Specific tests for agility control in young beach volleyball players

Abstract

Beach volleyball is a sport with high physical demands, where agility becomes a very important ability. The objective of this work was to design specific tests for the control of agility in young beach volleyball players, in correspondence with the context and demands of the game. Studies on this subject are scarce and are aimed primarily at players of the highest level of competition, therefore, it is necessary to deepen this aspect and especially with a view towards sports initiation. As the tendency of the coaches has been to extrapolate Volleyball tests, without taking into account the differences with Beach Volleyball, the research was based on a descriptive methodology where the dynamics of the game were considered. Methods and techniques such as analysis and synthesis, documentary analysis, methodological workshop, brainstorming and assessment by expert criteria were used for this. The result of this process provided specific evidence contextualized to the actions of the players. The relevance of these tests lies in the fact that they allow assessing the level of development of agility in young beach volleyball players, linking the different basic movements with technical-tactical actions of the game.

Keywords: physical tests, agility, beach volleyball, training, initiation.

Introduction

Beach volleyball is a collective net sport that is played on a very unstable surface, demanding high physical demands from its practitioners in explosive actions of short duration. Its protagonists experience great physical efforts in complex technical-tactical actions, which are constantly repeated during the match (McLaren et al., 2018).

It is a game with a lot of variability of actions and, above all, skills in field defense actions, where rapid movements are made with changes in direction and body positions. Such circumstances require coaches to plan training sessions that are increasingly tempered to the demands of the game (Doeven, Brink, Frencken, & Lemmink, 2017); (Palao, García de Alcaraz, Hernández, Valades and Ortega, 2018); (Echeverría, Ortega and Palao, 2020).

This aspect is currently of vital importance, since it improves the physical condition of the players and is essential to successfully resist the demands of the competition (Andrade, et. al., 2020). Training planning in team sports has evolved significantly in terms of forms of control and variety of methods for working on the physical capacities of each sport modality.

As a significant element, it stands out that, in contrast to traditional and reductionist methodologies, a new approach emerges where non-linear pedagogy is appreciated, focused on the analysis of the actions and execution patterns of the players at different levels of competition (Cantos and Moreno , 2019); (Martin and Camacho, 2021); (Haddad, Stylianides, Djaoui, Dellal, and Chamari, 2017).

The different forms of control of physical capacities during preparation can constitute a determining action with a view to guaranteeing the desired performance levels (Alzate, Ayala and Melo, 2017); (Martinez, 2017). In this direction, authors such as Romero and Becali (2014) affirm that the growing competitive demands in the world of sports force scientists in this field to carry out new studies, so that competitors successfully face their competitive projection.

Associated with the above, it is stated that the preparation of beach volleyball players requires constant research in the current context, as a fundamental way to obtain reference values for training. However, studies on physical abilities in Beach Volleyball have been directed fundamentally at the highest competitive level, with little study of the sports initiation stage. Research has focused on conditional capacities such as strength, speed and resistance (Jiménez, 2019) and less coordination has been studied.

As beach volleyball demands high physical complexities due to the characteristics of its game and the environment where it is developed, more attention should be given to the control of complex coordination abilities such as agility. Young, Jones and Montgomery (2001) identify two main areas as the most significant and influential factors in agility: the speed of changes of direction and the perceptual factors that influence decision making, both of which are very present in volleyball actions. beach.

Movement speed and agility are important skills in this sport, since playing on sand influences and makes it difficult for players to act, therefore, the ability to change direction quickly can make the difference between winning or losing a point.

Agility in Beach Volleyball allows players to move quickly and smoothly on the field (Martínez, 2017). This involves quickly and suddenly speeding up, slowing down, or changing direction to respond to disparate game situations. There are factors that influence agility, such as the speed of changes of direction, the technique of movement on the sand, the position adopted by the body at the time of the action and the physical peculiarities of each player (Dawes and Roozen, 2017); (Jiménez, 2019).
Despite this being an important physical ability in the game of Beach Volleyball, there are hardly any studies to control this ability in sports initiation and that are linked to technical-tactical actions.

The works found on agility control in beach volleyball for the sports initiation stage, focus on carrying out tests with resistance limits (Martínez, (2017). To this it can be added that regardless of an action of the player with similarity to the action of the game, there is no direct link with the technical-tactical actions of the game, remaining only in actions that reproduce specific technical gestures of the actions of the players (Portela, Rodríguez and Moreno, 2022).

