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## *Theoretical training condition in youth weightlifters*

### **Abstract**

Given the need for the subjects to actively and consciously participate in the Weightlifting training units, and given the relationship between theoretical preparation and such a pedagogical principle, theoretical deficiencies are detected in the athletes of the Weightlifting team. Weights (juvenile category) of the Comprehensive School of School Sports of Villa Clara, who were preparing for the 2019-2020 macrocycle. The objective of the work was: to propose a set of theoretical contents related to the technical actions of the Olympic clean and jerk that allow the active and conscious participation of youth weightlifters from Villa Clara in the training activity. Observation methods, theoretical tests, experiment and expert criteria were used. The proposed contents were applied experimentally during two mesocycles of special preparation, under conditions and methodological guidelines for active and conscious participation in the different training sessions. Finally, the improvement of knowledge and active and conscious participation is verified through the final theoretical test, evidenced by observation by five member coaches of the Provincial Commission of this sport.

**Keywords:** theoretical preparation, Olympic clean and jerk, youth weightlifters.

### **Introduction**

Despite the conception and generalization of the components that make up the preparation of high performance athletes: physical, technical, tactical, psychological and theoretical preparation; and the interrelation between them, scientific research in the sports field has devoted the least efforts to theoretical aspects, an affirmation that is assumed to correspond to the criteria of scholars on the subject, Sainz (2003), Hernández, Fernández and Pérez (2013). ), who concluded that theoretical preparation has been the least treated component in modernity.

The prominent Cuban professors of Baseball and Fencing Bugallo, Terry and Polo (2016), stated that:

In current times, many coaches do not pay due attention to the role that theoretical preparation plays for the development of their athletes, as well as for the achievement of high performance. By underestimating its importance, they cause a state of misinformation that greatly harms the attitudes that athletes adopt in the face of daily effort and, to a great extent, delays the learning process and motor improvement. (p.18). Domínguez and Llanos, cited by Joseph and Isalgué (2018) highlight its poverty not only in Volleyball, but also in all sports. Criteria of Rivera, Zamora and Dopico (2019), indicate that the theoretical preparation is the least worked component. In addition, López, Salt and González, (2019) state that coaches within the process of developing sports activity do not pay due attention to the role played by theoretical preparation for the progress and results of their athletes.

In the sport of Weightlifting, in its Program for the Comprehensive Preparation of the Athlete (PIPD) for the 2016/2020 cycle, by the authors Cuervo et al, (2016) the theoretical or intellectual preparation is identified as part of the preparation of the athlete aimed at

understanding the activity itself, the phenomena directly related to it and the development of the intellectual faculties necessary to achieve sports results and expresses its relationship with the other components of the preparation. It is expressed in said program that the contents of the theoretical preparation by categories must be in correspondence with the possibilities of assimilation and the educational level that must correspond to those ages.

Of the contents of the theoretical preparation program for weightlifters in the 17-20 year old category (according to the comprehensive preparation program), technical elements such as: elementary biomechanical and physiological bases are specified with more direct relationships to their technical preparation and hygienic aspects. , postures, muscles involved, application of exercises and safety measures in class.

In explorations carried out on the weightlifting team of the youth category (17-20 years) of the Comprehensive School of School Sports (EIDE) of the province of Villa Clara, Cuba, it was detected through observation, theoretical deficiencies in the weightlifters of this category that limits their conscious participation in training, they cannot express the causes that cause their technical errors and present limitations to explain various actions and operations derived from the training activity.

By reviewing the classics of Sports Training Theory and Methodology such as Matveev (1983); Harre (1988) and Ozolin (1989), the great importance they attribute to the theoretical component within sports preparation can be specified, and they base it on the need to assimilate unavoidable knowledge for the selected activity with its association with education and training, aspects that allow assuming from its conception, that the theoretical preparation allows to consciously execute the technique of the exercises and is interrelated with the rest of its components of the preparation.

In other studies the authors Ozolin (1989); Saínez (2010) and Díaz (2021) affirm that theoretical preparation constitutes the fundamental aspect of the practical realization of the principle of consciousness. In this sense, for the training unit to achieve the conscious and leading participation of the athlete, it is necessary that in addition to the conditions for training and the motivations for wanting to participate, the basic knowledge that allows them to participate is possessed.

