Execution zones and blocking types in Cienfuegos men's youth Volleyball

Abstract

Blocking is one of the most difficult actions in volleyball to master. It is the only element of the game that allows two or three players to play simultaneously. It constitutes the backbone of the defensive system and the focal point for defending the court, and is the fastest way to execute a counterattack. The objective of this research was to determine the impact of blocking by zones of execution and its types among the Cienfuegos province men's youth Volleyball team in the 2024 National Championship. The six games played by this team in the championship were analyzed. Methods and/or techniques such as observation, interviews, measurements, and a methodological workshop were used. The Navelo-Control Automated Performance Control Program, approved by the Cuban Volleyball Federation for use in elite championships, was used to analyze and process the data. The data was collected at the competition site, and the main result was that blockers predominantly used double blocks on the ends of the court. Weakness in zone 3 blocks and limited use of triple blocks in zone 4 were evident, despite the Cuban Volleyball team's tendency to perform many spikes in that zone, which is counterproductive for containing the opposing team's offense. This result contains relevant information as a reference for the training and preparation of this team's players.

Keywords*: Volleyball, blocking, technical-tactical performance.*

Introduction

Volleyball, as a team sport, has its own distinctive characteristics, so much so that the changes introduced to its rules in recent years have structured its dynamics into complex systems and forms of play. As a result, player training has shifted toward greater specialization, especially in offensive actions such as blocking, serving, and spiking. In the specific case of blocking, its importance lies in being a team's first defensive action to neutralize the opponent's attack and score the points that lead to victory. (Echeverría, Ortega, & Palao, 2020)

Currently, in the training and preparation of Volleyball players, it is becoming increasingly necessary to delve into the actions that have the greatest impact on the game to achieve success, such as blocking. There are variables that influence the success of this action; they not only reflect the characteristics of the game, but can also provide information for match management and training planning (Mon et al., 2019).

The preparation of Volleyball players is a process increasingly supported by the study of the characteristics expressed in competitive activity (Mon et al., 2019; da Silva et al., 2023). Therefore, understanding the individual and collective performance indicators of a team is crucial for the work of coaches, whether in training or competition (Drikos et al., 2021; Giatsis et al., 2023).

In today's competitive environment, it is essential for coaches to have accurate information on blocking as a determining factor in the game (Felisatti; Lujan & Quesada, 2022). Having this type of data allows them to develop more efficient technical and tactical preparation of their players, resulting in satisfactory results during the competition.

To achieve these aspirations, it is necessary to have reference values in the category or for the team itself. Winning or losing a match will be determined by the level of precision in designing the players' preparation. This context requires coaches to have in-depth knowledge of the characteristics of competitive activity and of their team in particular (Collet, Nascimento, Folle, Ibáñez, 2018). From the above, it can be deduced that analyzing competitive performance to improve training processes is vital in the context of modern Volleyball.

From the perspective outlined above, regarding the youth teams representing the province of Cienfuegos, to date, it has been found that few studies have been conducted related to the performance of this important element in national championships.

Understanding the areas where blocking is most or least performed in the game and the organization of the players involved could provide information on the defensive demands

of the game and what aspects players must master individually and for the team. (Da Silva, et al., 2023)

Given the above, the objective of this research was to determine the impact of blocking by zones of execution and its types on the youth boys' Volleyball team from the province of Cienfuegos in the 2024 National Championship for this category. All this information can serve as a reference for the training and preparation of this team.

Materials and Methods

The research was based on a descriptive methodology that considered the dynamics of the game and the actions of its participants in their own environment. A descriptive observational design with a field format (Anguera and Hernández, 2013) was used, where each recorded value is unique and without subsequent follow-up (Echeverría, 2015). The population for this research was the six matches played by the Cienfuegos team, participating in the National Junior Men's Volleyball Championship, 1st Division, held in the province of Matanzas in 2024.

The research was conducted in three stages. In the first, a diagnosis was made of the blocking training characteristics of the players on the studied team. An interview was conducted with the two coaches of this team, which consisted of ten open-ended questions aimed at determining aspects related to their level of knowledge about reference values in their category and the areas where blocking actions are most effective. We also sought to understand the importance this element holds for them in a match. Another aspect to explore concerned how their players model their tactical blocking behavior during technical and tactical preparation.

A bibliographic review of scientific research related to blocking was also conducted. The objective of this action was to determine the trends in the studies developed on this element of the Volleyball game. Another important element in this regard was to determine whether previous studies were taken into account, providing a clear vision for directing training tasks. The objective was to determine whether specific guidelines were

provided in pre- or in-match meetings regarding player behavior in the different blocking zones and the criteria used for their implementation.

