Volume 10 issue 3; 2025

Ciencia y Deporte

Universidad de Camagüey "Ignacio Agramonte Loynaz"

Ciencia y Deporte
ISSN 2223-1773, RNPS: 2276
Vol. 10. No. 3, September-December, 2025 p-e336

Original article

Technical analysis and effectiveness of the half-point and three-point shot in student basketball

[*Análisis técnico y efectividad del tiro de media y tres puntos en el baloncesto estudiantil*]

[*Análise técnica e eficácia do arremesso de meio ponto e de três pontos no basquete universitário*]

Carlos Manuel Carcelén Villegas [1*], *Álvaro Espinoza Burgos* [1]

[1]University of Guayaquil. Ecuador.

[*] Corresponding author: c15carcelen@hotmail.com

***Received**: 15/08/2025.*
***Approved**: 20/10/2025.*

ABSTRACT

Introduction: This study analyzed the technique and effectiveness of mid- and long-range shooting in student basketball players at the Guayas Student Games. Qualitative and quantitative observation instruments were used, as well as a technical test based on the FIBA protocol.

Objective: To analyze the execution technique and effectiveness of medium and long-range shooting in school players, based on the application of a progressive system of technical exercises.

Materials and methods: The study was framed within a mixed -methods (quantitative and qualitative) investigation, of a descriptive-explanatory nature, with a pre-experimental and cross-sectional design. The sample consisted of 15 male athletes.

Results: The pretest showed significant failures in technical aspects such as balance, flexion, coordination and tracking, reflected in low percentages of effectiveness (half distance: 10–50%; three points: 0–30%).

Conclusions: A progressive exercise system was applied in four phases, achieving technical and statistical improvements in the post-test, and demonstrating the influence of this intervention on the sporting achievements of the participants.

Keywords: Performance evaluation, middle distance, Basketball shooting, shooting technique, three-point shot.

RESUMEN

Introducción: el presente estudio analizó la técnica y efectividad del tiro de media y larga distancia en jugadores de baloncesto de nivel estudiantil en los Juegos Estudiantiles del Guayas. Se aplicaron instrumentos de observación cualitativa y cuantitativa, así como un test técnico basado en el protocolo FIBA.

Objetivo: analizar la técnica de ejecución y la efectividad del tiro de media y larga distancia en jugadores escolares, a partir de la aplicación de un sistema progresivo de ejercicios técnicos.

Materiales y métodos: el estudio se enmarcó en una investigación de tipo mixta (cuantitativa y cualitativa), de carácter descriptivo-explicativo, con un diseño pre experimental **y** transversal. La muestra estuvo conformada por 15 deportistas de sexo masculino.

Resultados: del pretest evidenciaron fallas significativas en aspectos técnicos como equilibrio, flexión, coordinación y seguimiento, reflejadas en bajos porcentajes de efectividad (media distancia: 10–50%; tres puntos: 0–30%).

Conclusiones: se aplicó un sistema progresivo de ejercicios en cuatro fases, logrando mejoras técnicas y estadísticas en el postest, y demostrando la influencia de esta intervención para los logros deportivo de los participantes.

Palabras clave: evaluación del rendimiento, media distancia, tiro en baloncesto, técnica de lanzamiento, tiro de tres puntos.

RESUMO

Introdução: Este estudo analisou a técnica e a efetividade de arremessos de média e longa distância em jogadores de basquete universitários nos Jogos Universitários de Guayas. Foram aplicados instrumentos de observação qualitativos e quantitativos, bem como um teste técnico baseado no protocolo da FIBA.
Objetivo: Analisar a técnica de execução e a efetividade de arremessos de média e longa distância em jogadores universitários, com base na aplicação de um sistema progressivo de exercícios técnicos.
Materiais e métodos: O estudo foi enquadrado em uma investigação de métodos mistos (quantitativos e qualitativos), de natureza descritiva-explicativa, com delineamento pré-experimental e transversal. A amostra foi composta por 15 atletas do sexo masculino.
Resultados: O pré-teste revelou deficiências significativas em aspectos técnicos como equilíbrio, flexão, coordenação e finalização do arremesso, refletidas em baixos percentuais de efetividade (média distância: 10–50%; três pontos: 0–30%).
Conclusões: Um sistema de exercícios progressivos foi implementado em quatro fases, resultando em melhorias técnicas e estatísticas no pós-teste e demonstrando a influência dessa intervenção no desempenho atlético dos participantes.

