

Methodological alternative for the development of sports skills in horizontal jumps for the 8-9 years old category

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Abstract

Sports initiation has become a fundamental link for the entry of minors into the practice of a modality in any field of sport, however, the dialectical relationship between internal biological factors and external pedagogical factors acquires a special significance, since the development and improvement of motor skills and development of physical abilities are dependent on the maturation processes of the sport. The organization of children who are initiated in sports, are not considered the Athletics Teaching Program that is implemented in Cuba, nor by many coaches in their pedagogical practice, so the objective of this research was to design a methodological alternative for the development of sports skills in horizontal jumps for the 8-9 years old category. in correspondence to the levels of maturation at these ages, for which both theoretical and empirical methods were used. As a general conclusion of the study, it was found that the proposed methodological alternative is viable, and the users felt great satisfaction with it.

Keywords: sports initiation, maturation, physical abilities, motor skills.

1. Introduction

Sport initiation is a stage of enormous importance in the development of the human being, it is the period of life in which the child begins to acquire important habits and skills, which can reach their full development in later stages of life, provided that the conditions of life and education favors it with an adequate organization of the educational process (Torres, Leon, and Hernández, 2022).

According to Rodriguez et al. (2023), sport initiation is considered by many authors as a significant teaching and learning modality to make the practitioner a fuller and more prepared person for life.

It is agreed with Garcia et al. (2022) that sport initiation has become a fundamental link for the entry of minors into the practice of a modality in any field of sport. This is even more important nowadays, as it acts as a determining factor in the general basic training of future sportsmen and women.

For Blazquez (1986), as cited in Guerra (2020), sport initiation should not be understood as the moment when sport practice begins, but as a pedagogical action, which, considering the characteristics of the child or subject who starts and the aims to be achieved, progressively evolves until the mastery of each sport speciality is reached" (p.35).

In the pedagogical process carried out both in Physical Education and in Sports Training, the dialectic relationship between internal biological factors and external pedagogical factors acquires a special significance, since the development and improvement of motor skills and the development of physical capacities, fundamental objectives of this process, depend on the maturation processes of the organism of the children who are initiated in sport.

For all of the above reasons, in athletics training with children, the age, sex and psychomotor maturation of these should not be overlooked when programming each of the tasks for the development of skills in the long jump for the 8-9-year category.

Lopez and Junes (2020), state that the evolution in the development of motor skills confirms the criterion that both these and habits are complementary phenomena, not exclusive and essential to any motor action, from which parallels can be deduced that explain how, as practical exercise, develops under certain conditions. All this supports the fact that at some point the skill can become a habit of a more complex action and vice versa, all of which must be considered when selecting these.

In accordance with the above, the term specific motor skills are assumed to be motor gestures that require a certain knowledge of sport technique, whose basis is in the basic motor skills and which allow preparation for the acquisition of the technique and tactics that will be necessary to carry out the chosen sport practice, according to the capacity of each person.

The current teaching program for basic training in Cuban athletics provides teachers and trainers with methods and means adaptable to any material condition, making its development feasible for teachers working in these areas. This includes the 8-9 category.

Recommendations are proposed that serve as a working tool for better planning, control, and evaluation of the pedagogical process in these age groups. However, it has been possible to verify through the methodological preparations of this sport, reports of visits to training sessions and reports for the improvement of these programs, that many of the exercises for the development of technique in horizontal jumps do not respond to the levels of psychomotor maturation of the athletes in the 8-9 years old male and female categories, especially because these exercises are the same as those used in the 10-12 years old category and even for the 13-14 years old category of initial specialization 13-14 years old, respectively.

Among the authors who have addressed the subject of skill invariants are: (Oviedo and Gonzalez, 2016; Hernandez and Perez, 2016; Arce Molina and Azahares; Fernandez, 2009). There are also other authors who have researched the subject, but all from the perspective of pedagogy, especially cognitive skills, which is a limitation that must be resolved in the field of sports training.