Bugallo, Terry and Polo, (2016), state that:

Every action that the human being carries out consciously must have a guiding base that serves as a guideline, and it is precisely through theoretical preparation that we achieve that athletes, on the one hand, understand the essence of the type of effort that they are required to appropriate the most efficient form of carrying out the action and on the other, understand the nature of the process of its formation and the phenomena that affect it. (p.112)

When learning or perfecting the techniques of the different exercises is needed in the training session, there must be corresponding elementary knowledge that at least allows the athlete to specify why to develop different actions and operations within the activity. Taking into consideration the antecedents and reflections previously exposed in the theoretical order, as well as the results obtained from the diagnosis carried out, in which the deficiencies in the theoretical preparation of the youth weightlifters of Villa Clara in the execution of the Olympic clean and jerk exercise are evidenced, was set as a goal:

Propose a set of theoretical contents related to the technical actions of the Olympic clean and jerk that allow the active and conscious participation of youth weightlifters from Villa Clara in the training activity.

This research means a great contribution to the sport of Weightlifting by providing the possibility for athletes to achieve greater active and conscious participation in the training activity and to be at the center of the educational process.

## Materials and methods

To complete the proposed objective, the dialectical materialist method is applied as a general method of science and the methods of the theoretical level are used: historical-logical, analytical-synthetic, inductive-deductive analysis and document analysis. From the empirical level, observation, theoretical tests, experiment and expert criteria were used.

Four were intentionally selected from the population of the six weightlifters that make up the Youth category team that were trained at the "Héctor Ruíz" provincial EIDE in Villa Clara, during the 2019-2020 macrocycle. The intention of the sample is justified in that they represent the athletes of immediate perspective within the team.

The second sample corresponded to five trainers, with 20 years of average experience and members of the Provincial Weightlifting Technical Commission. They made the observations, elaborated the theoretical tests and applied the content proposal experimentally.

The third sample corresponded to 22 experts duly selected through the coefficient of expertise based on the source of argumentation and their self-assessment, who evaluated the proposal. For the evaluation of the proposal, an index by aspects and an index by experts were determined.

The observation was a method through which it was possible to verify the behavior of the active and conscious participation of the athletes studied related to the theoretical foundations of the Olympic clean and jerk exercise within the training activity.

The theoretical tests allowed to evaluate the knowledge related to the actions and technical operations of the Olympic clean and jerk exercises within the training unit. Their evaluations are carried out in the following way:

Null: When it is observed in the results that the athletes are not able to answer any of the questions asked

Poor: When it is observed in the results that the athletes answer 2 to 3 of the questions asked

Null-poor: when the results match 1 or 2 of the questions asked

Regular: When the collected results present a coincidence between 5 and 6 of the questions asked

Adequate: when the compiled results show agreement on all questions

Regular- Adequate: when of the questions asked you fail to answer 2 questions

## Results and Discussion

In the observation carried out initially during five units of daily training, it was possible to verify the poor participation of the athletes related to technical actions, they were not able to identify their own technical deficiencies, as well as their causes and consequences. The evaluation of the first theoretical test (Table No. 1) by means of the designed key, allowed verifying the following theoretical deficiencies:

- ✓ Explanation of actions and operations during the execution of the Olympic clean and jerk technique and its special exercises.
- ✓ Only one of the athletes recognizes that for the slide in the clean and jerk from the chest, the displacement of the feet is diagonal and that the push is made straight vertically.
- ✓ None of the four weightlifters recognizes that, during the semiflexion for the serve, the weight (athlete and jimmy) falls on the heels.

**Table No. 1 Initial results of the evaluation of the first theoretical test to the training units.**

subjects	Initially observed training units and their results					
	1	2	3	4	5	summary
1	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Poor</i>	<i>Nil-poor</i>
2	<i>Nil</i>	<i>Nil</i>	<i>Poor</i>	<i>Nil</i>	<i>poor</i>	<i>Nil-poor</i>
3	<i>Nil</i>	<i>Nil</i>	<i>Poor</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil-poor</i>
4	<i>Nil</i>	<i>Poor</i>	<i>Nil</i>	<i>Poor</i>	<i>Nil</i>	<i>Nil-poor</i>
summary	<i>Nula</i>	<i>Nil-poor</i>	<i>Nil-poor</i>	<i>Nil-poor</i>	<i>Nil-poor</i>	<i>Nil-poor</i>

These shortcomings make it impossible for them to interpret the result of the actions and operations carried out in daily training, so their participation cannot be active or conscious, the technical action is executed without having knowledge of the logical trajectory of the jemmy, nor the mistakes made and their possible causes and effects.

In relation to the support of the feet in the initial positions of both parts of the exercise studied, only two weightlifters do not consider that, in the support for the clin, the feet should be placed hip-width apart. However, they answer that for the clean and jerk, from the chest, the feet are placed in relation to the hips.

The most appropriate result will depend on the initial position for each action; when such a reason is not clear, it will not be possible to understand that this guarantees the transmission of the force generated in the support by the kinematic chain until the final impulse of the clin and the serve for the clean and jerk from the chest.

