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The teaching-learning process of batting in the Sports School

El proceso de enseñanza-aprendizaje del bateo en la Escuela Deportiva

O processo de ensino-aprendizagem de bater na Escola Desportiva

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ABSTRACT

For researchers and teachers, this new context of development of physical activity and sports training requires special attention in order to improve the teaching-learning process of Veracruz schoolchildren. In Mexico, and in particular, in Xalapa, Veracruz, the growing and excessive sedentary lifestyle of the school population is a serious concern for public health and sports institutions that leads to low cognitive development and poor development of motor skills, which affects the quality of life of schoolchildren, sports practice with a very focused reference to the practice of baseball, in the Enrique Conrado Rébsamen Morning Sports School are considered two of the fundamental and most preferred pillars in schoolchildren. Batting is considered one of the most complex and important basic fundamentals during the teaching-learning process. Hence, the objective is to propose exercises aimed at improving the batting action to the fifth grade students of the Xalapa Veracruz Sports School. From the theoretical level analytical-synthetic and historical-logical methods were used; and from the empirical level there were used the document review, interview, survey and scientific observation. The study becomes a tool for sports practice and improvement of the teaching-learning process, and the improvement of coaches.

Keywords: Teaching-learning process; Sport practice; Batting.

RESUMEN

Para los investigadores y docentes, este nuevo contexto de desarrollo de actividad física y entrenamiento deportivo, exige de especial atención con vistas a perfeccionar el proceso de enseñanza-aprendizaje de los escolares veracruzanos. En México, y en particular, en Xalapa, Veracruz el creciente y excesivo sedentarismo de la población escolar constituye un serio motivo de preocupación para las instituciones de la salud pública y deportiva que acarrea el bajo desarrollo cognoscitivo y el deficiente desarrollo de las habilidades motrices, lo cual afecta la calidad de vida de los escolares, la práctica deportiva con una referencia muy dirigida a la práctica del béisbol, en la escuela Deportiva Matutina Enrique Conrado Rébsamen son considerados dos de los pilares fundamentales y más preferidas en los escolares. El objetivo de la investigación consistió en proponer ejercicios encaminados al mejoramiento de la acción de bateo a los alumnos de quinto grado de la Escuela Deportiva Xalapa Veracruz El bateo es considerado uno de los fundamentos básicos más complejos e importante durante el proceso de enseñanza-aprendizaje, de ahí que el objetivo es proponer ejercicios encaminados al mejoramiento de la acción de bateo a los alumnos de quinto grado de la Escuela Deportiva Xalapa Veracruz. Se utilizaron métodos teóricos como, el analítico-sintético y el histórico-lógico, mientras que del nivel empírico se utilizaron la revisión de documentos, entrevista, encuesta y observación científica. El estudio se convierte en una herramienta para la práctica deportiva y el perfeccionamiento del proceso de enseñanza-aprendizaje, y la superación de los entrenadores.

Palabras clave: Proceso de enseñanza-aprendizaje; Práctica deportiva; Bateo.

RESUMO

Para investigadores e professores, este novo contexto de desenvolvimento da atividade física e da formação desportiva requer uma atenção especial com vista a aperfeiçoar o processo de ensino-aprendizagem das crianças em idade escolar em Veracruz. No México, e em particular, em Xalapa, Veracruz, o crescente e excessivo sedentarismo da população escolar constitui um sério motivo de preocupação para as instituições de saúde pública e desporto que leva a um baixo desenvolvimento cognitivo e ao deficiente desenvolvimento das capacidades motoras, o que afecta a qualidade de vida das crianças em idade escolar, a prática de desportos com uma referência muito dirigida à prática do beisebol, na Escola de Desportos Matinais Enrique Conrado Rébsamen são considerados dois dos pilares fundamentais e mais preferidos das crianças em idade escolar. O objectivo da investigação consistiu em propor exercícios destinados a melhorar a ação de rebatimento aos alunos do quinto ano da Escola Desportiva Xalapa Veracruz é considerado um dos fundamentos básicos mais complexos e importantes durante o processo de ensino-aprendizagem, daí o objectivo de propor exercícios destinados a melhorar a ação de rebatimento aos alunos do quinto ano da Escola Desportiva Xalapa Veracruz. Foram utilizados métodos teóricos, analítico-sintéticos, histórico-lógicos e empíricos: revisão documental, entrevista, inquérito e observação científica. O estudo torna-se uma ferramenta para a prática desportiva e a melhoria do processo de ensino-aprendizagem, e o aperfeiçoamento dos treinadores.