The limited availability of specific tests for this ability makes coaches extrapolate them from Volleyball, without taking into account the differences between these modalities. Given this existing limitation in the national and international literature, the objective of this work was to design tests for the control of agility in young beach volleyball players, in correspondence with the context and the demands of the game.

Materials and methods

For the development of the research, we worked with a population made up of 16 coaches of the Beach Volleyball pairs participating in the National High Performance Games (JENAR) of this sport in Cuba in 2022. As characteristic elements, they all had work experience for more than 8 years in the category of basic initiation (pioneer, 11-12 years) or school (13-15 years), all Graduates in Physical Culture and ages between 22 and 40 years. In addition, all the provinces of the country were represented and four of them had the status of Master in Sports Training. Similarly, we worked with an intentional sample of 10 experts with special characteristics in order to determine the theoretical validity of the tests.

Based on the foregoing, it was assessed that the use of a sufficiently large number of expert judges is required for a satisfactory validation of the proposal. In this direction, several authors such as Conejero, Prado, Claver, et al., (2018) indicate a minimum of 10. Experts were considered to be people who had the following characteristics: more than 20 years of experience in the field of Physical Culture and Sports, with at least 15 years of experience as a coach and a minimum of five linked to initiation Beach Volleyball. Possess the academic category of Master's in Sports Training or scientific category of Doctor in Physical Culture Sciences and have carried out research related to the Theory and Methodology of Sports Training, specifically in relation to the preparation of tests.

Different methods and techniques were used such as: Analysis and synthesis, documentary analysis to support the evaluation of physical tests in Beach Volleyball, specifically in relation to agility. Such review included scientific articles and specialized texts. Brainstorming was used in the design of the test and in order to determine the aspects that it should contain. Methodological workshops, used in the process of elaboration and theoretical validation of the tests.

The research went through three phases, the first aimed to develop an evaluative analysis of the agility tests carried out by the coaches, who worked with the initiation categories. The needs of the coaches were determined from the methodological point of view, regarding the evaluation of the development of the agility and movement speed of their players. Likewise, a documentary analysis was carried out aimed at analyzing the demands of the game, assessing the current trends in Beach Volleyball training and its characterizing elements.

The second phase had the objective of designing tests that would allow evaluating the levels of agility in initiation beach volleyball players. To this end, three sessions of methodological workshops were held within the framework of the championship with the aforementioned coaches, with the use of brainstorming.

In the first, a specialized conference was held on the development and validation of tests in sports games. This action allowed them to increase their level of knowledge on the subject. In the second joint workshop with the coaches, there was a debate about their needs regarding the control and evaluation of the agility of the players at this level, evaluating the criteria of Zatsiorski (1989) and Morales (1995), regarding the elaboration of tests.

In the third workshop, a brainstorming and discussion was developed on the characteristics that the tests should have to evaluate the level of agility of the players in initiation Beach Volleyball, where the proposal of three tests was finally finalized by consensus. In the third phase of the research, a methodological meeting was held with the experts to assess the designed tests and establish their theoretical validity.

In order to obtain expert assessments and seeking a high level of consensus among them, this was carried out in a group manner, since all the subjects could be brought together in a scientific framework (Escobar and Cuervo, 2008). This action allowed a wide and diverse discussion space, based on the needs of the coaches. In this procedure, the objective of the tests, their description of the exercise, the necessary means and instruments and the standardization criteria were reviewed.

Results and Discussion

In the first phase of the research, the main needs of the training process were identified, which affects coaches who work in the initiation stage, regarding agility control. The interviews carried out with them allowed to verify the lack of theoretical and conceptual mastery on the elaboration of agility tests for Beach Volleyball. It was possible to appreciate that the tests carried out regarding this capacity are extrapolated from Volleyball and without taking into consideration the characteristics of the beach modality.

In the second phase of the research, after analyzing the previous results, several tests were designed to control agility in young beach volleyball players. To this end, two methodological workshop sessions were held with the coaches, considering budgets such as: the tests must link the speed of the different basic movements of Beach Volleyball in the sand, have in turn a link with technical-tactical actions, the logic of the action in game and had to assess the level of development of agility in the players.

