

Translated from the original in spanish

Original article

Analysis of the quality of technical execution of high hand strokes, in school category badminton athletes

Análisis de la calidad de ejecución técnica de los golpes de mano alta, en atletas de bádminton categoría escolar

Análise da qualidade da execução técnica dos golpes de mão alta, na categoria escolar badminton atletas

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Received: June 13th, 2020.

Accepted: September 9th, 2020.

ABSTRACT

The practice of badminton, since its beginning, in the high performance in Pinar del Río province, has managed to keep a systematic work and with results that guarantee the stay of Pinar del Río athletes in the national elite, mainly in the double and mixed modality, however, in the evaluation of the results of the pedagogic-technical tests and evaluations of the pedagogic objectives at national level, are currently poorly evaluated. With the objective of knowing such behavior, a detailed study was made of the particularities of the technical execution of high hand strikes, which turns out to be the technique most affected according to observations made in training sessions and development of competencies. The research was developed in the seven athletes of the school category of the Initial Sport School (Eide in Spanish) "Ormani Arenado Llorch" of Pinar del Río. Through the interview and the observation as scientific methods, it was possible to verify the level of technical execution of the high hand strikes in the Badminton athletes of the school category, detecting deficiencies that attempt with the obtaining of superior competitive results.

Keywords: Technical execution; high hand strokes; Badminton.



RESUMEN

La práctica del bádminton, desde sus inicios, en el alto rendimiento en la provincia Pinar del Río, ha logrado mantener un trabajo sistemático y con resultados que avalan la estancia de atletas pinareños en la élite nacional, fundamentalmente en la modalidad de doble y doble mixto, sin embargo, en la evaluación de los resultados de los *test* pedagógicos-técnicos y evaluaciones de los objetivos pedagógicos a nivel nacional, actualmente están evaluados de Mal. Con el objetivo de conocer tal comportamiento, se realizó un minucioso estudio de las particularidades de la ejecución técnica de los golpes de mano alta, la cual resulta ser la técnica más afectada según observaciones realizadas a sesiones de entrenamientos y desarrollo de competencias. La investigación se desarrolló en los siete atletas de la categoría escolar de la Eide "Ormani Arenado Llorch" de Pinar del Río. A través de la entrevista y la observación como métodos científicos, se pudo constatar el nivel de ejecución técnico de los golpes de mano alta en los atletas de Bádminton categoría escolar, detectándose insuficiencias que atentan con la obtención de resultados competitivos superiores.

Palabras clave: Ejecución técnica; Golpes de mano alta; Bádminton.

INTRODUCTION

The sports training process is understood as a scientific-pedagogical process, which allows the transformation from different dimensions of the athlete's body by applying the training loads. These must be properly planned to comply with the different preparations that an athlete must receive as a whole for his preparation, according to the sport he is practicing.

Throughout history, sport has gone through different variations in its form of expression. Currently, the great changes produced in it have led to the extension of its practice, through different uses and models of sports practice.

Badminton is an opposition racquet sport, played one on one (single, male and female) or two on two (male, female and mixed doubles). Depending on the event in question, the dimensions of the court vary slightly, being 13.40 m. x 6.10 m. for singles and 14.40 m. x 6.94 m. for doubles. Despite the fact that the court dimensions are smaller in the singles trials, the average number of steps per match is higher than in the doubles trials (593.8 vs 314.5) and the speed of movement is higher (Alcock and Cable, 2009).

One of the particularities of this racket sport is that the mobile with which it is played, called the wheel or feather, is formed by a cork and 16 feathers from the left wing of the goose, despite the fact that, in its flight, the wheel suffers a great deceleration after the hit, due to the friction with the air.

When studying badminton as a sport discipline, it is important to take into account the modifications of its working foundations, as well as the technological advances applied in it, which have made the sport one of the references of world sport spectacle. For a high level of play, this sport requires aerobic resistance, strength and speed. It also requires high demands of coordination and skill with the racket.



When assessing the current trends in this sport discipline, [Sanz \(2018\)](#) states that the study of technical-tactical sport analysis is a key factor for sport performance.

The above mentioned allows to emphasize the sport preparation that should be carried out in the study of the art since it is important to know the characteristics of the contemporary sport of badminton, its constant evolution and the demands in its competition to reach the desired results that are carried out by means of the training.

According to [Forteza \(1999\)](#),

"Training helps the athlete to achieve his goals, to improve his sports performance. This is achieved by applying physical stimuli that trigger various alterations in the body. These alterations, together with the subsequent recovery process, adapt the organism to functional levels higher than the initial ones in the body's systems, affected by the stimulus".