Palavras-chave: Processo de ensino-aprendizagem; Prática desportiva; Bater.

INTRODUCTION

For researchers and teachers, this new context of development of physical activity and sports training requires special attention in order to improve the preparation of Veracruz schoolchildren.

In this sense, Moctezuma (2019) expresses that, in the new Mexican school:

> "Physical education and sports will be the cornerstone of education in MEXICO", where it makes it possible to raise the quality of life through physical and sports practice of schoolchildren and teachers. For this level of education, among its main objectives is to achieve, how to complete the education of the student and the comprehensiveness of the basic fundamentals of baseball for efficient development (Martínez de Osaba Picos, *et al.,* 2020).

In Mexico, and particularly in Xalapa, Veracruz, the growing and excessive sedentary lifestyle of the child population that has been taking place, constitutes a serious cause for concern for public and sports health institutions that brings with it low cognitive development and poor development of motor skills, affecting the quality of life of schoolchildren.

Prolonged physical inactivity and no sports practice constitute a risk factor in the child population due to the appearance of various non-communicable diseases.

Health and sports practice with a very focused reference to the practice of baseball, at the Enrique Conrado Rébsamen Morning Sports School are considered two of the fundamental and most preferred pillars among the child population, a strength that family members, leaders and federations of the Secretary of Health, Sports and

Education of Veracruz for the importance of physical activity and sports practice, to promote baseball as one of the sports to be developed at these ages. However, the preparation of teachers has been affected by the scarce documentation, bibliographies and methodological guidelines related to the teaching-learning process of the basic fundamentals of baseball for children.

The issue contributes on the one hand to the area of health outcomes and also to the area of baseball player training from sports initiation, both lines of work established by the Ministry of Health and the Ministry of Education.

It is common to find youth or adult players with serious movement, coordination or balance problems, deficiencies that are difficult to modify due to lack of basic work, as well as the complexity of changing an acquired movement, thus seeing the importance of beginning to perform technical and physical preparation work from the first years of school, to initiate a logical and progressive development of basic motor skills and sports (Martin, 2008). They are periods in which the child shows a special interest in learning about certain areas; stages that could be described as windows of learning, with enthusiasm, joy, and without getting tired; these are opportunities during which a child can learn specific concepts with greater ease and naturalness than at any other time in his life.

How to work all this? Well, in the smallest ones, work should be oriented towards global and general exercises, seeking comprehensive, multilateral and even multi-sport and non-specific training. The fundamental motivating factors are play and fun naturally.

When putting exercises and games into practice, it must be taken into account the phase of motor development in which the child is (Martin, 2008).

The practice of physical activity and sports at an early age is of great importance for good development, both physically and emotionally, socially and cognitively, since through movement and motor games, they will live new experiences and stimulations in all these domains.

Basic Physical Education, sports and specifically baseball, develop skills such as space-time perception, eye-muscle coordination, agility, balance and segmental domain. Children get in touch with new languages such as body language (Barrios, 2016).

At a social level, the child will learn to play different roles in the group, will learn to assume certain responsibilities, as well as to understand established norms, will experience situations with new feelings, understanding, assuming and overcoming the different challenges and his/her possible successes or failures. It can be said that physical activity and baseball help the child to develop psychologically and socially García J. (2012).

