

PODIUM

Journal of Science and Technology in Physical Culture

SCIENTIFIC PUBLICATIONS DEPARTAMENT

Volumen 16
Issue 3

2021

University of Pinar del Río "Hermanos Saíz Montes de Oca"

Director: Fernando Emilio Valladares Fuente

Email: fernando.valladares@upr.edu.cu


Translated from the original in spanish

Original article

Analysis of the competitive performance of school category volleyball players in Havana

Análisis del rendimiento competitivo de las jugadoras de voleibol categoría escolar de La Habana

Análise do rendimento competitivo dos jogadores de voleibol de categoria escolar em Havana

Alfonso Pau de la O^{1*}  <https://orcid.org/0000-0002-4781-0479>

Pedro Manuel Téllez Quezada¹  <https://orcid.org/0000-0003-2728-9820>

María Luisa Cáceres Ponce¹  <https://orcid.org/0000-0003-0193-6233>

¹University of the Science of Physical Culture and Sport, "Manuel Fajardo". Havana, Cuba.

*Corresponding author: alfonsopau62@gmail.com

Received: 24/03/2021.

Approved: 09/14/2021.

How to cite ítem: Pau de la O, A., Téllez Quezada, P., & Cáceres Ponce, M. (2021). Analysis of the competitive performance of school category volleyball players in Havana/Análisis del rendimiento competitivo de las jugadoras de voleibol categoría escolar de La Habana. *PODIUM - Journal of Science and Technology in Physical Culture*, 16(3), 838-847. <https://podium.upr.edu.cu/index.php/podium/article/view/1105>

RESUMEN

La exigencia del deporte de alto rendimiento y los cambios que han venido aconteciendo en este demandan una adecuada preparación de las futuras voleibolistas de las categorías escolares. En una búsqueda documental realizada, se pudo verificar la no existencia de parámetros y valores reales a nivel nacional sobre el comportamiento físico, técnico y táctico de los equipos de voleibol de las categorías escolares de Cuba.

<http://podium.upr.edu.cu/index.php/podium/article/view/1105>



Partiendo de ello, el objetivo del presente trabajo se centra en analizar el rendimiento competitivo de las voleibolistas 13-15 años de La Habana, donde se utilizaron determinados indicadores para evaluar el comportamiento de las jugadoras durante la competencia, entre ellos: por ciento de puntos obtenidos por acciones propias o errores del contrario, así como la cantidad de saltos por funciones de juego, set y partidos. Se utilizaron métodos científicos tales como la observación directa en los partidos para poder evaluar los elementos deseados, encuesta a los entrenadores, la revisión de documentos y los métodos matemáticos para tabular la información que genera demandas importantes para el ajuste en las cargas de entrenamiento que se les aplicarán a los atletas en la próxima temporada. El control de estos parámetros resulta de importancia en la planificación de la preparación de las atletas, permitiendo a los entrenadores desarrollar de una manera eficaz el proceso de dirección del entrenamiento en estas categorías.

Palabras clave: Entrenamiento; Rendimiento deportivo; Voleibol.

ABSTRACT

The demands of high performance sport and the changes that have been taking place in it, demand adequate preparation of future female volleyball players of school categories. In a documentary search it was possible to verify the non-existence of parameters and real values at national level on the physical, technical and tactical behavior of volleyball teams of school categories in Cuba. Based on this, the objective of the present work is focused on analyzing the competitive performance of 13-15-year-old female volleyball players in Havana, where certain indicators were used to evaluate the behavior of the players during the competition, among them: percentage of points obtained by own actions or errors of the opponent, as well as the number of jumps per game, set and match functions. Scientific methods were used such as direct observation to evaluate the desired elements; surveys to coaches; review of documents and mathematical methods to tabulate the information that generates important demands for the adjustment in the training loads that will be applied to the athletes in the next season. The control of these parameters is of importance in the planning of the preparation of the athletes, allowing the coaches to develop in an effective way the process of training management in these categories.

Keywords: Training; Sport performance; Volleyball.