In the author's questioning, sports training is perceived as a determining element for badminton players as an angular basis for responses to the high competitive demands of the sport.

Badminton is a sport of intermittent efforts of medium and high intensity, interspersed with periods of pause, which is repeated during an indefinite and variable number of plays ([Cabello and González, 2003](#); [Cabello, Padial, Lees and Rivas, 2004](#)).

Therefore, it requires the innovation of the exercise, taking into account the particularities of the technique and skill with the racket. It seems a simple game for many, however, one must have enough physical capacity to withstand a complete tournament. Therefore, it is a game that has its own characteristics and one of them is the variable character of its actions and the tactical intention that must preside over the performance of each one of the players.

At the start of any play, a serve is made, either forehand or backhand, and is followed by the respective strokes of the player with the racket. In this sport there are different strokes or serves, which will depend on the purpose the player has when using any of them.

It is important to emphasize that a series of technical and tactical actions are required to make a move. Athletes must execute specific skills that allow them, with greater ease, to achieve an effective hit and win the action, which would bring them closer to victory.

In view of the complexity of this sport discipline, it was decided to investigate the situation of the athletes of Pinar del Río that have excellent results at national level in this sport, however, they are evaluated from regular (R) in pedagogic objectives, which propitiates an evaluation of Poor (M in Spanish).

In this sense, and based on observations made during training sessions and the development of the different competitions in which these athletes participate, it was noted that high hand blows were the technique with the greatest negative impact on competitive results.



Therefore, the objective of this research is focused on the analysis of the preparation and technical execution of high hand strikes in badminton athletes, school category, in Pinar del Río province.

According to Solas López, J. (2010), badminton offers a wide variety of basic strokes, which requires a high level of control from the players to execute them effectively. This author classifies these strokes in:

- High hand: when the stroke is executed over the shoulder.
- Medium hand: when the strike is executed between the shoulders and the waist.
- Low hand: when the stroke is below the waist.

The strokes, in badminton, are named for the trajectory the wheel makes as it passes through space.

The improvement of the process of technical-tactical preparation must be a fundamental premise for sports teachers at all levels, closely linked to the plans and programs that are implemented, imposed by the constant development of science and technology in their search for more effective ways and methods to achieve competitive results based on the educational action they perform. Reality shows the need to establish a structural reorganization of the technical and tactical activity, in order to give an operational solution to the particular and general problems under playing conditions.

MATERIAL AND METHODS

The research was framed in the badminton athletes of the school category of the School of School Sports Initiation (Eide), in the province of Pinar del Rio, considering as population the seven athletes, three female and four male that integrate this team, with an average age of 13.8 years.

In turn, the two teachers responsible for this activity at Eide were considered a source of information, and were interviewed to find out how the teaching process is carried out for the pedagogical activity they face.

Methodology

The observation was made of six training sessions, randomly selected, taking into account the forms most used in the technical-tactical preparation of the school athletes at Eide, in the different stages of preparation (general, special and competitive), as well as the established indicators that lie in:

- If the results of the diagnosis and the characterization of the athletes are taken into account
- If the techniques being worked on respond to the knowledge and needs of the participants.
- If the experience accumulated by the athletes is used.
- If the relationships of the motor gesture with the solution of the personalized skills, related to badminton in high performance, are worked on.
- If it contributes to the correspondence of the contents of the sport practice with the solution of the problems of the sport training.



- If it contributes to the use of different forms of self-regulation in the process of sports training.
- If it contributes to the response of the sport practice received through the athlete's performance.

All the activities observed correspond to the technical-tactical preparation of the athletes in real game situations and, in their entirety, were confrontation games.

It should be noted that to assess the indicators established for the observation, the author uses quantitative and qualitative values that allow us to know the state of the object of the research.

RESULTS

The observation was made to six training sessions, randomly selected, taking into account the forms most used in the technical-tactical preparation of the school athletes at Eide, as well as the established indicators.

In a badminton match, the athletes can use as many strokes as they need to win the point and thus obtain the victory. The number of strokes in a game depends on the rivalry that the players have when facing each other. In this study, it can be seen in table 1 that they oscillated between 147 and 212 hits, where the most used were the high hand hits, being the most used by its order the clear and the shot, which demonstrates its importance within the game, in the 1349 movements (Table 1).