In relation to the identification of the muscles of greater work for the realization of the clin, they show a general ignorance. This can have as consequences the incorrect use of the muscular planes that intervene in the different phases that make up the exercise and, in turn, errors in the technical execution)

No subject identifies the trajectories of the bar in the classic Olympic clean and jerk exercise and the errors that occur. Lacking this knowledge, it is impossible to explain or assess the errors that may occur during the execution of the different actions.

Another content lacking in the subjects was the ordering of the technical phases of the clin, in which none identified them; This situation, in addition to limiting communication between the coach and the athletes, makes it impossible to analyze their execution.

The theoretical content proposal was applied experimentally during two special preparation mesocycles corresponding to the second macrocycle of the general plan for the 2019-2020 academic year. Each mesocycle structured in four microcycles and five daily workouts allocated a general volume for the clean and jerk exercises of 23% and 25% for the mesocycles, respectively.

The first microcycle corresponded to the diagnostic stage, the initial theoretical test and observation were applied to evaluate the participation of the subjects. The eighth microcycle was used to carry out the second theoretical test and final observation.

The theoretical contents related to technical actions of the Olympic Clean and Jerk and applied during the seven microcycles are:

- ✓ Muscular work to perform the Olympic clean and jerk (participation of the different muscular planes in the kinematic chain, priority of leg work).
- ✓ Trajectory of the bar during the clin and clean and jerk from the chest (correct trajectory in correspondence with the technical phases of the clin and jerk from the chest).
- ✓ Postures during the actions, periods and phases of the clin and jerk from the chest
- ✓ Technical phases of the clin and jerk.

- ✓ Biomechanical structures of the Olympic Jerk (dynamic, rhythmic and kinematic structure).
- ✓ Attentional and volitional qualities: concentration of attention, self-control.
- ✓ Motor skills. (strength: types, explosive force. Speed: types, speed of action.
- ✓ Joint mobility: elbows, wrists, shoulders, coxofemoral and ankles. Relationship with the results of classical exercises.
- ✓ Weightlifter biotype: weight-height ratio, hand size, Cormic index, wrist circumference. Relationship with sports results.

For the application of such contents, conditions of active and conscious participation were created in the different training sessions during the actions corresponding to the clean and jerk exercises. Among other guidelines, the following were established:

- ✓ The training units maintained a methodological character for the clean and jerk exercises.
- ✓ They shared in depth the objectives of the training units, with details on the clean and jerk exercises.
- ✓ Explanation of why the clean and jerk exercises selected.
- ✓ The different theoretical contents were inserted into the training activity itself.
- ✓ Explanation and intentional demonstrations with the contents to be developed.
- ✓ Observations between the subjects in the performance of exercises.
- ✓ Creation of hypothetical situations in correspondence with the errors detected during the actions and operations.
- ✓ Independent tasks related to the conceived theoretical contents were oriented.

The survey made to the experts allowed to corroborate the coincidence of criteria in 100% that the designed activities are highly necessary; furthermore, 95% consider that this proposal is very useful and that it has potential for generalization; 98% believe that through it the athletes are prepared so that they can have an active and conscious participation during the training activity.

The criteria expressed by the experts show the social usefulness and the formal quality of the proposed activities, since the aspects evaluated gave the highest value to the methodological unit, in which of the 22 experts they valued it with the maximum points (5 points). There was a high coincidence in the results, supported by Kendall's concordance coefficient (0.88264463), significant, for a level of 0.001, in which the points awarded are between 4 and 5.

After the application of the theoretical contents during seven microcycles, the second theoretical test was applied with the characteristics already described to verify the effect of the theoretical preparation process applied, in addition, the second observation was repeated during the last five training sessions of the last microcycle. to evaluate the participation of the selected subjects.

The evaluation of the second theoretical test (Table No. 2) showed that the knowledge related to the contents studied, made possible an adequate theoretical preparation that allowed the interpretation and assessment of the situations that may arise in the actions and operations of the clean and jerk exercises.

**Table No. 2 Results of the evaluation of the second theoretical test to the training units.**

subjects	Training units observed at the end of the experiment					
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	Summary
<i>1</i>	<i>Regular</i>	adequate	<i>Regular</i>	adequate	adequate	<i>Regular-adequate</i>



2	<i>Regular</i>	adequate	adequate	adequate	adequate	<i>Regular-adequate</i>
3	adequate	adequate	adequate	adequate	adequate	adequate
4	adequate	<i>Regular</i>	adequate	adequate	adequate	<i>Regular-adequate</i>
Summary	<i>Regular-adequado</i>	<i>Regular-adequado</i>	<i>Regular-adequado</i>	<i>Adecuado</i>	<i>Adecuado</i>	<i>Regular-adequate</i>

In the answers to question No.1, the four subjects adequately interpret the situation (Posture: trunk straight, looking straight ahead, bar resting on the shoulders, the weight of the body falls on the metatarsus, the feet more open than the hips ), express positive criteria in the consequences related to the operations during the clean and jerk from the chest.