RESUMO

A exigência do desporto de alto rendimento e as mudanças que têm vindo a ocorrer neste desporto exigem uma preparação adequada dos futuros jogadores de voleibol nas categorias escolares. Numa pesquisa documental realizada, foi possível verificar a inexistência de parâmetros e valores reais a nível nacional sobre o comportamento físico, técnico e tático das equipas de voleibol das categorias escolares em Cuba. Com base nisto, o objetivo do presente trabalho centra-se na análise do desempenho competitivo dos jogadores de voleibol de 13-15 anos de idade em Havana, onde certos indicadores foram utilizados para avaliar o comportamento dos jogadores durante a competição, entre eles: percentagem de pontos obtidos por ações próprias ou erros do adversário, bem como o número de saltos por jogo, funções de set e match. Foram utilizados métodos científicos como a observação direta nos jogos para avaliar os elementos desejados, um levantamento dos treinadores, revisão de documentos e métodos matemáticos para tabular a informação que gera importantes exigências para o



ajustamento das cargas de treino que serão aplicadas aos atletas na próxima época. O controlo destes parâmetros é importante no planeamento da preparação dos atletas, permitindo aos treinadores desenvolverem de forma eficaz o processo de gestão do treino nestas categorias.

Palavras-chave: Treino; Desempenho desportivo; Voleibol.

INTRODUCTION

One of the sports that has introduced the most changes in its rules in recent years is Volleyball. The International Federation is engaged in a relentless battle to win the space occupied by the sports of crowds, such as soccer and athletics.

The changes introduced have resulted in a more marketable product, which has transformed volleyball into a more dynamic and interesting sport.

Such reasoning demands from its practitioners a greater development of their physical, technical-tactical, theoretical and psychological preparation to carry out a muscular work with a variable intensity. Hence, a high level of coordination of movements is required, since almost all of them are performed quickly.

Volleyball, mainly in high performance, has been immersed in an accelerated development and demand that requires more and more technical and scientific support. Today, volleyball players face challenges and reach goals that, years ago, seemed utopian. Hence, it is necessary to undergo rigorous training, accompanied by numerous scientific disciplines, if they wish to reach the top, not only with maximum performance, but also with the best personal development. This sport in high competition is characterized by the development of capacities that determine competitive performance (Medina, Sandi and Andux, 2005).

The final performance of a volleyball player depends on many factors, such as size, technical and tactical capacity, temperament and physical performance. Maximum height in a single jump and jump endurance are two very important aspects of a player's performance. A player of medium height can have the same reach as a taller player if he/she jumps higher, Castañeda and García (2020). In the same way, it is important to take into account what Sanz (2018) stated, when he refers that the study of technical-tactical sports analysis is a key factor for sports performance.

These arguments, plus the author's experience as a player and more than 20 years of work as a coach, have made it possible to study the behavior of the sports performance of the 13-15-year-old female team in Havana. Thus, a great concern is revealed about how the competitive performance of the athletes behaves in the competition and what the teams that obtained the best results did.

An empirical study revealed the heterogeneous nature of the preparation when dosing the load, there is little evidence of updated information on the value criteria for working with this age group, in addition, there is a lack of research on the subject for the school category. Consequently, with the above, the first steps are taken in the analysis of the sports performance of female athletes 13-15 years old in Havana, a problem presented by the group of coaches, where the main difficulties would be solved from the field of research.



What has been presented so far stimulates to undertake the present study that aims to analyze the competitive performance of the 13-15 years old female volleyball players of Havana, in the Western Zonal Competition 2019.

MATERIALS AND METHODS

The team under study is made up of ten female athletes from the Basic Sport School (Eide in Spanish) of Havana, between the ages of 13 and 15; of these, three are auxiliary attackers, two are passers, one is a libero, two are center backs and one is an opposing player (Table 1).

Table 1. - Characterization of the 13-15-year-old female team of Havana

No	Size meters	Scope 1 hand	Scope 2 hand	Hand Right	Years experience	Position in the game
1	1.82	2.40	2.40	D	6	Auxiliary
2	1.71	2.35	2.35	D	6	Auxiliary
3	1.80	2.38	2.38	D	5	Principal
4	1.79	2.39	2.39	D	4	Principal
5	1.77	2.35	2.36	I	6	Passer
6	1.77	2.27	2.28	D	5	Passer
7	1.78	2.43	2.43	D	3	Auxiliary
8	1.73	2.30	2.30	D	6	Auxiliary
9	1.68	2.22	2.22	I	4	Passer
10	1.70	2.24	2.24	D	4	Auxiliary
11	1.65	2.20	2.20	D	4	Passer
12	1.67	2.33	2.33	D	5	Passer

Direct observation was applied to the matches played using the statistical system (+, -) used for volleyball, which made it possible to obtain the data for analysis, shown in this study.