As a result of the work sessions with the coaches, three agility tests were obtained, which are shown below and which take into consideration several of Zatsiorski's (1989) postulates.

Test 1.

Test Name: Three (3) Short and Long Side Contacts.

Objective: To evaluate the level of development reached by the players in agility, specifically in lateral movements.

Test description:

Short displacements: A ball or marker is placed in the middle of the court and the other is placed on the lateral band (figure 1a). The player in defense position, stands behind the ball that is in the center of the field. The distance that separates the balls will be 3.5 meters for the pioneer category, and 4 meters for the school category.

Long movements: Two balls are placed on the lateral bands that delimit the width of the court (figure 1b). The player stands behind the ball in the center of the court. In the pioneer category, the distance that will separate the balls will be 7 meters, which is the width of the field, and 8 meters in the school category.

The player in defense position, at the signal (preferably visual) of the coach, starts from the center of the court and will make three contacts as quickly as possible. The time is taken from the signal until the player touches the third ball. The test is carried out twice, in the first one the displacements are started to the left and in the second one it is started to the right. The two times are added and divided by two to finally have the time of completion of the test.

The coach is left with the information on which side each of his players has more difficulties, an important aspect that will give him reference values that he must take into account in the preparation process.

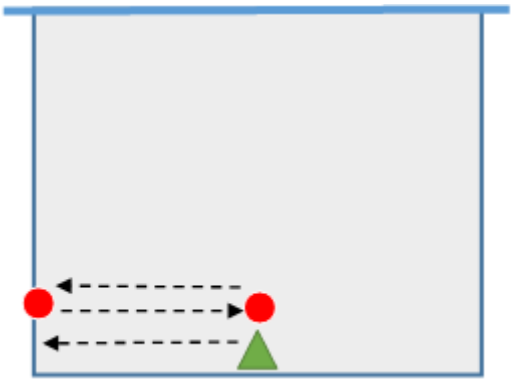

Figure 1a. Short side contacts.

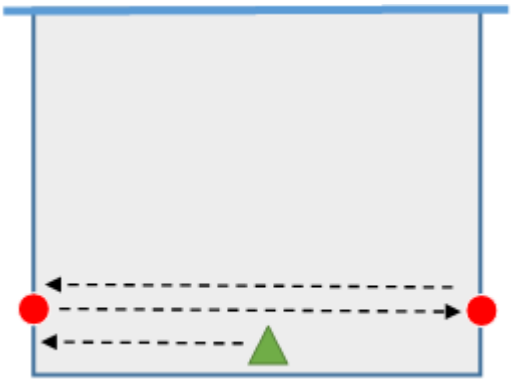

Figure 1b. Long side contacts.

Symbology: Ball. Player player movements

As these movements are fundamental, especially in defense actions, and taking into consideration that everything that is done in the preparation of the players must be in correspondence with their actions in the game, it is recommended to end the player's actions with a Shot on a thrown ball, although this does not count within the time of the test and its complexity will depend on the preparation stage.

Test #2.

Test name: Three (3) zig-zag contacts to the front (short and long).

Objective: To evaluate the level of development reached by the players in agility, specifically in forward movements.

Test description:

Short displacements: The balls or marks are placed as shown in figure 2A. A ball is placed towards the center of the court at a distance of 5.33 meters from the final band. Another will be placed on the lateral band 2.66 meters from the final band and a third will also be placed on the lateral band on the extreme left under the net at the mark that delimits the middle of the field. For the pioneer category, as in the special bases for the competition it is declared that the dimensions of the field will be two courts of 7 x 7 meters, the ball in the center of the court is placed at a distance of 4.66 meters from the final band. Another will be placed on the sideline at 2.33 meters from the final touchline and the third will also be placed on the sideline at the far left under the net.

Long displacements: The balls or marks are placed as shown in figure 2B. A ball will be placed on the left lateral band at a distance of 2.66 meters from the final band of the field. A second ball will be placed on the right lateral band at a distance of 5.33 meters from the final band and a third ball that is also placed on the lateral band on the far left under the net at the halfway mark.

For the pioneer category, as in the special bases for the competition, it is declared that the dimensions of the field will be two courts of 7 x 7 meters, the balls will be placed, one located on the left lateral band at a distance of 2.33 meters from the band end of the land. A second ball will be placed on the right sideline at a distance of 4.66 meters from the final touchline and a third ball which is also placed on the far left sideline under the net at the halfway mark.