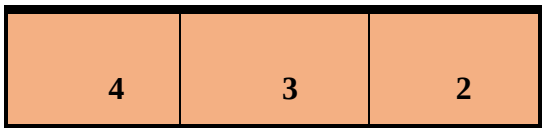
In the second stage, one week before the competition, two Methodological Workshop sessions were held to prepare the observers. The first aimed to prepare them and develop their skills for collecting information through direct observation in the competition setting, using the Automated Performance Monitoring Program called "Navelo Control" by Navelo (2019).

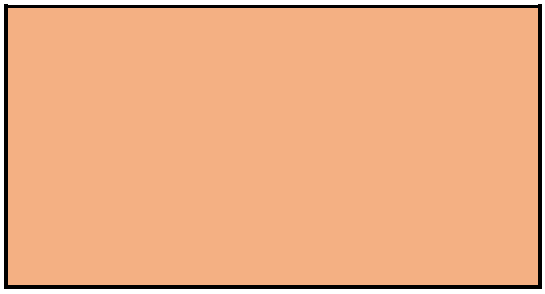
The information is processed using the PLUS-MINUS method and is an expanded version of pre-established codes, allowing immediate information to be provided in performance reports for different actions, both individually and by game complex. It also records the actions that complete the passage of play, that is, those that contribute or subtract points in a team's victory or defeat.

The second workshop aimed to familiarize observers with the characteristics of the facility and to conduct practices in conditions as close to competition as possible. A preparation match of the team under study was recorded, which allowed for familiarization with the dynamics of data collection and processing.

In the third stage, during the development of the study, measurement was used as a method to collect and evaluate data on blocking efficiency. Direct observation was carried out in the game scenario, analyzing a total of six matches played by the team studied, with a total of 22 sets played. The observed and analyzed variables, on which information was generated, were the following.

A. Blocking zone: defined as the zone where the player(s) perform the blocking action. Therefore, as shown in Figure 1, the front zones were established for observation and subsequent analysis.





B. Block Type: Defined by the number of blockers performing the action against the opposing spike. Three types of blocks were defined:

- 1 block: when the block is single.
- 2 block: when the block is double.
- 3 block: when the block is triple.

C. Block Performance: This data is provided by the program through its formula, which expresses the ratio of the number of players against attacks, taking into account adequate performance when the block is effective or ineffective, that is, whether the point is won or lost.

The data analysis method met the following requirements:

- Spontaneity of the players' behavior, as their actions were not intervened at any time.
- The recorded actions were recorded in their natural context, as they were observed during the team's participation in its official competition.
- Use of media or instruments. The "Navelo-Control" Automated Statistical Control System (ATS) was used by a computer. This system was created to control game actions, using its own categories and coding for the variables studied.

The observation was conducted in the multipurpose gymnasium of the "Luis Augusto Turcios Lima" School for School Sports Initiation (SIS) in the province of Matanzas, the competition venue. The observation and data collection were carried out by the researchers, who were positioned on the sidelines with a computer and using the "Navelo-Control" Statistical Control System.

The results of the collection and processing of statistical data obtained in each match were subjected to a validation process between the statistical system used and the points confirmed by the official score sheet. These actions demonstrated the security and accuracy of the information. The program then processed the data in several automatic

information tables, providing performance reports for the different actions individually and by game complex. However, for this study, only data related to the blocking performance of the Cienfuegos province team players were used.

Results and Discussion

The literature review revealed trends in blocking studies, highlighting the importance of having reference values corresponding to the players' age group and gender. Likewise, they consider the modeling of training and the establishment of the contents to be worked on, based on the determining actions of the game, to be of great significance (Drikos, Barzouka, Nikolaidov and Sotiropoulas, 2021; Da Silva, et. al., 2023).

Along the same lines, there is also a prevailing tendency to place great importance on the study of competitive activity in this sport, also demonstrating the use of observational methodology in real-life game situations. (Echeverría, Ortega, & Palao, 2020)

Interviews with the coaches of the studied team revealed that they recognize the importance of blocking as a determining element in volleyball play. However, they admitted they had no data or reference values for the areas with the highest or lowest incidence and the most commonly used type of blocking, either generally or by area. Furthermore, they stated they had not had a similar experience previously.

The determining factor in the blocking assessment was the total number of blocks executed by each blocking zone and the number of blockers involved. Table 1 shows the total number of blocks executed, the zones where they were executed, the different types of blocks, and the percentages they represent in each zone.

Table 1. List of blocks by zone and number of blockers involved in each zone.