The benefits provided at physical and psychomotor levels are also very important, through the movement of the body and its segments, as well as the control and manipulation of objects. It is admitted that it has favorable effects on the growth process because exercise provides stimulating factors on bone and muscle tissue. On the contrary, it has been observed that long periods of inactivity, as in the case of astronauts or people who due to illness or injury have gone through long periods of inactivity, have imbalances in bone composition and atrophies in muscles. The pressures to which the cartilages are subjected due to gravity, body weight and muscular actions allow optimal bone growth (Carmona and González, 2016).

As Matveev (1983) states, the athlete's preparation is based on systematic exercises, which represents, in essence, a pedagogically organized process with the aim of directing the athlete's evolution. While Bompa (1983) specifies that it is a systematic sports activity of long duration, graduated progressively at the individual level, which objective is to shape human, psychological and physiological functions to be able to overcome the most demanding tasks.

The author of the article assumes what was expressed by Martín (2009), when he states that in the preparation of baseball teams, the technical-tactical direction constitutes a concept that needs to resize its content in the preparation and its relationship with the other specific knowledge, therefore it requires the articulation of various concepts from various areas of knowledge, such as pedagogy, sports training theory and psychology, among others, since it allows the player and the coach the production, circulation and reception of the messages of the activity, with the purpose of analyzing the interactions between coach and player, player-player in a situation of communication typical of the contexts of technical-tactical preparation and game.

In the same way, there is coincidene with what Verkhoshansky expressed when he defines that the technical-tactical preparation, both in its form and in its content, must make explicit the character of a psycho-pedagogical process in which instructive and educational actions must be deployed that put in action all the processes that allow cognition, relationships, feelings and will of the players. Such is the importance of technical-tactical preparation that is cited among the main components of the training process, especially decisive for the achievement and improvement of sports mastery. Verkhoshansky expresses, when referring to such components: "technical-tactical preparation, which mainly guarantees the improvement of the athlete's ability to take advantage of his motor potential in the effective resolution of motor tasks" (Verkhoshansky, 1990: 9).

The foregoing specifies the need to deepen the study of the practice of the basic fundamentals of baseball because, in this direction, training is more aimed at promoting the formation of motor habits, skills and sports motor skills, with correct methods, means and procedures involved in the actions that take place.

In the bibliographic review of researches related to cognitive and motor aspects in sports training and in sports games in particular, the study by Ríos and López (2017) stands out, among others, who highlight the importance of practical knowledge and provide methodological theoretical foundations of interest, favorable to the preparation and planning of sports training; however, in their works it is not explained how to develop this activity in an integrated manner in the context of the training process of the basic fundamentals of baseball at an early age, for the authors of this work they consider that this aspect should not be ignored during the process. of teaching-learning in a general sense and in particular in the batting element.

The action of batting is characterized by the ability of the neuromuscular system to overcome external endurance with a high rate of contraction. This requires a perfect mastery of the variable structure of the movement, which is given by the performance of fast and precise movements that are executed at a certain rhythm and that require complex motor coordination.

Coordination during batting is an essential ability to develop, since the batter, in order to make real contact with the ball, has to adequately harmonize in time and space the movements involved in the execution, all of which is possible due to direct and immediately perception of the performed throw. The limitations in bibliographies, documents and updated programs for the teaching of batting and the insufficiencies in the practical execution of batting are carried out propitiated as the objective of the research to propose exercises aimed at improving the action of batting to fifth grader students from the Xalapa Veracruz Sports School.

MATERIALS AND METHODS

Six teachers were used as a population and four educational teachers were taken as a sample for 66.6%; In addition, the population of schoolchildren was 25 and 20 schoolchildren were taken as a sample, who are in the 5th grade, from the Enrique Conrado Rébsamen Sports School in Xalapa, Veracruz, 15 of the male sex that represents 75 % and 5 of the female sex that represents 25 %.

Theoretical methods

They were used for the search for information and the elaboration of the theoretical basis of the research, as well as for the analysis and interpretation of the results.

Analytical-Synthetic: it was used throughout the research process, in the study of the consulted bibliographies, the analysis of the components of the proposed methodology and the interpretation of the results obtained with the applied instruments.