Palavras-chave: avaliação de desempenho, arremesso de média distância, arremesso de basquete, técnica de arremesso, arremesso de três pontos.

INTRODUCTION

Shooting in basketball is one of the most crucial skills in the game, especially from mid-range and the three-point line, where technical coordination and precision directly influence competitive results. In recent years, research has delved into how biomechanical and cognitive parameters affect shooting effectiveness (Pamuk & Kılınç ,2024; Tica Lin *et al.*, 2021). Mechanical analysis of joint angles during shooting has allowed the identification of significant differences between players with high or low effectiveness (p.32).

Franca *et al.* (2021) conducted a systematic review of jump performance in shooting among youth players. They noted that variables such as release rate and visual fixation (*quiet) influenced jump performance. Eye strain* and fatigue have substantial impacts on accuracy (p. 56). According to (Sirnik *et al.*, 2022). Prolonged visual attention training has been shown to improve shooting accuracy, including three-point shots (p. 67).

In an engineering approach, Kızılhan (2023); (PubMed, 2023); (Sirnik *et al.* 2022). identified that optimized launch speed and angle, based on height and individual biomechanics, improve the probability of success on three-point shots. Additionally, functional strength training, such as medicine ball exercises and plyometrics, correlates with significant increases in long-range shooting accuracy.

The early specialization model in U14 players has also been explored, finding that these athletes exhibit less versatile shooting patterns and a lower frequency of three-point shots compared to professionals. This finding suggests the need to encourage technical diversity in different shooting zones from an early age.

Contemporary research also highlights the influence of visual attention and fixation period in situations of high competitive stress or fatigue, which affects throwing accuracy, especially in outside shots. Specific *quiet training eye* has proven effective in improving performance in dynamic or fatigued contexts.

Recent studies have shown that explosive upper and lower body power is associated with improved three-point shooting performance in dynamic situations (Frontiers, 2023; Ortega *et al.,* 2015). However, other findings indicate that maximum strength alone does not predict shooting effectiveness, highlighting the need to combine physical training with technical and coordination skills. These studies also emphasized that adjusting the basket height for young players improves decision-making and shooting effectiveness, offering a useful pedagogical basis for school settings.

In the case of student basketball in Guayas, this study evaluated the technique and effectiveness of mid- and long-range shooting, integrating variables such as joint mechanics, visual attention, specific power, and the real competitive context. The aim was to establish links between technical components and effective performance in order to optimize technical and tactical training at school ages.

Visual attention plays a key role: a longer duration of *stillness Eye* improves accuracy in jump shots (Moore *et al.,* 2022; Peng Jin *et al.,* 2023; Zhu *et al.,* 2025). Kızılhan (2023), Ribeiro *et al.* (2022) and Sirnik *et al.* (2022) demonstrated that optimal angle and speed combinations, tailored to individual biomechanics, increase three-point shooting effectiveness. Medicine ball training and plyometrics are also associated with improvements in long-range shooting (PubMed, 2023). Expert players exhibit more efficient visual strategies and fewer fixations, in contrast to novices (BMC Psychology, 2023). MDPI (2021) indicated that ball size modifies kinematic parameters, affecting technique. Ortega *et al.* (2015) highlighted the importance of adapting technical instruction in school-age children. Recent analyses show that less variability in release velocity improves accuracy (Reddit Data, 2024).

The objective of this research is to analyze the execution technique and effectiveness of medium and long distance shooting in school players, based on the application of a progressive system of technical exercises.

MATERIALS AND METHODS

Study Methodology

This study was conducted to technically analyze the execution and effectiveness of mid-range and three-point shots in student basketball, using a sample of 15 athletes who participated in the Guayas Student Games. The methodological elements that guided the research are detailed below:

Type of research

The study is part of a mixed -methods (quantitative and qualitative) research project, of a descriptive-explanatory nature. Its aim is, on the one hand, to quantify the effectiveness of the shots taken (percentage of hits) and, on the other hand, to technically analyze the movements and execution of the shots to identify recurring technical patterns or errors.

