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## *Manual of exercises with weights for the preparation of the force in players of Basketball of the school category*

### **Abstract**

This research addresses a topic of great relevance related to the planning of supplements and exercises with overload in the process of preparing strength in contemporary training in Basketball, after an analysis it is considered as an objective: to design a manual of exercises with weights. for the preparation of strength in basketball players. The research population is made up of the 4 basketball teachers of the Comprehensive School of School Sports "Héctor Ruiz" in the municipality of Santa Clara, Villa Clara. Several methods are applied for its realization, among them are interviews and surveys as fundamental, observation, triangulation, the criteria of specialists; the results obtained reflect correspondence between the objectives of the program and those of the manual, as well as the assessment of the specialists regarding the structural and functional elements of the proposed manual. As a fundamental result, the conception of the proposal has a great practical utility and represents a methodological contribution to the problem that is addressed, the pedagogical practices of Basketball teachers are improved, the specialized bibliography is enriched and the treatment of force is facilitated through the Exercise with weights.

**Keywords:** Basketball, training, exercise, weights.

### **Introduction**

Basketball has always been characterized as a sport open to innovations that improve it as a game, as a sport and as a show (Sáenz, Ortega and Pons, 2017). It is one of the most popular sports in the world, therefore, it is inserted in the sports culture of many countries. It is considered a complex sport, due to a wide variety of actions that occur dynamically and continuously.

To reach a level of performance, it is considered appropriate that Basketball players must be well prepared physically, technically and tactically (Arnal and Galindo, 2020); (From Rose, 2001); (Vázquez and Infante, 2020).

When a game of this sport is observed, it is not difficult to notice that it requires a great development of some capacities (Sánchez, 2016); (Vera, 2016); (Suárez, Pérez and Roque, 2019); (Estrada, Ávila, and Roque, 2019). When an analysis of the physiological requirements is carried out, and its main physical capacities, it is found that it is a discipline that integrates all of these, as well as the different energy systems.

Ochoa (2013) considers that Basketball requires significant anaerobic energy, which is directly related to muscle strength, therefore, a stronger muscle can better respond to challenges without incurring extreme fatigue and without requiring a long period of rest. Recovery. These criteria illustrate how important and necessary it is to address this need.

Currently there are innovative methods that allow the development of functional strength adapted to the need with optimal results, so in this work the needs of the sports discipline are integrated to Basketball, with the benefits of functional training adapted to the specialties of the same. Based on what was observed, the concern of what would be the ideal way to improve the physical abilities of the practitioners of the Basketball discipline is raised.

Regarding the preparation of strength, Román (2005) defines the directions of work for the development of muscular strength in different sports disciplines, in which he states that the development of strength must depend on the characteristics of the sport. In relation to this, it clarifies that the methodology of the development, conservation and recovery of muscular strength in the process of physical preparation must be taken into account.

This same author points out that in the different types of sports, the strength capacity is manifested, either as strength itself, rapid or explosive strength or as resistance to strength, hence the methodology in all the stages of strength preparation performs an important role in the development of the athlete and this should vary depending on the characteristics of the chosen sport.

These are aspects that the authors of the research consider should be kept in mind in any work that is carried out as part of the preparation of strength because it achieves an increase in the scientificity of this preparation process of any Basketball team.

Authors such as Suárez et al. (2019) are of the opinion that strength is a necessary physical condition to master the specific skills of Basketball; point out that there was a theory that the basketball player who practiced exercises with weights, his arms, back and legs would adopt a very tense complexion that would make him lose the skill and coordination required such as: accelerating, throwing, making changes of direction and decelerating. At present, this is no longer discussed because, over time, scientific and medical research has shown the opposite, however, in exchanges with managers and sports teachers in the province of Villa Clara, the analysis of the Comprehensive Program for the Preparation of the Basketball Athlete, from the training plans of the teams, it was found that there are few tools that guide them in the work of exercises with weights linked to sport in an agile, precise way; not only because of the number of exercises to be used, but also because of the type of exercise and its relationship with the characteristics of the sport in favor of the sports result.

These aspects reveal the existence of the following problem: How to contribute to the improvement of work with weights as an essential part of the preparation of strength in Villa Clara Basketball players?

From the above, the objective of the work is: to design a manual of exercises with weights for the preparation of strength in Basketball players.

There could be several ways to solve the problem, but one that the authors consider favorable due to its practical usefulness and the possibilities it allows for updating, is to provide an exercise manual to be used by coaches.