Historical-Logical: it was used in the study of the theoretical-practical background of the research, revealing the main elements related to the field of action; as well as to determine the general laws, the operation and the development of the phenomenon researched in history, related to the teaching-learning of batting in the Sports School of Xalapa, Veracruz.

Empirical methods

Document analysis: it was used in the evaluation of important documents in order to carry out the investigation.

Interview: it was used individually to determine the level of acceptance and completion of the research by managers, parents or guardians and schoolchildren.

Survey: it was used to verify the theoretical-methodological treatment to the integration of practical knowledge related to batting and compliance with the validity and reliability requirements.

Scientific observation

It was used as a way to obtain direct and immediate information about the phenomenon or object that is being researched. It was used in class visits with the aim of knowing how sports teachers developed the teaching-learning process of the object of study (batting) within the content of the classes.

During the research, 48 classes were evaluated, held once a week, with a duration of 60 minutes each, 24 belong to the pre-test, during one semester, and 24 to the post-test, during the second academic semester.

RESULTS AND DISCUSSION

The results of the diagnosis revealed deficiencies in the batting technique, as well as difficulties and limitations, both in the level of knowledge and in the form of execution of the different basic fundamentals of baseball and especially of batting, among which stand out:

- Ignorance of the name of the basic fundamentals of baseball.
- Insufficient sequence in learning the basic fundamentals of baseball according to the characteristics of the schoolchildren and very marked in batting.

On the other hand, in the observations of the classes, insufficiencies were found in the teachers, regarding the integrated treatment of the basic foundation of batting and the procedures necessary for the teaching -learning of this technical action, the development of motor and sports skills in schoolchildren; the following deficiencies were detected:

- The coaches do not have a program to carry out in an organized and systematic way the teaching-learning process of the basic fundamentals of baseball and very specifically in batting.
- The federations suggest that children learn from the first grades the basic elements of baseball in an organized way, taking into account the high percentage of acceptance that this sport has among Veracruz children.
- Insufficient training and updating of knowledge on the part of the trainers, makes them carry out their classes in an empirical way.
- The lack of documentation, bibliographies and Methodological Guidelines for teaching the basic elements of baseball makes it difficult for teachers to improve.
- Lack of motivation, low cognitive development and poor development of motor and sports skills persist in children due to the monotony of classes.
- In the normative documents for the preparation of schoolchildren in baseball, at the Enrique C. Rébsamen School in Xalapa Veracruz, there are limitations regarding content, strategies and methodological guidelines, which allow directing the integration of practical knowledge to the teaching of fundamentals basics of baseball in schoolchildren, although the need for solid knowledge given in the educational context is recognized.
- Little use of didactic means for the teaching and learning process of the basic fundamentals of baseball and poor batting mechanics.

Within the teaching and learning of the basic foundation of batting it was found that for the best understanding of the students the action must be fragmented, and at each moment dedicate all the time that is necessary, adapting to the rhythm and learning

style of each student, guaranteeing the correct execution at the end of the correct application of each exercise.

The pedagogical procedure to be followed is presented in detail below:

1. Selection of the bat with the help of the coach so that he becomes familiar with it.

2. Demonstration and explanation of the grip of the bat by the teacher.

a. Execution of the grip of the bat by the students.
b. Execution of the grip of the bat by the students picking it up from the ground, winding it on the fingers.

3. Demonstration and explanation by the teacher of the position in the batter's box (you can use sheets, photos, etc.)

a. Execution by the students (emphasis on a comfortable and relaxed position at the plate before the launch and with an adequate separation from it using the bat for it).

4. Demonstration and explanation by the teacher of the swing movement and its completion, taking into account the placement of the hands (use photos, sequence sheets, videos, etc.)

a. Slow execution by students of the air swing movement with lighter weight bats.
b. Fast air swing executions with lighter weight bats.
c. Air swing executions with normal bats.

5. Float ball batting. (both profiles).
6. Batting ball thrown from the front (both profiles).
7. Drop ball batting (both profiles).
8. Batting ball in the cone. (both profiles).
9. kneeling batting (both profiles).