All of the above reveals a lack of methodological orientations for the development of sports skills in horizontal jumps, which correspond to the maturity levels of children aged 8-9 years.

Therefore, the objective of this study was to design a methodological alternative for the development of sports skills in horizontal jumps for the 8-9-year-old category, in accordance with the levels of maturation of these children.

2. Materials and methods

The approach of this study was historical-dialectical-materialist, as it allowed the use of both theoretical and empirical methods, depending on the nature of the object of study.

Among the methods used were

From the theoretical level, induction-deduction, analysis and synthesis and the functional structural systemic method, modelling.

From the empirical level, documentary analysis, survey, interview, user criteria, the IADOV Technique was used for the evaluation of user satisfaction, considering the theoretical postulates of Campistrous and Rizo (2006) cited in Fernández and López (2014), Techniques for biomechanical study, open and participatory techniques, mathematical-statistical, and triangulation.

Population and sample

A population of 35 grassroots coaches working in sport initiation was used, of which 21 were randomly selected, representing 35% of the total, as well as 3 directors of the Technical Commission for Athletics in Villa Clara. We also worked with 5 specialists from the Faculty of Physical Culture and the National Institute of Physical Education and Recreation (INDER) in Villa Clara.

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We also worked with 5 female athletes and 5 male athletes out of a total of 10 in the 8-9 years old category.

3. Results

Synthesis of the results of the diagnosis

The Teaching Programme presents complexes of exercises that are not in accordance with the maturity of children in the 8-9 years old category, in addition, the trainers report that they do not have theoretical-methodological ways to select or adapt the content to develop the motor skills of horizontal jumps in the 8-9 years old category to the maturity of children of those ages.

As it has been observed, there is a need to adapt the complex of exercises for the development of skills for horizontal jumps.

The results of the interview with the directors of athletics in Villa Clara agree with those of the coaches at the grassroots level.

Synthesis of the evaluation of the methodologies contained in the current Teaching Programme for the 8-9-year-old categories.

When assessing the methodologies provided by the current Teaching Programme, it is necessary to clarify that it does not specify for which age group it corresponds, so the coaches assume these methodologies for both age groups (8-9). This is why it is necessary to specify the category, as trainability reflects the degree of adaptation to training loads. It is a dynamic magnitude, which depends on a series of endogenous factors (body constitution, age, etc.) and exogenous factors (nutrition, environmental conditions, etc.).

The methodologies contained in the Teaching Programme do not consider the fact that within the same person there can be variations in the different organic and functional systems. For this reason, when selecting an exercise for the development of skills in horizontal jumps in the 8-9 category, it should be done in such a way that it is a load that is in accordance with the internal and external factors of the athlete and his/her age, so that he/she can achieve the required degree of adaptation (Weineck, 2005).

Nor do these methodologies take into account the sensitive phases, which are understood as the periods of development that are especially favorable for the establishment of certain sport-motor performance factors; these are the stages in which trainability is especially high, which allows motor skills to be developed in correspondence with the level of development of the capacities that the child has achieved to solve the tasks that must be carried out in the teaching-learning process (Weineck, 2005).

In the methodologies provided in the programme there are contents that are not suitable for children's categories as they do not consider the development of the skeleton of children, where the intensive reformation processes of growing bones considerably limit the stress tolerance of the locomotor apparatus (Dietrich et al., 2004).

Infant and juvenile bones have not yet been strengthened to the same extent as those of adults. They are certainly more elastic but less resistant to bending. This leads to special fracture forms, such as so-called green stem fractures (Rost et al., 1989, p. 171), which should be considered when selecting an exercise for these categories.

It is agreed with Harre (1976) that in general technique training at an early age, the priority corresponds to multilateral training, far from a premature specialization as reflected in the methodologies brought by the Teaching Programme, as it is about acquiring a large number of simple isolated techniques or specific motor skills, which can in turn favorably influence the learning process of specific and complex techniques, while increasing the number of applicable training contents.

