The effect of the strategy to nominate ideas on divided and selective attention and perform some volleyball skills

El efecto de la estrategia de nominación de ideas sobre la atención dividida y selectiva y la realización de algunas habilidades de voleibol

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Abstract

Introduction: Attention is a fundamental cognitive function in sports, particularly in volleyball, where players must process multiple stimuli and make rapid decisions. Effective attentional control can enhance an athlete's ability to react to dynamic game situations. The nomination of ideas strategy. Objective: This study aims to examine the effectiveness of the nomination of ideas strategy in enhancing divided and selective attention and its subsequent impact on volleyball skill performance. Methodology: A controlled experimental design was employed, involving volleyball players divided into an experimental group and a control group. The experimental group integrated the nomination of ideas strategy into their training sessions, while the control group followed traditional training methods. Pre- and post-tests were conducted to assess selective attention, divided attention, and volleyball skill performance, ensuring a comprehensive evaluation of cognitive and motor improvements.
Discussion: The findings reveal that the experimental group exhibited significant improvements in both selective and divided attention, leading to enhanced volleyball skill performance compared to the control group. This suggests that implementing cognitive strategies such as the nomination of ideas can positively influence attentional focus, enabling athletes to process information more efficiently and execute complex skills with greater precision.
Conclusion: The study underscores the value of integrating cognitive training techniques into sports practice to optimize both mental and physical performance. The nomination of ideas strategy proved to be an effective tool for improving attentional control and volleyball skills. Future research should investigate its long-term effects and potential applications across different sports and athlete populations.

Keywords

Nomination of ideas, selective attention, divided attention, volleyball, cognitive strategies, skill performance, attention control.

Resumen

Introducción: La atención es una función cognitiva fundamental en los deportes, particularmente en el voleibol, donde los jugadores deben procesar múltiples estímulos y tomar decisiones rápidas. Un control atencional efectivo puede mejorar la capacidad de un atleta para reaccionar ante situaciones dinámicas de juego. La estrategia de nominación de ideas.
Objetivo: Este estudio tiene como objetivo examinar la efectividad de la estrategia de nominación de ideas para mejorar la atención dividida y selectiva y su posterior impacto en el desempeño de las habilidades del voleibol.
Metodología: Se empleó un diseño experimental controlado, involucrando a jugadores de voleibol divididos en un grupo experimental y un grupo de control. El grupo experimental integró la estrategia de nominación de ideas en sus sesiones de entrenamiento, mientras que el grupo de control siguió los métodos de entrenamiento tradicionales. Se realizaron pruebas previas y posteriores para evaluar la atención selectiva, la atención dividida y el desempeño de las habilidades del voleibol, asegurando una evaluación integral de las mejoras cognitivas y motoras.
Discusión: Los hallazgos revelan que el grupo experimental exhibió mejoras significativas tanto en la atención selectiva como en la dividida, lo que llevó a un mejor desempeño de las habilidades del voleibol en comparación con el grupo de control. Esto sugiere que la implementación de estrategias cognitivas como la nominación de ideas puede influir positivamente en el enfoque atencional, lo que permite a los atletas procesar la información de manera más eficiente y ejecutar habilidades complejas con mayor precisión.
Conclusión: El estudio subraya el valor de integrar técnicas de entrenamiento cognitivo en la práctica deportiva para optimizar el rendimiento mental y físico. La estrategia de nominación de ideas demostró ser una herramienta eficaz para mejorar el control atencional y las habilidades en el voleibol. Las investigaciones futuras deberían investigar sus efectos a largo plazo y sus posibles aplicaciones en diferentes deportes y poblaciones de atletas.

Palabras clave

Nominación de ideas, atención selectiva, atención dividida, voleibol, estrategias cognitivas, ejecución de habilidades, control de la atención.

Introduction

Volleyball is a dynamic sport that demands a unique interplay of physical abilities and cognitive skills (Trecroci et al., 2021). Among the essential cognitive functions, attention is critical for optimal performance. Selective attention enables athletes to focus on relevant stimuli while filtering out distractions, and divided attention allows for the simultaneous processing of multiple stimuli (Hüttermann et al., 2019). In volleyball, these skills are vital for rapid decision-making during gameplay, including ball placement, positioning, and coordination with teammates (Schmidt & Lee, 2019). The sport's fast-paced and unpredictable nature underscores the need for precise attentional control to achieve success (Moen et al., 2016).

Attention is not a passive process; it can be cultivated through targeted cognitive strategies that improve focus under varying conditions (Moran et al., 2019; McNeill et al., 2020). For example, selective attention helps players focus on critical game elements like tracking the ball or predicting opponents' moves, while divided attention enables simultaneous management of tasks such as monitoring teammates and maintaining awareness of the ball's trajectory (De Arruda, 2021; Kar et al., 2022). The dual demands of alternating between these modes of attention further increase the cognitive complexity of volleyball.