For the measurement of progress during the process carried out in 2020, execution records were obtained at first without taking into account the technical execution, since emphasis will be placed during the application of the proposed exercises.

Subsequently, based on the first results, the execution of the action for the correction from the biomechanical point of view is worked on, emphasizing mainly the eye-hand coordination, which determines the correct or failed execution of the batting, an aspect to evaluate at what level of technical development is each student and those who require support.

After what the students have learned, it was passed to a higher level of demand where they put into play their skills obtained, based on the level reached in relation to the previous steps. The student will be able to give a direction to the ball within the field of play under the instruction of the teacher. If he is able to achieve it, the effectiveness, functionality, innovation and impact of the exercise will be evaluated by the teacher.

Taking into account the aspects to be diagnosed, the following key for the final evaluation was determined:

- B (5 points): the boy who executes the batting action correctly and can make up to two errors.
- R (4 points): The boy who performs the batting action and can make up to three errors.
- M (3 points): The boy who performs the batting action and can make up to four errors.

Proposal of exercises aimed at improving the batting action

Grouping five by five, this passed in a circuit of four stations with 10 balls per child with the different drills, for the development of laterality. The exercises are as follows:

1. float ball batting,
2. Individual batting float ball.
3. Ball released.
4. Cone batting.
5. kneeling batting

During the following four months, the same work was carried out with greater intensity and increasing to 12 balls per child in the circuit, helping to increase the average. At the end of the work in May 2020, an evaluation was carried out to measure the progress of the students and the effectiveness of the strategy.

During the following two months (June and July 2020), it was increased to 15 balls per child and the final evaluation was carried out checking the development of motor skills, the main objective being eye-hand coordination, affecting the improvement of batting and therefore the average increase.

To contrast the effectiveness of the exercises, a second visual qualitative evaluation of the batting mechanics in the children was applied, with the support of a video camera to have the graphic representation of the execution of each child during the proposed exercises and a scale of quantitative evaluation to know the effectiveness of the batting, with which we corroborate the increase in the average.

Didactic means built to execute the exercises aimed at improving the batting action (Figure 1), (Figure 2), (Figure 3) and (Figure 4).

Fig. 1. - Didactic mat for teaching the correct stop to bat

Fig. 2. - Teaching batting on Cone

Fig. 3. - Teaching batting with floated ball

Fig. 4. - Teaching batting with floated ball

In table 1, the results of the evaluations are presented in a qualitative and quantitative way to the 20 children participating in the research, during the execution of the batting exercises in the Diagnosis, carried out in the month of August 2019, the results of the first evaluation, carried out in the month of May 2020 and the final evaluation carried out in the months of June and July 2020, showing the qualitative advances, as well as the quantitative ones resulting from the application of the exercises aimed at improving the action of batting for a year with fifth grade students from the Enrique C. Rébsamen sports school (Table 1).

Table 1. - Results of the evaluations Validation of the exercises aimed at improving the batting action

phases	Diagnosis		First evaluation		Final evaluation	
Evaluation	Qualitative	quantitative	Qualitative	quantitative	Qualitative	quantitative
Ball	Bad: 19	3:19	Bad: 13	3:13	Bad: 0	3:0
floated	Fair: 1	4:1	Regular: 7	4:7	Fair: 1	4:1
	Good: 0	fifty	Good: 0	fifty	Good: 19	5:19
individual	Bad: 20	3:20	Bad: 16	3:16	Bad: 0	3:0
floated ball	Regular: 0	4:0	Regular: 4	4:4	Fair: 2	4:2
	Good: 0	fifty	Good: 0	fifty	Good: 18	5:18
Ball	Bad: 20	3:20	Bad: 16	3:16	Bad: 0	3:0
on	Regular: 0	4:0	Fair: 4	4:4	Fair: 1	4:1
cone	Good: 0	fifty	Good: 0	fifty	good:19	5:19
sunk batting	Bad: 20	3:20	Bad: 1	3:1	Bad: 0	3:0
	Regular: 0	4:0	Regular: 14	4:14	Fair: 1	4:1
	Good: 0	fifty	Good: 5	5:5	Good: 19	5:19

In order to provide an objective assessment of the results achieved during the research period, the Criterion of experts, specialists and users was used in the thesis of Physical Culture (Fleitas, *et al.,* 2013).

