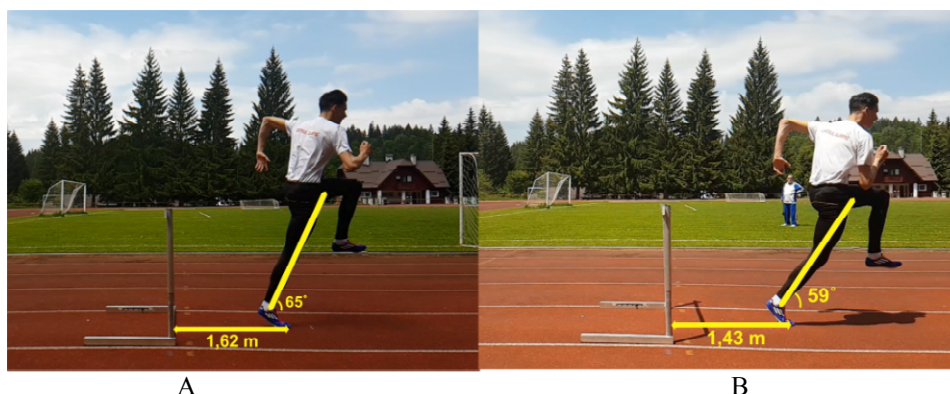


Fig.5. The starting angle in step 2

- in Fig.5, we find that due to the more efficient landing, the starting angle in step 2 is sharper at 59° in final from the original 65° angle, and a more effective pulse is effected by decreasing the flight time of the steps between fences.

To show that the athlete approached the model parameters, we present the following entry:

Table 1. Kinetic Absolute Model Parameters (Milan Coh, 2010)

Nr.crt.	Parametrii cinematici - 110mg.	Valori
1	Horizontal detachment rate at fence attack	8.70 m/sec
2	Vertical detachment rate at fence attack	1.98 m/sec
3	Raising CGM to the ground	1,29m
4	Maximum lift of CGM above the fence	0,42m
5	Attack angle size	130°
6	Landing angle size	90°
7	Flight time	0,35 sec
8	The horizontal distance from which the attack on the fence triggers	2,24m
9	Horizontal landing distance to the fence	1,65m.

In the training program for the athlete, a program was introduced in November-December twice a week, 20 minutes of special fence exercises with the technical study of control and correction by the coach and athlete self-control with permanent communication through dialogue with the coach.

Starting January, February, the above program was carried out three times a week to automate the correct execution of technical skills based on the improvement of the coordinating capacities and the individualized proprioceptive senses according to the motor executions at a tension level corresponding to the intensity, angular displacement and accelerating bodily segments of intra-muscular coordination determined by the strength and mobility of nerve processes fixed by a large number of correct executions, according to the ability to maintain the body in balance by optimizing the CGM trajectory, with a voluntary muscular relaxation of the athlete.

As a conclusion we note that the individualized self-training training with correction and self-correction, the training can be a condition for fixing the coordination capacities specific to the technical samples.

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