For 8-12-year-olds, the conscious acquisition of a new technique usually means learning some unfamiliar movements as components of the technique to be learned; these are combined in a specific way with other components of already acquired skills which must be considered in a teaching methodology. It is therefore necessary to select from a complex of exercises those which the athlete can assimilate according to his motor experience and level of maturity.

Example of the biomechanical (kinematic) study of the Long Jump of the athletes under study in the 8-9 category.

The biomechanical study made it possible to evaluate the errors in technique that may be conditioned by the athletes' psychomotor maturation, not corresponding to the tasks and exercises they perform in the development of skills associated with the teaching of the Long Jump take-off. These results reveal the need for a change in the way in which the content for the development of the motor skills of the Long Jump has been determined, as well as a procedure that allows the coaches to select the content according to the development of skills.



Figure 1. Angles of athlete 1.

When assessing the take-off technique of the athlete one by the selected specialists, they agree that the take-off, although the long jump is the most natural of the jumps, is a complex movement as it requires levels of strength, coordination and speed, which children in the 8-9 years category do not possess, so the trainer must be careful when selecting the exercises for teaching them so that they constitute invariant skills and therefore need a procedure to determine them.

Procedure for the determination of motor skill invariants

Definition of the term motor skill invariant, based on Valle's model (2007) to obtain a conception.

Motor skill invariant was defined as the unification of knowledge, skills and varied motor experiences, which stand as invariants of the motor skills of a discipline, whose dynamics support the relationship between what the sports teacher needs to develop and the opportunities of the athlete from his or her diversity to be able to master it. In this way, one of the purposes of the present study was fulfilled.

For all of the above, the technological procedure for determining motor skill invariants was also defined as the way to establish the nuclei or content of the selected motor skill, which corresponds to the experiences and knowledge that the athlete brings, the types of skills that he/she may be able to achieve according to the level of maturation of the organic and functional capacities corresponding to the initiation stage.

Procedure used by Hernandez and Perez, (2019) to determine skill invariants which was contextualized according to the demands of the sporting activity.

First phase: criteria for the determination of the tasks of the teaching methodology or technical progression of the Long Jump for the 8-9 years old category.

Second phase: criteria for the selection of content for the development of horizontal jumping skills.

Third phase: evaluation of the motor skill invariants determined for athletes practicing horizontal jumps in the 8-9 years old category.

Criteria of the specialists on the proposal of the term invariant skills and the procedure to determine them.

Two workshops were held with the specialists of Athletics of the Faculty of Physical Culture.
First workshop:

Objective
To evaluate the proposal of the term invariant motor skills of horizontal jumps.

Synthesis of the workshop report.
Once the proposal of the term motor skill invariants for horizontal jumps was presented to the specialists, they considered that the term is adequate and is defined through the use of scientific methods.

They stated that the term is suggestive, enlightening and meets the expectations of sports coaches, as in its essence it relates knowledge, motor experiences and skills that children who practice horizontal jumps in the 8-9 years old category must have to fulfil the motor task in the teaching of this discipline, whose dynamic supports the relationship between what the sports teacher needs to develop and the opportunities of the athlete from their diversity to be able to master it from their maturation.

Second workshop:
Objective
To evaluate the proposed procedure to determine motor skill invariants for horizontal jumps.
Synthesis of the workshop report.

They also consider that the procedure is adequate and was elaborated through the use of scientific methods.
They state that the methodological procedure proposed to determine the motor skill invariants is useful and pertinent because it allows the trainer working in the basic link to select the content for the development of horizontal jumping skills, according to the maturity levels of the children in the 8-9 years old category, as well as being comprehensible, since the content of its phases is at the level of a university graduate with a degree in Physical Culture.

4. Discussion

Determination of the exercise complex for the development of motor skills.
The exercise complex is based on the analysis of specialized literature and biomechanical studies, based on the variability and invariance of specific motor skills that children can perform according to their level of maturity and without risk of injury.