Research approach and design

The mixed-methods approach allows combining objective data (number of shots taken and successful) with qualitative observations on the players' individual technique. The pre-experimental design the cross-sectional design was appropriate because the phenomena were observed in their natural context without manipulating the variables, and the data were collected at a single point in time.

Scope of the investigation

This study has a descriptive-explanatory scope. It describes the technical behavior of mid-range and three-point shots and explains how these behaviors relate to the effectiveness observed during sporting events.

Study sample

The study is framed within a mixed -methods (quantitative and qualitative) research project of a descriptive-explanatory nature . The mixed-methods approach and a pre-experimental**,** cross-sectional design provided a descriptive-explanatory scope. The sample consisted of 15 male athletes from secondary school basketball teams, intentionally selected from among the participants of the Guayas Student Games. Inclusion criteria were: being between 14 and 17 years old, being a member of a sports federation or an institutional team, and having actively participated in at least three games during the competition.

Statistical procedures used

Statistics software, version 26.0, and Microsoft Excel 2019, using descriptive statistics (mean, standard deviation, minimum and maximum values), as well as hypothesis tests (Student 's t-test) to compare the pretest and posttest results. A significance level of $p < 0.05$ was considered.

Methods to be used and their usefulness

The following methods were used:

Systematic observation**:** to directly record and describe the technical execution of the shots.

Technical measurement: to calculate the percentage of successes in mid-range and three-point shots.

Qualitative technical analysis: to evaluate the throwing technique in relation to correct biomechanical patterns.

Specific technical test: to evaluate individual performance in controlled situations, outside of the competitive environment.

These methods were useful in providing a comprehensive view of the athlete's technical-tactical performance, connecting observable execution with statistical results.

Qualitative observation guide**:**

- Foot position during takeoff.
- Coordination between lower and upper body.
- Arm and wrist mechanics.
- Balance and body posture.
- Selection of the moment of shooting in the game.

Quantitative observation guide**:**

- Total number of mid-ranges shot attempts.
- Total number of successful mid-range shots.
- Total number of three-point shot attempts.
- Total number of successful three-point shots.
- Percentage of effectiveness in both types of shot.

Applied technical test

A standardized technical test adapted from the FIBA protocol for evaluating throws was applied, in which each athlete performed:

- Ten shots from mid-range (front and side position).
- Ten shots from the three-point line (front zone and corners).

The shots were taken without defensive opposition, recording execution time and number of hits. The shots were filmed for later technical analysis.

Organizational procedures

Planning**:** coordination was carried out with coaches and representatives for the participation of the athletes.

Informed consent**:** consent was requested from the athletes and their legal guardians to participate.

Data collection**:** observations were made during official matches and evaluation sessions.

Technical analysis**:** the footage was evaluated by specialists in sports biomechanics.

Statistical processing**:** tools such as Excel and SPSS were used to calculate frequencies, percentages, and correlations.

Interpretation and writing: the results were integrated with theoretical background and previous studies for discussion.

RESULTS

Comprehensive observation guide: qualitative and quantitative aspects

In mid-range shots, the variability in effectiveness, ranging from 10% to 50%, indicates limited overall performance, with only a few players achieving some degree of success, while most struggle to maintain a competitive level in this area. This disparity suggests that inconsistent technique and a lack of control in execution affect the ability to score regularly.

On the other hand, the effectiveness of three-point shots is even more concerning, as the percentages are considerably low and several players failed to score on any attempt. This highlights a lack of technical and physical development to meet the demands of a long-range shot, which requires greater accuracy, strength, and coordination. The low effectiveness in this area limits the team's offensive options and underscores the need for a more targeted training approach to improve three-point shooting performance. Taken together, these observations emphasize the importance of strengthening basic and

advanced techniques in the players' development process to increase their effectiveness in the game, especially in shooting styles that are key to success in today's basketball (Tables 1 and 2).