Table 1. - Result of the observation. Technical strokes used by athletes

Technical strokes	Athlete 1		Athlete 2		Athlete 3		Athlete 4		Athlete 5		Athlete 6		Athlete 7		Total
	Set 1	Set 2	Set 1	Set 2	Set 1	Set2	Set1	Set2	Set1	Set2	Set 1	Set 2	Set1	Set2	
Clear	10	11	17	12	10	11	16	15	11	21	23	20	23	20	220
Drop	4	4	13	9	6	4	14	11	14	15	18	18	18	18	166
Lob	9	12	6	11	10	12	5	12	5	3	17	15	17	15	149
Drop on the net	7	9	9	12	8	11	11	11	11	14	12	13	12	13	153
Spike	14	16	9	8	14	18	12	11	12	14	17	21	17	21	204
Defense	4	4	7	6	7	5	9	7	9	10	13	10	13	10	114
Drive	3	1	1	3	6	2	1	4	1	1	5	0	5	0	33
Kill	4	1	1	1	5	5	2	3	2	4	3	7	3	7	48
total	55	58	63	62	66	68	70	74	65	82	108	104	108	104	1349

It was also possible to estimate the number of unforced errors made by the athletes in high hand strokes, which had a negative impact on the game (Table 2). It is evident that only 14.2 % of the observed perform less than 10 unforced errors per game, increasing the winning hits and allowing them to win the point. Another aspect to consider in the diagnosis is that 57.1 % of the sample is above 20 unforced errors per game, so it should be reflected that badminton games are at 21 points and that difficulty gives some advantage to the opposite, as shown in table 2.



Table 2. - Results of the observation. Behavior of unforced hits and errors

Technical strokes	Athlete 1		Athlete 2		Athlete 3		Athlete 4		Athlete 5		Athlete 6		Athlete 7	
	Set 1	Set 2	Set 1	Set 2	Set 1	Set2	Set1	Set2	Set1	Set2	Set 1	Set 2	Set1	Set2
Winning strokes	12	6	2	2	8	6	3	2	5	5	8	10	7	6
Forced errors	0	1	4	0	2	2	5	3	4	6	6	4	7	3
Unforced errors	2	4	10	9	7	7	9	15	9	15	17	14	15	12

Similarly, the percentages where high hand strikes have been used in the different observed training sections are shown (Table 3). It was patented that a realling lasts between four and six strokes, depending on the rivalry of the athletes, where, from them, two to five are high hand strokes such as: clear, drop or spike, which varies between 59.7 % minimum value and 81.6 % maximum utility value of these strokes in the match, according to the characteristics of the athlete and the game system used. They are evidenced as unforced errors between 10.1 % minimum and 30.3 % maximum, which shows the main difficulties that exist and their involvement in the game as they are offensive and precision strokes.

Table 3. - Results of the observation. Use of high hand strokes

Athlete	Clear %	Drop %	Spike %	Ralling	% of the strokes during the Ralling	% general of the usefulness of the strokes	% of unforced strokes
1	0,96	0,35	1,32	4,4	2,63	59,7	10,1
2	1,45	1,07	0,83	4,9	3,32	67,7	27,9
3	0,94	0,45	1,44	4,5	2,83	62,9	22,2
4	1,62	1,33	1,19	5,2	4,11	79,0	30,3
5	1,69	1,81	1,63	6,27	5,12	81,6	20,5
6	1,72	1,27	1,40	6,42	4,39	68,4	26,5
7	1,49	1,08	1,20	5,81	3,77	64,8	23,0

The overall results of the application of this instrument are reflected in Table 4, where shortcomings are evident in all the indicators and dimensions established (Table 4).

Table 4. - Observation results by dimensions and indicators

Variable	Dimensions	Criteria	Indicators	MA	A	PA	I
				5	4	3	2
Technical-Tactical Preparation with an emphasis on the strokes of high hand	Gnoseological	1.1.1	4	0	0	8	16
		1.1.2	4	0	0	6	18
		1.1.3	4	0	0	4	20
	Procedural	1.2.1	4	0	0	6	18
		1.2.2	4	0	0	4	20
		1.2.3	4	0	0	12	12
	Behavioral	1.3.1	4	0	0	8	16
		1.3.2	4	0	0	0	24
		1.3.3	4	0	0	4	20
Mean				5,7778		18,2222	
Standard deviation				3,38296		3,38296	



Among the difficulties detected are:

- The most used strokes were precisely those of high hand, however, show difficulty in their execution, solution of the situation presented and effectiveness.
- Poor coordination of legs and arms during the strokes.
- Incorrect strokes of the steering wheel, since it is performed in a descending and delayed way.
- Hitting the steering wheel from the side and with the elbow below the head.
- Inaccurate location of the view.
- Inaccurate time of strokes.