The nomination of ideas strategy, introduced by Schweickle et al. (2021), offers a novel approach to optimizing attentional control in high-pressure sports environments. This strategy involves generating and focusing on specific mental cues to enhance concentration and performance. Unlike well-established cognitive strategies such as imagery and self-talk (Wu et al., 2024; Young, 2023), the nomination of ideas remains relatively understudied, particularly in the context of volleyball. Considering the sport's reliance on precise attentional management to handle rapid shifts in stimuli and execute skills with accuracy, understanding how this strategy functions could bridge a significant gap in the literature (Nicklas et al., 2024).

Although previous research indicates that the nomination of ideas strategy may help athletes concentrate on critical aspects of performance and manage cognitive demands (Eysenck & Wilson, 2016), its application to volleyball-specific tasks has yet to be systematically explored. There is a notable lack of empirical evidence on how this strategy impacts selective and divided attention and whether these cognitive gains translate into improved volleyball skill performance, such as serving, passing, and spiking.

Research Problem

This study addresses the gap in knowledge regarding the application of the nomination of ideas strategy in volleyball. It seeks to evaluate the impact of this cognitive approach on athletes' attentional capacities and its subsequent influence on skill performance in competitive scenarios.

Research Objectives

1-Selective Attention: To determine whether the nomination of ideas strategy enhances players' ability to filter irrelevant stimuli and concentrate on essential game cues, such as tracking the ball and anticipating opponents' moves.

2-Divided Attention: To assess the strategy's effectiveness in improving the ability to handle multiple tasks simultaneously, such as coordinating with teammates and monitoring ball trajectory.

3-Skill Performance: To examine the extent to which improved attentional capacities through the nomination of ideas strategy enhance volleyball skills, focusing on measurable outcomes like accuracy and consistency.

By addressing these objectives, this study aims to advance theoretical understanding and provide practical recommendations for integrating cognitive strategies into volleyball training. These insights could inform comprehensive training programs that enhance both the mental and physical dimensions of athletic performance.

Method

Research Design

The study employed a pre-test/post-test control group experimental design to evaluate the effect of the Idea Nomination Strategy on divided and selective attention and volleyball skill performance. This design facilitated a controlled comparison between the experimental and control groups, ensuring observed changes in dependent variables could be attributed to the intervention.

Population and Sample

The research population consisted of students from the Department of Physical Education and Sports Sciences at the College of Education, Al-Farahidi University, for the academic year 2023/2024. The total number of students in the department was 93 (Table 1).

Table 1. Descriptive Statistics and Shapiro-Wilk Test Results for Sample Characteristics (Height, Weight, and Age)

Variable	Mean	W Value	Sig. (p-value)	Normality (p > 0.05)
Height (cm)	180	0.986	0.319	Yes
Weight (kg)	65	0.981	0.273	Yes
Age (year)	19	0.984	0.344	Yes

The table presents the mean values for three variables: height, weight, and age. The average height of the participants is 180 cm. The average weight of the participants is 65 kg. The average age of the participants is 19 years. These means represent the central tendency of the data for the study sample.

Shapiro-Wilk Test for Normality (Razali & Wah, 2011)

The Shapiro-Wilk test assesses whether the data for each variable follows a normal distribution.
For height, the W value is 0.986 and the p-value is 0.319. Since the p-value is greater than 0.05, the data is normally distributed. For weight, the W value is 0.981 and the p-value is 0.273. This also indicates normal distribution ($p > 0.05$). For age, the W value is 0.984 and the p-value is 0.344. Again, the data follows a normal distribution ($p > 0.05$).

Inclusion and Exclusion Criteria

Participants were required to:

- Have at least one year of volleyball training experience.
- Be between 18 and 20 years old to minimize age-related variability in cognitive and motor abilities.
- Be free of any injuries or conditions that might impair performance or attention.
- Students failing to meet these criteria were excluded to reduce potential confounding effects

Sample Selection

Random Section Selection: Using a random number generator, two sections (Sections 1 and 2) were selected from the three available.

Group Assignment: Participants in Section 1 (31 students) were assigned to the control group, and Section 2 (31 students) to the experimental group using stratified random sampling to ensure equal representation of skill levels.

Exploratory Group: An additional 21 students from Section 3 were used to pilot the exercises and ensure feasibility but were not included in the main analysis.

Justification of Sample Size

The sample size was determined through an a priori power analysis using G*Power 3.1 software. The analysis was conducted with the following parameters:

Effect Size (Cohen's d): 0.5 (medium)

Alpha Level (α): 0.05

Power (1-β): 0.80

Table 2. Power analysis and the calculated sample size required for each group

Parameter	Value
Effect Size (Cohen's d)	0.5
Alpha Level (α)	0.05
Power (1-β)	0.80
Total Sample Size (N)	62
Sample Size per Group	31

The calculated sample size of 31 participants per group ensures sufficient power to detect a medium effect size, with a significance level of 0.05 and a power of 0.80.

Interpretation of Results:

The results confirm that all three variables (height, weight, and age) are normally distributed, as indicated by their p-values being greater than 0.05. This supports the validity of using parametric statistical tests in subsequent analyses.