Table 1. Exercises for the development of motor skills

Tasks	Methods	Means for exercises	Methodological observations
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General concept of the technique of horizontal jumps.	Explanation, demonstration, and practical opportunities.	Flat, soft surface (grass)	It should be borne in mind that language at this age should be simple, not extensive explanations, combined with demonstration or audiovisual aids and practical opportunities will be given if there is no danger of injury.
Passing the ball, on the run or over another small obstacle.	Repetitions. Front. Wave.	Flat, soft surface (grass), small obstacles made of recyclable materials.	Create small obstacles that do not require the child to exert a great deal of effort and avoid falling on the leg with which he or she is taking off.
Alternating jumps on the grass.	Repetitions. Front. Wave.	Flat, soft surface (grass).	Alternate take-offs, i.e., with one leg and the other if you do deep bends when cushioning the landing.
Imitation of the long jump take-off on the spot.	Repetitions. Front. Wave.	Flat, soft surface (grass).	Imitate the movement once the teacher has explained and demonstrated. Receive help or assistance from the teacher.
Take off every three walking steps.	Repetitions. Front. Wave.	Flat, soft surface (grass).	Perform the take-off movement without excessive extension, raising the pendulum as far as the child's strength allows.
Three-step run and take-off in the grass.	Repetitions. Front. Wave.	Flat, soft surface (grass).	Perform the take-off movement without excessive extension, raising the pendulum as far as the child's strength allows. Land on the leg opposite to the take-off and continue walking.
Global leap naturally.	Repetitions. Front. Wave.	Tank with sand or foam rubber mattresses.	To perform the natural long jump movement without technical demands if not at a high level and short impulse run.
Alternating jumps and ending with a fall into the pit or sand tank.	Repetitions. Front. Wave.	Tank with sand or foam rubber mattresses.	Perform alternating jumps in small amplitude ending with a jump to fall on the tank or rubber mats naturally.