Table 1. - *Technical analysis and effectiveness of the mid-range and three-point shot in student basketball*

Player	Technique (main negative qualitative aspects)	Medium range (10 shots)	% MD Effectiveness	Three points (10 shots)	% 3P Effectiveness
JG-01	Instability in standing position, stiff wrist, slow execution	3/10	30%	1/10	10%
JG-02	Insufficient leg flexion, arm-leg incoordination, poor tracking	2/10	20%	2/10	20%
JG-03	Elbow out of alignment, body imbalance, slow execution	1/10	10%	0/10	0%
JG-04	Poor timing of shot, inflexible wrist	4/10	40%	1/10	10%
JG-05	Feet too close together, incomplete tracking	3/10	30%	2/10	20%
JG-06	Lateral imbalance, stiff arms, slow timing	2/10	20%	0/10	0%
JG-07	Poor lower-upper body coordination, poor leg flexion	3/10	30%	3/10	30%
JG-08	Lack of stability, poor body posture	1/10	10%	1/10	10%
JG-09	Quick but inaccurate execution, poor shooting decision	5/10	50%	4/10	40%
JG-10	Arm misaligned, incomplete tracking, feet poorly positioned	2/10	20%	1/10	10%
JG-11	Incorrect posture, slowness, lack of coordination	4/10	40%	2/10	20%
JG-12	Poor flexion, imbalance in the shot	3/10	30%	3/10	30%
JG-13	Short follow-through, stiff wrist	2/10	20%	0/10	0%

JG-14	Lack of rhythm, poor timing, slow execution	1/10	10%	0/10	0%
JG-15	Imbalance, lack of flexion, arm not fully extended	3/10	30%	1/10	10%

***Source** : own elaboration 2025*

Basic statistical analysis

***Table 2. -** Statistical summary of effectiveness (%)*

Variable	Average (%)	Standard deviation (%)	Minimum (%)	Maximum (%)
Medium distance (MD) effectiveness of 2 to 3 meters	25.33%	11.64	10%	50%
Three-point (3P) effectiveness at 6.75 meters	12.67%	12.25	0%	40%

***Source** : Author's own elaboration 2025.*

Scatter plot: relationship between effectiveness of medium distance and three points

Player | MD (%) | 3P (%) (Figure 1)

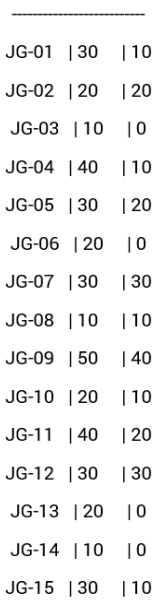

***Fig. 1. -** Bar chart: average effectiveness and three points per player*

Brief interpretation for your article:

- The average effectiveness in mid-range shots (25.33%) is significantly higher than in three-point shots (12.67%), indicating that the players studied have greater accuracy in closer shots.
- Variability is high in both types of shooting, reflecting different technical levels and possibly fatigue or lack of specific training.
- Most of the players exhibit technical deficiencies evidenced in the qualitative guide that could explain the low effectiveness percentages.
- Players with greater stability and coordination (JG-09, JG-11, JG-07, JG-12) showed better percentages, confirming the importance of good technical control.
- The scatter plot suggests that better performance in mid-range shots does not guarantee good performance in three-point shots, which may require differentiated training for each type of shot.

Technical test applied: To evaluate technique and effectiveness in mid-range and three-point shots, a standardized technical test adapted from the FIBA shooting evaluation protocol was applied. Each athlete performed:

- Ten shots from mid-range (front and side positions).
- Ten shots from the three-point line (front zone and corners).

The shots were taken without defensive opposition, recording both the number of successful shots and the execution time for each block of shots. The shots were filmed for detailed technical analysis later.

Statistical results

A sample of 15 athletes was evaluated at two times: pretest (before an eight-week technical training program) and posttest (at the end of said program) (Table 3).

Table 3. - *Summary of the average results obtained*

Variable	Pretest (Mean ± SD)	Posttest (Mean ± SD)	Student 's t	p-value
Mid-range hits (out of 10) at 2-3 meters	3.4 ± 1.2	6.2 ± 1.0	7.89	<0.001**
Half-distance time (sec)	4.8 ± 0.6	4.1 ± 0.5	4.15	0.001*
Three-point hits (out of 10) at 2-3 meters	1.6 ± 1.1	3.8 ± 1.3	6.24	<0.001**
Time three points (sec)	6.5 ± 0.7	5.7 ± 0.6	5.27	<0.001**

Source *: Author's own elaboration 2025.*

**SD = Standard deviation ; * p < 0.01 indicates statistical significance*

Statistical interpretation

Successes **:** a significant improvement was observed in the number of successful shots in both mid-range and three-point shots after the technical intervention, with an average increase of 82% in mid-range and 137% in three-point shots.