RESULTS AND DISCUSSION

When analyzing Table 1, which highlights the personalization of the team under study, based on information from the (Model 0-2Bis FCV, 2019), it can be seen that only athletes 1 and 3 are evaluated as excellent, according to the regulations of this sport in Cuba, considering their age; likewise, player 4, despite having a larger size compared to the rest of the team, only reaches the evaluation of not bad, according to her age; the others are well below the parameters established at the national level. When making a



comparison with the other teams that were presented, it was possible to corroborate that they are among the largest sizes and scope in the country.

The present study is contextualized in the 2019 Western Zone National School Championship, where a total of six teams are presented.

To analyze the percentages of points obtained by own actions or errors of the opponent, the percentages in which points or goals were obtained by one and other teams, by own actions or errors of the opponent, are taken into account. In this order, the serve stands out with a high level of 33.8 % of own actions and 66.1 % of scores obtained by errors of the opponent, an element that is manifested with 30.2 % of executions during the whole competition, resulting acceptable for this category.

In this case, it is important to take into account the quality of the executed service. It is not only to put the ball in play, but to develop a tactical thinking and to provide the proper concentration for a correct execution, in order to be able to obtain the point whenever you have possession of the ball, which should be an objective to overcome at this stage of training (Tabla 2).

Table 2. - Percentage of points obtained by own actions or errors of the opponent

Complexes	Own actions	%	Opponent's % errors	Total	%	Complexes
Serving	80	33,8%	156	66,1	236	30,2%
K - 1	125	36,5	217	63.4	342	43,7%
K - 2	55	55%	45	45	100	12,8%
K - 3	46	44.6	57	55.3	103	13,1%
Total	306	39,1	475	60,8%	781	

The best result is shown in the K-2 with 55 % of points obtained by the team itself and 45 % by the opposing team, which is the most significant effect with 13.1 % of the total number of moments where the goal is decided.

It is important to highlight that 39.1 % of the points obtained are due to the teams' own actions and 60.8% are the result of errors by the opposing team, showing the tactical level of these athletes at this stage of sports training.

The number of jumps executed per set and games was also evaluated (Table 3).



Table 3. - Number of jumps per set and game during the championship

Teams	Number of jumps					
	Set-1	Set-2	Set-3	Set-4	Set-5	Game
Havana vs Island	23	18	20	-	-	61
Havana vs Artemisa	53	27	34	41	12	167
Havana vs Pinar del Río	36	34	36	-	-	106
Havana vs Cienfuegos	38	31	28	-	-	97
Havana vs Artemisa	34	32	44	-	-	110
Havana vs Villa Clara	30	27	29	-	-	86
Total	214	169	191	41	12	627
Average	35,6	28,1	31,8	6,8	2	17,41

Considering the number of jumps made by the players in each set and in each match and throughout the competition, the average per athlete was 17.41, an aspect that should be taken into account by the coaches when dosing the number of jumps, both for the spike and for the block. [Esper \(2003\)](#) suggests the need to know the number and types of jumps made by volleyball players during a match.

Volleyball has been influenced by numerous studies aimed at the evaluation of athletes in their jumping capacity, for diagnostic purposes, training planning and to verify the effectiveness of training methods aimed at improving jumping capacity, according to [Reyes and Portuondo \(2012\)](#). This research considers the attention to all the components of the preparation as a whole.

It is agreed with [Castañeda and García \(2020\)](#) when they point out that different levels of competition can lead to different physical demands on athletes (Table 4).