Blockade execution zones	**Zone 4**			**Zone 3**			**Zone 2**		
Number of blockers	1/B	2/B	3/B	1/B	2/B	3/B	1/B	2/B	3/B

Total number of blocks carried out by the different zones and their % according to the type of block	37	**60**	7	**70**	19	2	26	**45**	3
	35.6**%**	57.7**%**	6.7**%**	76.9**%**	20.9**%**	2.2**%**	35.2**%**	60.8**%**	4.0**%**
	104			**91**			**74**		
% execution according to blocking zones	**38,6 %**			**33,9 %**			**27,5 %**		
Total blocks	**269**								

Legend: 1/B: one blocker 2/B: two blockers 3/B: three blockers

Regarding the zone where the blocking action was most executed, Zone 4 had the highest percentage of actions. However, the percentages between Zone 4 and Zone 3 are relatively similar. Logically, this is directly related to the zone most used by opponents for their finishing actions. Regarding the number of blockers participating in the execution of the block in each zone, the following was observed:

• In Zone 4, the highest number of blocks was characterized by the participation of two blockers, with values above 50% execution, higher than the other blocker counts, while the participation of three blockers or triple block barely exceeds 5% execution.

• In Zone 3, the largest number of blocks was characterized by the participation of a single blocker, exceeding 90% of the total blocks executed in this zone. In this zone, the minimal execution of triple block actions was evident, and double block actions barely exceeded 20%.

• Zone 2, although it had the fewest blocks executed, presented the same characteristics as Zone 4. Very few triple blocks were executed, and more than 60% of blocks were executed by two players.

Table 2 shows the total number of blocks and the number of blockers involved in the action by type.

Table 2. List of blocks and the number of blockers involved in the action.

Number of players involved in the blocking action	**1/B**	**2/B**	**3/B**
Total blocks	**133**	**124**	**12**

% of blocks by number of blockers	**49,4%**	**46,1%**	**4,5%**
Total number of blocks	**269**		

Legend: 1/B: one blocker 2/B: two blockers 3/B: three blockers

Table 2 shows the total number of blocking actions, with the participation of a single blocker being the most common among this team's players in the competition, although their numbers are very similar to those of two-player blocking actions. This highlights the low level of triple blocking, sometimes because the opportunities are lacking and other times because they don't use it due to poor tactical analysis of the game situation. Therefore, all this information is an important element for coaches to consider when planning their team's preparation and defensive tactical systems.

Regarding the results of the literature review and interviews with coaches, there is a consensus on the need to establish preparation based on the study of competitive activity. Therefore, the relevance of the study is evident and necessary, constituting an important experience for the team's coaches. The demands placed on blockers have increased because the offense has become more explosive and offensive combinations are being played at very fast speeds, coinciding with the results of Hernández (2020).

Consistent with the results of Marques (2019) and Hernández (2020), it is concluded that the work of blockers becomes a permanent necessity to enable the improvement of the process with their methods and content of technical-tactical training. In this context, the blocking results of this team denote the need to seek adaptations to the actions of opposing attackers, taking into consideration the characteristics of the players, whose average height is not very tall.

The above reasons indicate that this team needs to place greater emphasis on the use of double and triple blocks, as the predominant type was single, as also seen in the work of

Portela et al. (2022). The fact that in Zone 4, the highest number of blocks was characterized by the participation of two blockers denotes a team weakness.

The fact that fewer blocks are produced in Zone 2 is considered a direct consequence of the characteristic of Cuban volleyball, where fewer passes and, consequently, fewer spikes are produced in Zone 2. However, much attention is drawn to this team's limited use of triple blocks as a way to reduce the spiker's advantage over the block, especially considering the high incidence of spikes with high passes in Zone 4.

Conclusions

The data provided by this study show the occurrence, frequency, and type of blocking performed by the Cienfuegos youth team in the 2024 national championship. The study of the team's execution zones and blocking types allowed us to characterize their current performance, providing real-world information for decision-making in the training of the team's players. Another very significant element to analyze in the preparation of this team is the fact that, although Zone 4 is where the most shots on high passes are made, as demonstrated by previous studies, the fact that a high number of individual blocking actions are observed in this area of the field constitutes a weakness.

Blocking requires experience and development in players to be successful, so future research could focus on monitoring this study with these players throughout their time in higher competitive categories. This would allow for a better understanding of the development and most influential factors in blocking. Blocking performance increases and the number of errors decreases as the category analyzed increases; therefore, it is important to follow up on this type of research, as there are no previous studies of this category in the province of Cienfuegos.

Acknowledgments

The authors consider it appropriate to express their gratitude to Rafael de Mato Navelo Cabello, Ph.D., creator of the "Navelo-Control" Statistical Control System, and to José Luís Camacho Fernández, M.D., from the "Marta Abreu" Central University of Las Villas, for providing us with material resources and their time to conduct this research.

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