The player is placed adopting the defensive position, in front of the final band and in the center of the court (figure 2a and 2b). At the starting signal (preferably visual) you must make the three contacts moving as quickly as possible. The time is taken from the starting signal until the player touches the third ball. The test is carried out twice, first moving from the center of the field to the left and then in the same way, but to the right. The two times are added and divided by two to finally have the time of the test.

Test diagram:

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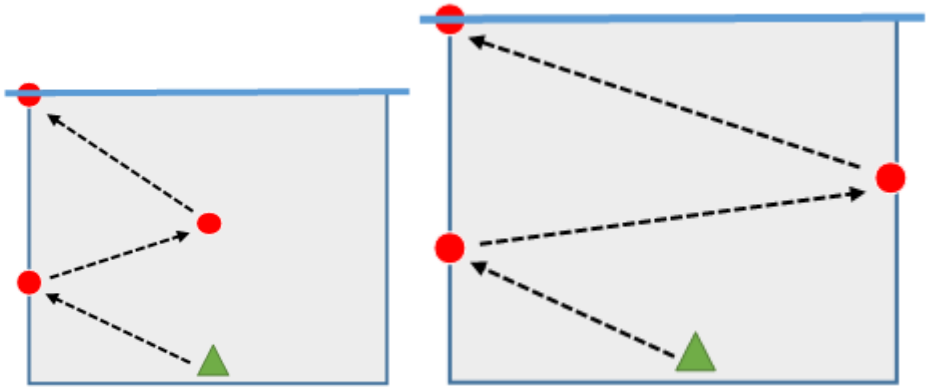

Figure 2a. Short front contacts. Figure 2b. Long front contacts.

Symbology: Ball. Player player movements

The coach has the information on the side that each of his players has the most difficulties, these will constitute reference values for the planning of the preparation. As these displacements end near the net, it is recommended to end the player's actions with a blocking action or shot on a thrown ball, although this no longer counts within the time of the test. In the same way, the degree of complexity for this action will depend on the moment where the preparation stage is carried out.

Test #3.

Test name: Three (3) contacts front and back.

Objective: To evaluate the level of development reached by players in agility, specifically in combined forward and backward movements.

Test description:

The balls or marks are placed in the middle of the field as shown in figure 3. One located 50 centimeters from the final band of the field, another is placed 4 meters and a third under the net in the middle of the field. For the pioneer category, as in the special bases for the competition, it is declared that the dimensions of the field will be two courts of 7 x 7 meters, one will be placed 50 centimeters from the final band of the field, another is placed 3.50 meters and a third equally under the net at half court.

To start the test, the player, adopting the defensive position, stands next to the ball located near the final band of the field (figure 3). At the signal (preferably visual) of the coach, he must move forward as quickly as possible making a movement to touch the ball that

is in the middle of the court, he will move backwards until touching the ball from the starting point and finally move again forward to touch the ball located in the center of the court under the net.

The time is taken from the starting signal until the third ball is touched. The test will be done twice, the two times are added and divided by two to get the time of the test. In this test it is important to insist that the movement backwards is lateral and with the eyes looking straight ahead.

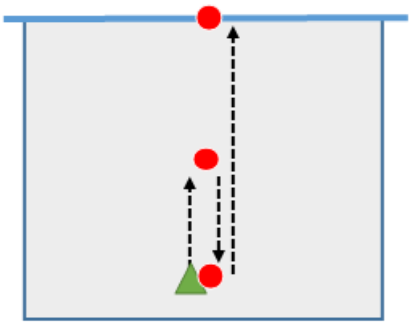

Figure # 3. Front and back contacts.

Symbology: Ball. Player player movements

As these displacements that make up the test end near the net, it is recommended to culminate the player's actions with a blocking execution or shot on a thrown ball, although this does not count within the time of the test. The complexity that will be given to this action will depend on the moment of the preparation stage.

Standardization conditions for carrying out the tests:

The tests will always be carried out after having performed a warm-up. The exercise will never be performed after training. The player must have a normal pulse and respiratory rate before running the test.

Evaluators: At least two trainers will participate, for greater ease in their organization and veracity in the collection of information.