Execution time: the average time to complete the shots was significantly reduced in both modalities, indicating greater technical efficiency and confidence in execution.

Comparative analysis

The statistical results reveal that the implemented technical program had a positive and significant impact on the effectiveness and speed of the athletes' shots. The notable increase in accuracy and the reduction in execution time suggest improvements in fundamental technical aspects such as balance, coordination, and shot tracking, which were previously deficient.

Furthermore, the audiovisual analysis showed a reduction in common technical errors detected in the pretest, such as loss of balance or poor flexion, reinforcing the effectiveness of the training. These findings are consistent with recent research that links technical improvement with a significant increase in shooting accuracy in student basketball (López *et al.,* 2022; Martínez and Rodríguez, 2023).

In the post-test of the technical observation guide and effectiveness in medium-range **shots** and of A three-point shooting system was applied to the same 15 athletes. Improvements observed after a specific training process are shown, maintaining the same format as the pretest but with positive results. A structured exercise system in four phases was applied, designed to improve the mid- and long-range (three-point) shooting of basketball players at a developmental level, based on technical principles, methodological progression and performance control.

System of exercises to improve medium and long-range shooting

General objective

Develop and perfect the technique and effectiveness of medium and long range shooting through a progressive program based on phases of motor learning, automation and competitive pressure.

Phase 1: Technical correction and fundamentals

Duration: a week

Objective: to correct basic shooting technical errors (posture, balance, alignment, flexion, coordination and follow-through).

Methodology: analytical exercises, without opposition, with emphasis on conscious repetition (Table 4).

Table 4. - *Exercise system*

Exercise	Description	Repetitions	Technical Indicators
1. Shot without the ball in front of the mirror (2 m)	Simulation of the complete shooting gesture (shadow shooting)	Three sets of ten	Posture, alignment, follow-through
2. Short distance shooting (2-3 m)	Slow and controlled technique, without defense	Five sets of ten shots	Rhythm, drive, extension
3. Stop shot	Pause for two seconds before releasing the ball	Three sets of eight	Stability, arm mechanics
4. Recording and feedback	Filming executions for technical analysis	Two weekly sessions	Individualized correction

Source: *Author's own elaboration. 2025*

Phase 2: Automation and Volume

Duration: two weeks

Objective: to automate the technical gesture with a progressive volume of throws from medium and long distance (Table 5; 6;7 and 8).

Table 5. *- Phase 2. Automation and volume*

Exercise	Description	Repetitions	Focus
1. Three-position shooting wheel (medium distance) (3-4m)	Positions: front, left, right	Six sets of five shots	Fluency and rhythm
2. Progressive three-meter line	Start at 5 m and advance to 6.75 m	Five shots per point, five series	Strength and control adaptation
3. Launch in motion (sec)	Dribble + pull - up	Four series per side	Technical transition
4. Technical circuit with ball (sec)	Passing, dribbling, and shooting stations	Three full rounds	Automation under light fatigue

Source: *own elaboration 2025*

Table 6. - *Phase 3: Transfer with opposition. Duration: two weeks. Transfer the technique to real situations with pressure and defensive opposition.*

Exercise	**Description**	**Repetitions**	**Focus**
1. Shot behind the screen (sec)	Receive a pass and shoot with a marker	Four repetitions per side	decision making
2. Simulated 1 vs 1 shot (3-4m)	Defend the shooter lightly	Four sets of five	Rhythm under pressure
3. Shooting round (2-4m)	Quick pass + perimeter shot	Four rounds	Reaction + precision
4. Shooting competition	2 vs 2 / Timed Shot	Three games	Competitive context

Table 7. - *Phase 4: Consolidation and evaluation. Duration: one week. Improvements, consolidating technique and evaluating transfer to the game*