Table 4. - Record of the number of jumps per athlete during the championship

Teams	Number of jumps per player									
	4	10	6	8	5	7	17	9	3	16
Havana vs La Isla de la Juventud	15	14	10	7	4	3	3	3	1	1
Havana vs Artemisa	44	33	24	20	21	7	18	-	-	-
Havana vs Pinar del Río	31	21	20	12	7	4	8	1	2	-
Havana vs Cienfuegos	21	24	10	12	4	4	12	2	3	5
Havana vs Artemisa	21	26	21	8	12	4	12	2	3	5
Havana vs Villa Clara	16	16	18	8	6	8	5	3	3	3
Total	148	134	103	67	54	30	61	9	12	9
Average	24,6	22,3	17,1	11,1	9	5	10,1	1,5	2	1,5

In this aspect, the relevant results correspond to players 4 and 10 with auxiliary position who made a total of 148 and 134 jumps respectively during the entire competition, averaging between 24.6 and 22.3. These were the players with the highest average.

Meanwhile, the results of the main players are below the jumps of the competition with 103 and 67 jumps respectively and the average number of jumps which was 17.1 and 11.1, this means that the games were developed by the extremes, an aspect to take into account in order to draw competitive strategies in this category.

However, the passers were the ones with the lowest number of jumps with 54 and 30 and the lowest average with 9 and 5, despite the fact that they do not spike and were not controlled for the number of jumps made in the passes.

The set with the highest number of jumps executed corresponds to the 1st set of the match against Artemisa, with 53 jumps, requiring a high tactical technical level, which means that few errors were made by both teams, with a total of 167 jumps, surpassing the average number of jumps per match with 1045.

The lowest number of jumps was executed against the team from the La Isla de la Juventud, with only 61 jumps and the set of 25 points with the least number of jumps corresponds to the second set with only 18 jumps. Such a result means that, in this match, there was not a high level of demands from the opposing players so a large number of errors were made.

In this same order, a survey was applied to 100 % of the coaches who participated in the championship, emphasizing the lack of guidance on the behavior of the competitive parameters, order in the western zonal competition, national to plan the preparation of schoolgirls. Similarly, they state that, in order to face the fundamental competition, they should develop, at least, 20 tops and not only with teams from their region, but from all over the country, which shows that the competitive strategy drawn lacks objectivity to achieve the desired results; they also state that they do not control in the tops and



preparatory competitions the competitive parameters which can help to carry out in a more scientific way the preparation.

It is coincided with arguments found in reviewed works, which review studies related to the analysis of jumps in volleyball teams, among them those of [Esper, A. \(2002a\)](#), [Esper, A. \(2002b\)](#), [\(2003\)](#) and [\(2013\)](#); [Bertorello \(2008\)](#); [Reyes and Portuondo \(2012\)](#) and [Castañeda and García \(2020\)](#), which, although they allude to higher categories or elite teams, do not cease to have significance in development teams.

Something similar occurs with the study of the average number of jumps by game functions (attack and blocking) (Table 5).

Table 5. - Total average jumps by game functions (attack and blocking)

Functions	Attack %	Blocking %	Total Average
Auxiliaries	266 63.3	34 16.5	300 150
Passers	47 11.2	50 24.1	97 48.5
Main	107 25.5	123 59.4	230 115
Total	420 100	207 100	627
Average	105 -	69 -	-

It is worth noting that the number of jumps by game functions shows that the auxiliary players were the most active in the attack, with 266 jumps, which means 63.3 % of effectiveness in the attack. This means that the greatest number of passes were made by the wingers. These attackers only jumped to the block 34 times, which represents 16.5 %.

The main attackers only made 107 jumps in the attack with 25.5 %, however, they were the ones who had the highest number of jumps in the blocking, with 123 or 59.4 %.

The result is not satisfactory since, whenever there is an attack, on the contrary, they must jump to complete the double block or single block as the main function of this type of player in the game, since they are the tallest players and are responsible for defending the center of the net.

On the other hand, the results of the passers are not very significant. Similarly, in an interview with these coaches, 90 % stated that they do not control the competitive performance during training, preparatory competitions and, despite this, they recognize that it is of vital importance to achieve and obtain results to face the preparation of the athletes.

They emphasize that not everyone faces the sports preparation taking as a reference the (Pipd), volleyball athlete preparation program, since it lacks this information, it only orients, from a methodological point of view, how the preparation process should be faced in terms of the contents to be dealt with in each category.



In this order, it is agreed with **Castañeda and García (2020)**, when they state that physical preparation and sports performance are elements that will hardly be dissociated, in this sense, physical capacities support the technical-tactical skills; the development of these skills in players must be increasingly specific, as a response to the nature, structure and modifications of the game regulations.