In the interchange with the trainers, it was possible to appreciate that 100 % has difficulty with the term high hand, having necessarily to make reference to the classification of the same.

At the same time, the criteria of the interviewees with respect to the fact that the athletes must master the different strokes was very varied, giving it some importance. 100 % of the coaches stated that strokes are part of the content of daily training. It is clear that coaches are aware of the importance of hitting and the behavior of hitting in games to facilitate victory during the match.

However, there is a diversity of criteria about how much time should be dedicated, in training, to the development of badminton strokes, since some spend more time on them than others; this depends on the skills of the athletes, however, they agreed on the possible methods and procedures they used to work on the different stroking techniques. Similarly, only 65 % of the sample considered that the offensive strokes are learned to be executed faster by the athletes, since the high hand strokes are the most difficult since they depend on several factors such as perfect coordination of legs and arms, speed, power, to name a few.

Something similar occurs in terms of the control they use to measure the behavior of the hits. The 100 % of the coaches proposed the skill test, which is oriented by the athlete's preparation program. So that the coaches could reflect about the fact that their athletes have adequate skills to perform the different strokes and the behavior in the matches, coinciding 100 % in that there were great difficulties, mainly in the high hand strokes, since their disciples in those moments lost the matches because of the amount of flyers that failed in an offensive way.

Another particular is the use of procedures or methods for the development of technique in badminton players; 100 % refers to the methodological structure of training and the methodological orientations that govern sports training in order to raise the level of training. Therefore, 100 % of the interviewees are in favor, consider feasible and necessary the use of a methodology for the development of the technique of high hand hits in badminton, because this would allow to organize and to perfect the work with the techniques, considering that changes should be produced within the conception of the planning of the training directed to such an effect.

The above mentioned reaffirms that the process of preparation that is carried out is decontextualized, assistive and not very projective.



DISCUSSION

The teaching of sports technique and its improvement is an important part of the preparation of the sportsman or woman. It is significant in all sports that the teaching is done following a methodology built on general bases: the creation of representations on the studied technique, the practical domain of the appropriate actions and movements, the valuation of the performed, the determination of the errors and their elimination.

The basic skills of badminton can be divided into four: grips and serve, direct overhead strokes, overhead backhand strokes, and underarm strokes. There are other strokes that could be included, but with these it is possible to play, of course, if one knows how to execute these basic skills, however, when addressing this study in real playing situations, clear plays an important defensive role in the game; hence (Grice T. 2008) I value it for its high and deep trajectory. As in the case of offensive clear, they direct the midfielder back, high and away, which means a difficult return for the opponent and if that athlete's skill is not good, it will guarantee a direct point (Rizal, A. 2014).

In this same order, the spike or smash in a game is an important element to support an athlete's achievement; it can be deadly since it is the offensive hit par excellence.

A drop in a badminton game is an important element to support the achievement of an athlete because it can define a point; in this case, the hits are towards the net with a dummy, which makes it difficult for the opponent to arrive by surprise and, if this skill is mastered correctly, then the return of the wheel will be relatively easy for the opponent (Rizal, A., 2014).

The demands of modern badminton involve the mastery of a very fast and aggressive offensive game, which not only requires excellent physical condition and a high level of general coordination, but also specific coordination in motor skills Poliszczuk, T. and Mosakowska, M. (2009).

The essence of the game of badminton is a stroke, the activity of hitting a flyer with a racket. According to (Arisbowo, 2008) the technique of strokes in the game of badminton is manifested as follows: (1) Lob (2) Drop, (3) Smash, (4) Drive, (5) defense, (6) clear, etc.

According to Sanz (2018), you have to reach a high technical level in order to be tactically good. The technical richness allows to be able to make different strokes and with it to have a higher level of game. The technique implies to have control and security in the strokes to be able to be precise and to take advantage of it before important moments within a match and in Badminton it is based on the existence of the different strokes that there are in this sport.

For the optimal achievement in badminton, the athlete must have a correct coordination of the movement. Hence the use of the continuous method. Coordination in high hand strokes is the basis for achieving badminton skills, including Drop (Ridho Faiz, A. 2015).



The study made it possible to define the main technical-tactical deficiencies of the Badminton school athletes of Pinar del Río, which lie in the high hand strokes. Hence, the unfavorable results in the expertise of the pedagogic objectives that are valued in the national school championship and whose result has a direct influence on the evaluation of these tests in the event and against the good competitive results historically achieved by the Pinar del Rio territory in this sport discipline.

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Conflict of interests:

The authors declare not to have any interest conflicts.

Authors' contribution:

The authors have participated in the writing of the work and analysis of the documents.



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