## **Materials and methods**

This section describes the strategy adopted in the design and evaluation of the proposal, where the following aspects are taken into account:

- Research stages
- Methodology adopted
- Information processing
- Characterization of the current state of knowledge and treatment of strength in Basketball players of the school category

## Research stages

The methodology for carrying out the research was in correspondence with the proposed objectives. This methodology was developed in three dialectically interrelated stages, and in which the diagnosis of the current state was the starting point.

First stage: characterization of the current state of knowledge and treatment of strength in basketball players in the province.

Second stage: design of the manual of exercises with weights for the preparation of strength in basketball players of the school category.

Third stage: assessment of the proposal by the criteria of specialists.

## Adopted methodology

Description of the context where the research is carried out:

The study was conducted in the sport Basketball. In the first and second stages, to verify the current state of knowledge and treatment of force in players of this sport in the school category, a population of four teachers was used; as well as for the elaboration of the manual, a population of eight teachers was used.

In the third stage for the evaluation of the proposal, five specialists were selected who met the following requirements, being a graduate in Physical Culture, being a basketball or weights teacher for more than eight years, and having extensive and certified work experience.

Different methods and/or techniques were used to fulfill the research objectives depending on the stages. The instruments and techniques of diagnosis and assessment, as well as the topics of the workshops were conceived from references of research on the subject internationally and in Cuba.

Documentary review: it was used with the objective of knowing the information regarding the demands and methodological orientations of the official documents that temper the preparation of force. The documents were reviewed by applying the content analysis technique proposed by Alfonso (2006), which consists of the global reading of the text, analytical reading and selection of the analysis and interpretation categories. These categories were: conception of force preparation; treatment and attention to the subject and procedures that address.

Written survey: it was applied to the teachers with the objective of specifying the information about the knowledge and treatment of strength preparation. In this sense, questions were elaborated that pointed to the concept of force that is handled, how it works, the main exercises that are used, among others.

Scientific observation: it was used with the objective of perceiving, in the natural setting, the treatment and procedures used to work on strength in the training unit, as the main space in which the fulfillment of the macrocycle planning takes place.

Triangulation: once the analysis of the methods and/or techniques was carried out independently and from different angles, it allowed verifying the data and establishing trends in relation to the preparation of strength in Basketball in the province.

Participatory techniques:

The workshops were aimed at sports teachers. These workshops were the ones that allowed the elaboration of the exercise proposal based on its foundation and presentation structure.

Opinion survey: This was applied to the specialists who did not participate in the workshops, with the intention of knowing their opinion about the possibilities offered by the proposal.

Statistical mathematician: The empirical frequency distribution and its corresponding percentage distributions were used to process the data recorded in the survey.

Information processing

The results of the application of the different research methods and/or techniques used were processed after combining quantitative and qualitative procedures, taking into account the characteristics of the data. Depending on these characteristics, content analysis categories were developed and the empirical frequency distribution was used.

## **Results and Discussion**

### **Characterization of the current state of knowledge and treatment of force in basketball players in the province**

His analysis is projected on two planes:

1. Official projection assumed in relation to the preparation of strength in school Basketball

As part of this plan of analysis, the documentary review was used to obtain the information.

The following documents were reviewed:

- Indications of the president of the National Institute of Sports and Recreation (Inder)
- Comprehensive Athlete Preparation Program
- Training plans
- Control protocols and preparation checks
- Basketball development strategy in Villa Clara.

2. Projections of the main authors of the process (teachers)

In this plane, the written survey was applied to collect the information. For a deeper reflection, the survey was analyzed in two parts: the first part groups the questions that report on strength in general (questions 1, 2, 3, 4, 5, 6, 7) and on exercises with weights (questions 1, 2, 3, 4, 5, 6, 7). questions 8, 9 and 10).

Regarding the first group of questions, 100% of the respondents recognize strength as very important for the Basketball player, this fact is very significant for the purposes of being able to carry out investigative and improvement actions with these teachers. Regarding question two, 100% affirm that they work with strength because they consider it important, but fundamentally in the first stage of preparation.