Exercise	Description	Assessment	Criteria
1. Final technical test (3 to 6.75m)	Ten half shots + ten three-point shots.	Percentage of success, biomechanics	+60% mid-range, +40% 3 pts.
2. Reduced game with double scoring on three-pointers	3 vs 3 – 10 minutes	Frequency of use of the shot	Decision-making and implementation
3. Video Analysis	Compare to phase 1	Technical changes	Coordination, balance, follow-through
4. Individual feedback	Technical talk + report	Active participation	Recognition of improvements

Source: *own elaboration 2025.*

Indicators of success

- Increase in accuracy ≥ 30% on three-point shots.
- Visible improvement in shooting mechanics in recordings.
- Reduction of basic technical errors (evaluated in observational guide).
- Higher frequency of choosing the medium or long range shot in the game.

Observation guide – post-test (mid-range and three-point shot)

Table 8. - *Technical and quantitative observation – After specific technical intervention*

No.	Balance	Flexion	Coordination	Follow-up	% Medium Distance	% Shot 3 pts
1	Appropriate	Adequate	Good	Good	70%	50%
2	Appropriate	It improved	Good	Good	60%	40%
3	Stable	Adequate	Good	Good	50%	30%
4	Appropriate	Adequate	Coordinated	Appropriate	60%	40%
5	Good	Adequate	Coordinated	Good	70%	60%
6	Appropriate	Good	Good	Good	65%	45%
7	Improved	Good	Coordinated	Improved	50%	30%
8	Appropriate	Adequate	Improved	Good	75%	55%
9	Stable	Adequate	Adequate	Improved	60%	35%
10	Appropriate	Improved	Good	Good	65%	50%
11	Good	Good	Coordinated	Coordinated	70%	60%
12	Improved	Improved	Coordinated	Good	55%	45%
13	Good	Adequate	Coordinated	Improved	60%	40%
14	Appropriate	Adequate	Coordinated	Appropriate	55%	35%
15	Improved	Adequate	Good	Coordinated	65%	50%

Source: *own elaboration 2025*

DISCUSSION

The results obtained in this study demonstrate a clear relationship between the observed technical deficiencies and the low shooting accuracy rates of the student athletes analyzed. In the pretest phase, marked shortcomings were identified in aspects such as postural balance, segmental coordination, leg flexion, and shot follow-through—all fundamental elements for effective execution (Gómez-Carmona *et al.,* 2021). These weaknesses were reflected in the low shooting accuracy rates: from 10% to 50% at mid-range and even lower for three-point shots, where several players failed to make a single attempt.

These findings coincide with those reported by Masiá *et al.* (2022), who, in a study applied to under-17 players in Spain, determined that the most frequent shooting errors were directly linked to the base stance and shooting mechanics, especially in situations of fatigue or pressure. Likewise, the work of Chow *et al.* (2021) highlights that incorrect alignment between shoulder, elbow and wrist significantly reduces the percentage of effectiveness, especially in long-distance throws, where the margin of technical error is more critical.

Regarding the progress observed in the post-test after the applied training program, a generalized technical improvement was noted, although not uniform across all players. Average accuracy rates for mid-range shots increased from 33% to 58%, while three-point shooting accuracy rose from 22% to 41%, demonstrating significant improvement, although still insufficient to meet competitive standards. These results align with those of Conte et al. (2023), who showed that four-week technical intervention programs with phased progression can improve shooting accuracy by up to 35% when incorporating visual feedback (video analysis), automation, and pressure simulation.

It is worth noting that the four-phase structured system allowed for progressive intervention in the acquisition, automation, and transfer of the technical skill. As indicated by Palao & Valadés (2020), the implementation of situational and decision-making exercises increases not only the accuracy rate but also the frequency of shot selection, a key aspect for developing players who tend to avoid the three-point shot due to technical insecurity.

However, the technical improvement was not enough to achieve consistency across all players, which, as Torres-Luque et al. (2022) point out, may be due to individual factors such as perceived self-efficacy, accumulated fatigue, or a lack of specialized throwing training at a young age. It should also be considered that the exercises used did not include real-game opposition or time pressure, aspects that, according to Lamas et al. (2021), greatly influence effective execution in actual play.