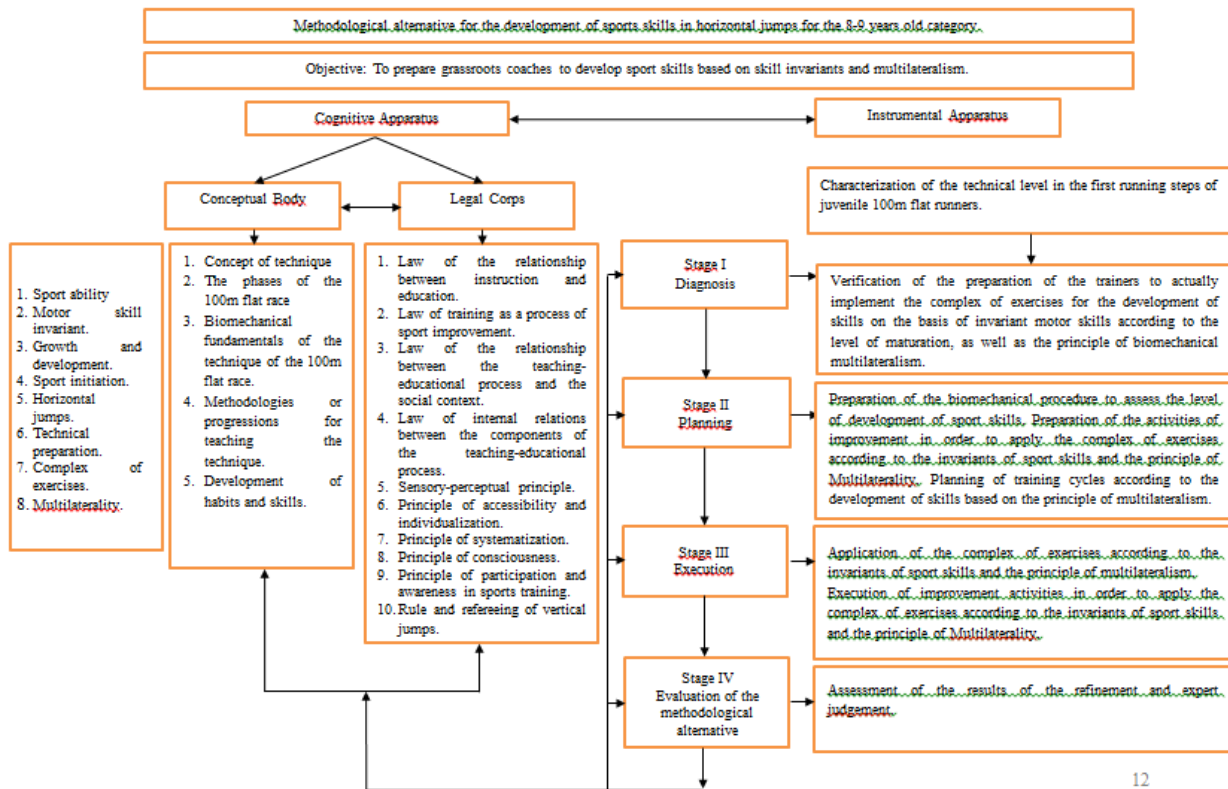


Figure 2 Derived from the previous steps, the following methodological alternative was revealed

It is agreed with Martin (1977) that the initial teaching involves a motor representation, and in the subsequent execution of the gross form of the technique, the priority corresponds to the "assimilation exercise" (p.223), which must go preceded by a brief explanation, a practical demonstration or both as indicators of the objectives, an aspect that is assumed in the preparation of the exercise complex.

It will be considered that the methodologies must address:

- The pretension of multilateralism in the training of children should not prevent a specialization oriented towards performance sport, but rather the former is a necessary condition for the latter.
- Multilateralism in general is an indispensable basis for further specialization. The unity of the general and the special are considered an important regularity in the sense of the thesis of (Martin, 1977), "The claim to harmoniously unify Multilaterality and deep specialization is not a formal or logical contradiction, but the real internal dialectic of the developmental process." (p. 223).
- "Multilaterality is a prerequisite for success, especially in technical and compositional modalities. Specific performances grow organically from a development of motor Multilaterality and need a broad motor foundation" (Lehmann, 1980, p. 75).
- "The broader this foundation is, the more freedom we have in terms of combination possibilities, which is a decisive factor for creativity" (Hotz, 1986, p.100).

We also agree with Rius (2005), when he states that it is not possible to design specific exercises for each age. The natural capacities and learning of each individual differ. The criterion to be followed will be the one that marks the logic. A progression that implies teaching increasingly complex tasks, always starting from the simplest. The simplest is that which everyone is capable of executing without effort in a voluntary and conscious manner, whether it is automated.

Results of the application of the IADOF technique to the selected users.

This technique made it possible to obtain the group satisfaction index (ISG), for which the different levels of satisfaction are expressed on a numerical scale ranging from +1 to -1 as follows:

Escala	Result
+ 1	Maximum satisfaction
0.5	More satisfied than dissatisfied
0	Not defined and contradictory
- 0.5	satisfied
-1	Maximum dissatisfaction

Group satisfaction is calculated by the following formula:

$$\text{"ISG=" "A (+1) + B (+0.5) + C (0) + D (-.5) + E (-1)" /" N"}$$

After applying the ISG formula the following index is reached:

ISG = 0.70 (between 0.5 and 1 indicates satisfaction).

This index indicates that the introductory users are satisfied with the proposed methodological procedure for the development of skill invariants, despite the fact that they make several reflections when answering the open questions, which are considered in their improvement.

5. Conclusions

The current state of the methodological ways that coaches have to define the content to develop the motor skills for horizontal jumps in the 8-9 years old category, reveals that a methodological procedure is needed to determine invariant skills and to assume the principle of multilateralism so that these skills correspond to the characteristics of those ages.

In view of the previous problematic situation, I designed a methodological approach for coaches to develop the motor skills for horizontal jumps in the 8-9 years old category, according to the children's maturity level, with which the users feel great satisfaction.

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Conflict of Interest

There is no conflict of interest between the authors.

Credit authorship contribution statement:

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