Based on the concept of Specialist, which is the person who has a high degree of current experience in the subject for which they are required, five baseball teachers are selected who have as an endorsement the mastery and contextualization of the sphere of action related to the research topic in which your criteria is needed.

The sequence of actions of a methodological nature for the use of the evaluation method by specialists presents several actions.

Action 1. Objective of the consultation with the selected specialists.

Know the criteria related to the Applicability, Feasibility, Relevance, (Crespo, 2007), Pertinence and Effectiveness of the applied exercises, aimed at improving the batting action for a year with fifth grade students from the Enrique C. Rébsamen sports school.

Action 2. Select the possible specialists for the research and their characteristics.

Experience of more than 5 years of work with students.

Action 3. Select the method, technique and instrument for collecting the criteria.

Application of the Chanlat Matrix.

Variables and sub-variables were analyzed based on a maximum score of ten units for each sub-variable.

The trainers selected as specialists were given the Chanlat Matrix instrument to provide their opinions.

The following formula was applied to the results: Expected effectiveness of the Strategy (EEE)=IxFxO100.

Where:

- Impact (I): Repercussion, influence of the proposal.
- Functionality (F): The purpose of the proposal, what the proposal is for.
- Opportunity (O): Propitious moment to implement the proposal.
- If EEP > 8, the proposal is considered to have strong expected effectiveness.
- If 5 ≤ EEP ≤ 8, the proposal is considered to have medium expected effectiveness.
- If EEP < 5, the proposal is considered to have weak expected effectiveness.

Action 4. Results of the assessments of the specialists.

The five (5) specialists who participated in the research provided the following criteria.

- The applied exercises, aimed at improving the batting action for a year with fifth grade students from the Enrique C. Rébsamen sports school, present Applicability, Feasibility, Relevance, Pertinenc and Effectiveness.
- The proposed exercises were gladly accepted by all the students investigated.
- The results of the applied quantitative and qualitative evaluation demonstrated the importance of the proposed exercises.
- The specialists expressed that the use of the constructed didactic means helped considerably to the success of theresearch.
- The final evaluation of the specialists, related to the Expected Effectiveness of the Strategy (EEE in Spanish) was > 8 points.

The proposed exercises provide a practical tool for the teaching-learning process of physical education and sports teachers in the state of Veracruz, with the possibility of generalizing it to other territories of the country.

The Didactic means built to execute the exercises aimed at improving the batting action are considered a highly reliable pedagogical tool to improve the teaching-learning process of batting in children.

The baseball teachers expressed their assessment related to the Expected Effectiveness of the Strategy (EEE) of > 8 points and their agreement for the importance, timeliness and relevance of the exercises to improve the teaching-learning process of batting.

Regarding the way in which this tool was used to carry out the diagnosis in batters, it was possible to verify that in other consulted sources the results of the variables yielded various information that was useful in the study. These sources used high-tech resources such as the batting sensor by Ríos Fuentes, *et al.,* (2020), the intervention program based on a biomechanical study, conducted by Hernández, *et al.,* (2021). In a more detailed way, the results of this work were contrasted with those of Menéndez- llerena, *et al.,* (2020) and it was possible to determine that as a continuation of this work, some very valuable methods could be transferred that allow discerning the relationship between the motor skills of the athlete and his batting style, an aspect that was not addressed in this research, but could further enrich the diagnosis. Other useful aspects for the continuity of this work can be found in the research by Palma, *et al.,* (2020) from whose experiment muscular exercises can be transferred that could also increase the power and effectiveness of the hitters under study.

CONCLUSIONS

The exercises to improve the teaching-learning process of batting and the Didactic means can be used for baseball classes of other grades, with their due adaptations, taking into account the sensitive phases of the children.

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