CONCLUSIONS

By way of conclusion, it should be noted that the bibliography consulted, as well as the documents that govern the preparation of the athlete, do not show parameters for the control of competitive behavior in school categories at the national level, nor do they facilitate the orientation of coaches regarding the dosage of the loads, according to the performance of the athletes in the competition. The instruments applied show that the competitive strategies drawn up by them lack objectivity to achieve the desired results. However, the results of this study considerably facilitate the objective direction of the team's preparation for the next competitive cycle, taking into account the real possibilities of each athlete, according to the position he/she plays and his/her collective performance.

REFERENCES

- Bertorello, A. L. (2008). Cantidad, tipo e intermitencia de los saltos en el voleibol masculino. *Lecturas: Educación física y deportes*, 121(8). <https://dialnet.unirioja.es/servlet/articulo?codigo=5604535>
- Castañeda Duarte, D., & García Hernández, T. R. (2020). Estudio del comportamiento del salto en atletas juveniles de voleibol de playa. *Podium. Revista de Ciencia y Tecnología en la Cultura Física*, 15(3), 484-493. ISSN: 19962-452. <http://podium.upr.edu.cu/index.php/podium/article/view/9533>
- Esper, A. (2002a). Evaluación del salto en equipos de voleibol femenino de primera división de la Argentina en competencia. *Revista digital de Educación Física y Deporte*, 8(53). <https://www.efdeportes.com/efd53/voley.htm>
- Esper, A. (2002b). Influencia de diferentes entradas en calor en la saltabilidad. *Revista digital de Educación Física y Deporte*, 8(50). <https://www.efdeportes.com/efd50/saltab.htm>
- Esper, A. (2003). Cantidad y tipos de saltos que realizan las jugadoras de voleibol en un partido. *Lecturas: Educación física y deportes*, 58, 21-30. https://www.researchgate.net/publication/28060098_Cantidad_y_tipos_de_saltos_que_realizan_las_jugadoras_de_voleibol_en_un_partido
- Esper, A. (2013). Estudio de los saltos que realizan los jugadores de voleibol masculino de un equipo de la Liga Argentina de Clubes. *Revista digital de Educación Física y Deporte*, 17(178). <https://www.efdeportes.com/efd178/los-saltos-que-realizan-los-jugadores-de-voleibol.htm>



- Medina J. E., Sandi M., Andux C. (2005). Evaluación del rendimiento de los voleibolistas mediante minería de datos. *REVISTAS CIENTÍFICAS DE LA CUJAE*. Industrial, 24(2). <https://rii.cujae.edu.cu/index.php/revistaind/article/view/135>
- Reyes Savón, C., & Portuondo Bartelemi, G. (2012). La capacidad de salto en el voleibol. *Revista digital de Educación Física y Deporte*, 17(170). <https://www.efdeportes.com/efd170/la-capacidad-de-salto-en-el-voleibol.htm>
- Sanz, P. (2018). Análisis técnico-táctico de la jugadora Carolina Marín en el campeonato del mundo de Bádminton 2018, en Nankín, China. (Trabajo de Fin de Grado). Universidad de León. <http://hdl.handle.net/10612/109700>

Conflict of interests:

The authors declare not to have any interest conflicts.

Authors' contribution:

Alfonso Pau de la O: Conception of the idea, instrument making, statistic análisis, preparation of tables, graphs and images, database preparation, general advice on the topic addressed, review and final version of the article, article correction, authorship coordinator.

Pedro Manuel Téllez Quezada: Literature search and review, instrument making, instrument application, compilation of information resulting from the instruments applied, preparation of tables, graphs, and images, general advice on the topic addressed, drafting of the original (first version), review and final version of the article, translation of terms or information obtained.

María Luisa Cáceres Ponce: Literature search and review, instrument making, instrument applications, compilation of information resulting from the instruments applied, statistic análisis, preparation of tables, graphs, and images, review and final version of the article, article correction, review of the application of the applied bibliographic standard.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license
Copyright (c) Alfonso Pau de la O, Pedro Manuel Téllez Quezada, María Luisa Cáceres Ponce