Norm for the evaluation of the tests. As the result of the measurements is obtained in seconds, and the less time it takes, the better it is. An analysis was carried out in table work with the researchers to establish the following evaluation criteria:

- ✓ Very good. The value resulting from subtracting the value of the standard deviation from the mean.
- ✓ Good. values around the mean.

- ✓ Regular. The value resulting from adding the value of the standard deviation to the mean. A rigid value is not given, but it oscillates around that result.
- ✓ Wrong. The result obtained is superior to that qualified as regular.

As a result of the third phase and after having defined the test proposal, a methodological meeting was held in a formal space with the experts, which allowed obtaining the theoretical validity of the tests. To this end, a debate and discussion focused on some fundamental aspects was carried out, through which they had to issue their assessments of the tests.

Considerations were issued on: if the structure is adequate or not, if they allow to control the level of agility development in initiation Beach Volleyball players, if they respond to the characteristics of the internal logic of the game at the initiation level and if the design is in correspondence with current trends in sports training.

The decision-making made by the group of experts was achieved by consensus, after an extensive process of debate and discussion. As a result of the evaluation, it was obtained that 100% of the expert evaluators agreed to affirm that the aforementioned requirements are met in the tests. Highlighting as an element of great value and novelty, the linking of the actions of the players in the tests with technical-tactical actions of the game depending on its logic and the moment of preparation. However, they recommended submitting the tests to a more rigorous validation process, also considering reliability and objectivity assessments (Zatsiorsky, 1989).

The objective of this work was to design specific tests for the control of agility in young beach volleyball players, in correspondence with the context, the speed of displacement and the demands of the internal logic of the game. The research process made it possible to demonstrate the need to temper the preparation of the players in the control of conditional abilities, to the characteristics of the game action, in this case specifically related to agility.

Due to the above, it became clear the need to contextualize the evaluations of this capacity, to the current trends of sports training and to contribute to perfect the contents of the Comprehensive Program for the Preparation of the Athlete (PIPD) of the Cuban Beach Volleyball.

It is necessary to understand the need for a new approach, on the control of this capacity that is so important in the performance of beach volleyball players today (Jiménez, 2019).

It implies for the coaches to go beyond the mere formality of placing balls, conditioning an area or using a stopwatch to evaluate. The need to go towards a more comprehensive conception of physical tests in Beach Volleyball as an essential support of competitive dynamics is evident (Dawes and Roozen, 2017).

The integration of different factors by combining, in each specific agility test, technical-tactical and cognitive aspects of the game action, should have significant results with a view to greater optimization of training time and the preparation of the players. From the above it can be deduced that the tests under these conditions become a dynamic component of the sports preparation process. Undoubtedly, players with a high level of agility are more accurate when it comes to recognizing and taking advantage of dissimilar game situations, which can constitute a competitive advantage over their opponents.

As a significant element of these tests, the similarity in movement patterns, muscle groups and necessary energy systems present in the game action in Beach Volleyball can be mentioned, all of which provide information for significant feedback. It is important to highlight the fact that the proposed tests have very specific characteristics for beach volleyball players in the initiation stage. Its realization contemplates the actions of the player in short and long displacements that are basic in the game.

It will make it easier for coaches to have collected data to compare sports performance, assess their preparation plans and track the progress of each player, from one test to the next and from one season to the next. More reliable information will be available to set precise targets for improving performance. The correct evaluation of the specific demands and of the movements involved in it, can provide relevant information in terms of perfecting the sports preparation process, such as, for example, the regularity of which direction the players are most deficient in collectively and individually.

Conclusions

The evaluative analysis carried out about the agility tests carried out by the coaches who worked with the initiation categories, demonstrated the need for a change in their conception to temper them to the characteristics of the game action with a link to technical actions. -tactics, the lack of evidence for their control during the preparation process, as well as the tendency to extrapolate them from Volleyball.

The tests designed have as a novelty the fact of establishing a link between the different basic displacements of Beach Volleyball in the sand with technical-tactical actions, based on the logic of the action in play and allowing a more precise assessment of the level of development of players in agility.

The experts in its assessment recognize the theoretical validity of the content of the tests, pointing out the need to deepen its validation through elements of greater consistency, for which it is necessary to continue perfecting its validation process in terms of reliability and objectivity.

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