On the other hand, regarding the answers to question three related to the types of strength that the basketball player must develop, 40% mention explosive strength, 25% resistance to strength, and the rest indicate rapid strength. as essential in the Basketball player and a respondent refers to the strength but from the muscular planes showing that the criteria that is possessed about the strength that the Basketball player really needs is not unified. About the moment in the training when they work on strength, 100% agree that they work on it at the end of the main part because it is an exhausting job that does not favor carrying out the technical preparation afterwards. The answers to question five about whether they divide the volume (repetitions) for the preparation of strength by muscle planes (arms, trunk and legs) 90% refer that they do allocate volume to the arms and legs, but do not take into account the trunk work, this negative aspect considering the characteristics and demands of the basketball game for players who generally have a size above the average. On the orientations they receive regarding the work that must be carried out as part of the preparation of force; 100% consider that they are not enough, mainly when working with weights. They point out that the exercises that are oriented and mastered are not enough, however they do consider them important for the development of the basketball player's strength preparation.

In the observations of the training units, it was found that exercises with weights are not used for the development of strength. Regarding the quantity, it can be seen that three or

four are used depending on the objective as a way of planning the treatment of the subject. This procedure corroborates the answers given by the coaches in the survey.

Regarding the explanation and demonstration, in 95% of the observations it was appreciated that the work objectives are set, corrected, and the athlete takes part in the process.

Triangulation was applied in order to collect data from different angles, to verify and interpret them, as it is considered a technique that provides credibility and neutrality. This technique was used to verify the opinions expressed by the respondents and the observation, in order to obtain the matching information on the main existing insufficiencies.

- the respondents recognize as very important the strength for the Basketball player
- They affirm that they work with strength because they consider it important, but fundamentally in the first stage of preparation
- In relation to the types of strength that the Basketball player must develop, they mention explosive strength and resistance to strength, and another points out rapid strength as essential in the Basketball player and one respondent refers to strength, but from the muscular planes showing that the criterion that is possessed about the strength that the Basketball player really needs is not completely unified
- About the orientations they receive regarding the work that must be carried out as part of the force preparation; all respondents consider that they are not enough, especially when working with weights

### **Proposal development and structuring process**

For the process of elaborating the manual, the authors took into account a series of particularities that guaranteed its genesis and improvement, in such a way that an alternative solution to the problem of perfecting work with weights as an essential part of the preparation of strength in players was achieved. of basketball.

This elaboration process was supported by workshops in which analyses, syntheses, inductions and generalizations were developed, starting from interactive positions.

Not only the experiences and contributions of the participants contributed to the discovery of the path that the proposal should take, but also the information obtained through the diagnosis of knowledge, methodological procedures and demands of improvement regarding the preparation of force. From this logic, the guided interaction and the collective decision were born the themes for the workshops, which became a program for overcoming content on force preparation.

**The workshop topics are listed below.**

Workshop I: Subject: Theoretical aspects of the preparation of the force.

- Main definitions and concepts.
- Teaching-learning models.
- Classification of strength.

Workshop II: Topic: Methodological aspects of the preparation of the force.

- Methods for the development of muscular strength.
- Exercise with weights. Most common errors and their corrections.
- Main theories for the conception and selection of exercises with weights.
- Conception of the manual of exercises with weights.

Workshop III: Topic: The treatment of force in school basketball

- Professional experiences.

- Principle of individualization.
  - The redesign of the manual of exercises with weights.
  - Main fundamentals of the exercises with weights that will make up the manual
- As can be seen, the organization of the topics of the workshops goes from the theoretical foundations to the approach of the experiences and conceptions of the exercises with weights and the manual itself to face the problem of working with weights as an essential part of the preparation. of strength in basketball players of the school category. Once the workshops were over, a survey of the participants' opinions was carried out. They considered that thanks to the workshops they achieved:
- Delve into the theories and criteria on the preparation of the force.
  - Point out their criteria about the means and methods for the preparation of force.
  - Recognize its main gaps in the pedagogy of teaching and learning.
  - Prepare a manual that responds to the conditions and needs of basketball teams

Structure of the manual

**It is structured as follows:**

- Front page
- Index
- Introduction
- Chapter 1
  - History of strength training
  - benefits of strength training
  - Exercises with weights
  - Work areas in the use of percentages (%)
  - Organizational forms
- Episode 2
  - Characteristics of the development of the types of force
  - Weight training planning for strength development
  - Methodological tasks for the development of strength in Basketball
  - Specific test with overload applied to Basketball
  - Plan of activities for the development of resistance to rapid force in basketball athletes
  - Selection and application of the specific test with overload applied to Basketball athletes
  - Work recommendations based on test results
  - Exercises with weights to work strength according to the morphological characteristics

### **Methodological considerations for strength work with weights.**

**Table No 1. Distribution of repetitions by zones and work ranges**

Work areas	Work time	Force Lying down	Push-off	Squat



<b>1- 65%</b>		<b>12 Rep.</b>	<b>9Rep.</b>	<b>8Rep.</b>
<b>2- 70%</b>	<b>15" seg</b>	<b>10Rep.</b>	<b>8Rep.</b>	<b>7Rep.</b>
<b>3- 75%</b>		<b>8Rep.</b>	<b>7Rep.</b>	<b>6Rep.</b>
<b>4- 80%</b>		<b>6Rep.</b>	<b>6Rep.</b>	<b>5Rep.</b>

### **Evaluation of the proposal**

The opinion poll carried out among specialists offers the following results.