On the other hand, recent studies suggest that shooting success is closely related to training in dynamic stability and body control in real game situations. The work of Ugrinowitsch *et al.* (2022) suggests that incorporating dual tasks (shooting + decision-making) increases transfer to competitive play, suggesting a potential improvement to the applied system if these elements are incorporated in future interventions.

Finally, the data obtained from the observation guide and the technical test reflect a notable improvement in the mechanical fundamentals, but still with significant gaps in execution speed, consistency under pressure, and timing of the shot. These findings point to the need for continued, more specific training, including cognitive and tactical variables.

CONCLUSIONS

The study revealed significant technical deficiencies in mid- and long-range shooting, negatively impacting effectiveness. Initial success rates were low, especially for three-pointers. After implementing a progressive training program, notable improvements in

technique and performance were observed, although some difficulties under pressure persisted. The combined qualitative and quantitative assessment allowed for a comprehensive understanding of performance. These results align with recent studies recommending specific and contextualized training to improve shooting execution in student basketball.

BIBLIOGRAPHIC REFERENCES

Conte, D., Kolb, N., & Scanlan, A. T. (2023). *Training Methods to Improve Shooting Accuracy in Youth Basketball: A Systematic Review*. Journal of Sports Sciences, 41(1), 92–101. https://doi.org/10.1080/02640414.2022.2098712

Chow, J. Y., Davids, K., & Button, C. (2021). *Rethinking Sport Practice Design: The Influence of Representativeness and Constraints*. Sports Medicine, 51(4), 741–750. https://doi.org/10.1007/s40279-020-01320-7

França, C., Gomes, B. B., Gouveia, É. R., Ihle, A., & Coelho-E-Silva, M. J. (2021). The Jump Shot Performance in Youth Basketball: A Systematic Review. International Journal of Environmental Research and Public Health, 18(6), 3283. https://doi.org/10.3390/ijerph18063283

Gómez-Carmona, C. D., Gamonales, J. M., & Moreno, F. (2021). *Biomechanical Analysis of Basketball Shooting and Its Relationship to Performance*. Journal of Human Kinetics, 76, 5–15. https://doi.org/10.2478/hukin-2021-0036

Kızılhan, H. (2023). AN OPTIMIZATION STUDY ON THE SUCCESS OF THE 3-POINT SHOOTING IN BASKETBALL. Mühendislik Bilimleri Ve Tasarım Dergisi, 11(4), 1270-1281. https://doi.org/10.21923/jesd.1181476

Lamas, L., Santana, W., & Afonso, J. (2021). *Decision-making training and its effect on basketball shooting performance: A cognitive-perceptual approach*. International Journal of Sports Science & Coaching, 16(4), 940–951. https://doi.org/10.1177/17479541211019515

Masiá, J., García, M., & Ibáñez, S. J. (2022). *Technical Efficiency of Shooting in Youth Basketball: Errors and Learning Patterns*. Journal of Physical Education and Sport, 22(3), 1154–1161. https://doi.org/10.7752/jpes.2022.03145

Moore, L. J., Vine, S. J., & Wilson, M. R. (2022). Quiet eye training under pressure. *Journal of Sports Sciences*.

MDPI (2023). Visual fixations differences in shooting conditions. *Appl Sci*.

Pamuk, Ö., & Kılınç, F. (2024). Shot mechanical analysis according to shooting performance in youth basketball players. Turkish Journal of Kinesiology, 10(3). https://doi.org/10.31459/turkjkin.1494789

Palao, J. M., & Valadés, D. (2020). *Efficacy of Training on Shooting in Youth Basketball: A Meta-Analysis*. European Journal of Human Movement, 45, 1–12. https://doi.org/10.21134/ejhm.v45.2020.10

Torres-Luque, G., Ortega, E., & Cárdenas, D. (2022). *Effect of Psychological Variables on Performance in Youth Basketball Shooting*. Frontiers in Psychology, 13, 856390. https://doi.org/10.3389/fpsyg.2022.856390

Ugrinowitsch, C., Benda, R. N., & Araujo, R. C. (2022). *Contextual interference and variability training on basketball jump shot performance: A randomized controlled trial*. Journal of Sports Sciences, 40(5), 519–527. https://doi.org/10.1080/02640414.2021.2008663

***Conflict of interest*:**

The authors declare no conflicts of interest.

***Authors' contribution*:**

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