In this sense, they declare the impossibility of taking advantage of the strength of the legs given the initial position adopted, the tendency to push forward and not vertically. Two of the subjects reported impossibility of transmission of force throughout the kinematic chain, caused by the support with feet more open than normal.

Related to the second situation raised, the four subjects identify the consequences of an exaggerated semi-flexion of the legs with an inclination of the trunk forward for the serve, the arms guide the bar back, slip with the legs in line and with exaggerated displacement of the posterior leg: possible consequences are identified as they relate to:

- ✓ Limitations to take advantage of the forces of the legs.
- ✓ The thrust does not occur vertically.
- ✓ Weight fixation problems.
- ✓ Imbalances during the displacement by the feet in line.
- ✓ The work of the arms is incorrect.
- ✓ The weight of the body does not fall on the heels.

The measures proposed in correspondence with the situations identified by the four subjects correspond to:

- ✓ Adopt a correct starting position with a straight trunk.
- ✓ Slight semi-flexion of the legs at the knee joint to perform the serve.
- ✓ Performing the slide with feet diagonally.
- ✓ Displacement of the legs at similar distances in relation to the support.

For problem No. 3 of the theoretical test, he demonstrated the knowledge of the relationship of the results of squatting from behind with the clean and jerk. All are able to perform the calculation based on their individual results and the identification of technical deficiencies.

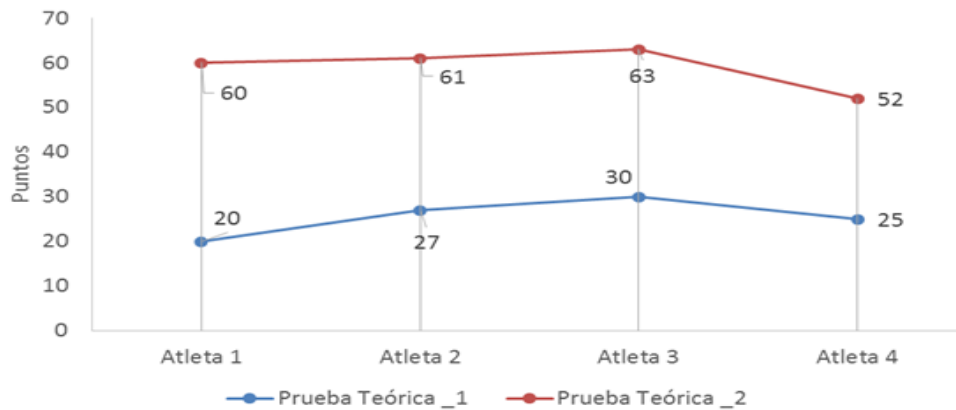
In situation No. 4 of the test, the subjects correctly identify the muscles that predominate during the performance of the halon de clin. It stands out for most of the subjects, the work of the quadriceps and calves.

The interpretations according to situation No. 5 of the theoretical test, although they presented some difficulties, two of the subjects adequately specify the trajectory of the bar during the clin when anticipating the work of the trunk and two trace the trajectory during the slide in a correct way. correct with forward shift.

In situation No.5 itself, regarding the clean and jerk from the chest, three of the subjects identified a correct path of the jimmy when the supposed inclination of the trunk backwards occurs during the semi-flexion for the serve with forward thrust.

The result of the second theoretical test, despite the rigor with which it was applied, showed positive results, which, when compared with the first test, shows that in the four subjects investigated an improvement in their theoretical preparation is achieved,

propitiating in turn, a greater active and conscious participation during the execution of the technique of the Olympic clean and jerk exercises during the training activity.



Graph No 1. Comparison of the results of the theoretical test.

As can be seen in the graph, there was a considerable increase in the knowledge of the athletes and a better theoretical preparation to perform in training and competitions, so that they can obtain good results.

## Conclusions

The results of the initial diagnosis made allow to show the deficiencies in terms of the theoretical knowledge of the youth athletes of the EIDE of Villa Clara related to the technique of the Olympic clean and jerk, which prevent them from active and conscious participation in the training activity.

The theoretical contents applied in correspondence with the shortcomings presented by the youth athletes of the EIDE of Villa Clara, favored raising the theoretical preparation related to the Olympic clean and jerk technique, and greater active and conscious participation of the subjects in the training activity.

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