Application level (economy and facilities)

Specialists believe that the manual allows teachers to be guided from theory and the exercises proposed are very useful for Basketball, and the way they are presented allows them to be easily understood and applied, they not only serve to exercise the ability to what they are created, but also allow to delve into the theory of strength preparation, and its determining concepts for performance.

It is recognized by the specialists that some of the exercises are known and widely used by them, but that in most training sessions there may be a lack of guidance on how to put them into practice in correspondence with the objective. In this sense, it is necessary to emphasize that this has actually been happening frequently.

The elaborated exercises imprint a greater scientificity to the process of preparation of the force in the Basketball players, since they are based on fundamentals such as: transfer of the general exercises to the special ones of the sport.

The specialists express that the work acquires a greater finesse, the process is more acute, which is what requires a high-level preparation.

Variants are appreciated that allow individualization to be carried out. This scientific nature and sharpness contributes in a general sense to the enrichment of knowledge, and, consequently, to the improvement of the professional skills of Basketball teachers.

In this context, the specialists are also of the opinion that the exercise proposal manages to meet several expectations:

- It deepens in the preparation of strength and has aspects that favor individualization.
- Reveals the least complex exercise, which is not always achieved in practice, because it is intended more for the teacher than for the students.
- Achieves a transfer of the strength achieved in a general way to the structure of the movement of the technique for which the exercise was intended.
- Offers knowledge of specific procedures to enhance the work of the force

These revelations of the specialists base the criterion of the social utility that the proposal presents.

### **Recommendations for improvement.**

The specialists offered precise recommendations for improvement, such as the need to continue working on ways to evaluate the development achieved.

## **Conclusions**

The preparation of Basketball teachers regarding the work with weights as part of the preparation of strength is insufficient, which can be seen in the existence of difficulties in planning and in the training units and there are no precise guidelines regarding that kind of work

The conception of the proposal for the preparation of Basketball teachers was in accordance with the topics that were demanded, has practical utility, represents a methodological contribution to the problem being addressed, is based on the needs of

teachers and enriches the bibliography. specialized, the treatment of strength is facilitated through exercises with weights.

## References

- Alfonso, M.R. (2006). Challenges of the Physical Education teacher to investigate their pedagogical practices. X International Congress of Physical Education, Sport and Recreation, From October 9 to 13.
- Arnal, D.G., & Galindo, C.P. (2020). Effects of plyometric training in basketball players: literature review.
- DeRose, J.D. (2001). The game as a source of stress in infant-juvenile basketball, *Journal of Sports Sciences*, Portugal.
- Estrada, M.S., Ávila, N.D.P., & Roque, R.J.R. (2019). Exercises to improve general strength in basketball athletes school category. *University&Science*, 8, 790–803.
- Ochoa, G. (2013). Development of muscle power in sports performance for the basketball team in the male category (15-16 years) of the student sports federation of Santa Elena FEDEPESE, province of Santa Elena in 2013. *La Libertad: Peninsula State University of Saint Helena*, 2013.
- Roman, I. (2005). Full force. *Editorial Academia*, (pp. 1–335).
- Saenz-Lopez, P., Ortega, E., & Pons, J. (2017). Basketball challenges of the 21st century. *Journal of Sport Psychology*, 26(3), 7.
- Sanchez, P. (2016). Adaptations to an integrated training of strength, power and proprioception of the lower body on stability and the vertical jump in men's basketball.
- Suárez, M., Pérez, N.D., & Roque, R.J. (2019). Exercises to improve general strength in high school basketball athletes. *University&Science*, 8, 790–803.
- Vazquez, F. F., & Infante, H. A. M. (2020). The absolute force by muscular groups in the first category basketball of Holguín (Original). *Olympia Scientific Journal*, 17, 1222–1231.
- Vera, P. E. (2016). The physical preparation of basketball in sports performance in the intermediate and higher categories of the Hispanic America Educational Unit of the city of Ambato, province of Tungurahua. *Technical University of Ambato. Faculty of Human Sciences and the ....*