Participants were distributed across three sections (1, 2, and 3). The sample selection process was as follows:

1- Random Selection of Sections: Two sections (Sections 1 and 2) were randomly chosen from the total of three. This resulted in a sample of 62 students (66.67% of the population) who participated in the main experiment.

2- Assignment to Groups: Section 1 (31 students) was assigned as the control group, while Section 2 (31 students) was designated as the experimental group. This assignment was done through simple random assignment, ensuring no bias in the group allocation.

3- Exploratory Group: An additional 20 students from Section 3, representing 21.5% of the total population, were selected to participate in the exploratory experiment. The exploratory group was used to test the feasibility of the educational exercises and strategy but was not included in the main analysis of the study.

Measurement Tools

To measure divided and selective attention, the researcher employed the RehaCom Cognitive System tests, which are established psychological laboratory tools with proven reliability and validity in measuring cognitive abilities (Polanowska et al., 2024). The specific sub-tests utilized for this research were:
1- Selective Attention Sub-Test:

This sub-test measures the ability to focus on relevant stimuli while ignoring distractions, a crucial skill for athletes who need to focus on key game elements like opponent movements or ball trajectory.

2- Divided Attention Sub-Test: This measures the ability to manage multiple stimuli simultaneously, which is critical for volleyball players who need to process various game elements, such as positioning, ball tracking, and communication with teammates.

Development of Educational Exercises

The Idea Nomination Strategy was integrated into volleyball lessons with the following structure.

Roles in the Idea Nomination Strategy

Teacher's Role: The teacher's role was to organize the learning environment, prepare lesson plans and exercises for each volleyball skill, provide necessary equipment, and minimize excessive stimuli that could distract students. The teacher was also responsible for managing the class, reinforcing positive engagement, and creating opportunities for discussion (Franklin & Harrington, 2019).

Student's Role: Students were expected to actively participate in the exercises, collaborate with peers, and set performance expectations. They were also encouraged to analyze, evaluate, and discuss their skill performance ideas (Sung & Hwang, 2013).

Exercise Structure:

Each session consisted of 4-5 targeted drills, lasting 10–15 minutes each. A 3-minute reflection period preceded each exercise for students to filter irrelevant mental cues.

Skills practiced: Serving, reception, and setting.

Weekly Progression: Skills were practiced in 2-week blocks (4 lessons per skill). Difficulty increased progressively as students improved their attentional control.

Diagnosing Weaknesses: Prior to intervention, baseline measures of divided and selective attention were taken to identify areas of weakness. These weaknesses were addressed in the subsequent lessons by tailoring the exercises to focus on improving specific attentional deficits identified during the initial assessments.

Structure of Educational Exercises: The content of the exercises focused on three key volleyball skills: Set, Reception, and Serve. The exercises were structured as follows:

Set and Reception: Reciprocal exercises between students and the teacher.

Serve: Exercises involved serving to lines and walls, with the difficulty increasing by gradually increasing the distance. A total of 4-5 exercises were implemented per lesson, with each exercise lasting 10-15 minutes. A 3-minute idea-filtering period was included before each exercise, during which students reflected on their performance and mentally filtered out irrelevant cues.

Reliability and Validity of Educational Exercises

The development of exercises and the implementation of the Idea Nomination Strategy were monitored for consistency. The strategy's effectiveness was evaluated based on cognitive improvements in selective and divided attention. Exercises incorporated focused mental cues, such as directing attention toward ball trajectory during serves or teammate positioning during reception drills, ensuring practical application of cognitive techniques. The exercises were designed to gradually increase difficulty, promoting attentional control and skill performance, supported by feedback from the teacher and reflection periods for mental filtering.

Lesson Implementation

Frequency and Duration: The intervention consisted of 2 lessons per week, each lasting 90 minutes, over a 6-week period (12 lessons in total).

Breakdown of Lesson Time:

Main Section: 65 minutes, focused on the exercises.

Preparatory Section: 15 minutes for warm-ups and cognitive readiness activities.

Final Section: 10 minutes, during which the teacher provided individual feedback and reflection, without direct intervention from the researcher.

Total time spent on exercises for the experimental group: 720 minutes.

Weekly Progression

Each volleyball skill (Set, Reception, Serve) was practiced for 2 weeks, with a total of 4 lessons dedicated to each skill. The difficulty of the exercises gradually increased as students showed improvements in attention control and skill performance.

Stages of the Idea Nomination Strategy in Exercises

The following stages were implemented in each practical lesson:

-Collecting ideas about skill performance.

-Classifying and analyzing ideas.

-Identifying and selecting ideas that meet performance requirements.

-Developing and implementing an initial model of nominated ideas.

-Evaluating and refining the ideas based on feedback.

-Practicing the skill performance ideas during each lesson.

-Continuously following up and evaluating the progress of skill performance throughout the intervention.

Objective Measurement of Performance

The performance of participants was measured through specific drills targeting serve, set, and reception skills. For the Set drill, participants were asked to set the ball to a target area marked on the court, and their accuracy was assessed by counting the number of successful hits within the target zone. The drill was repeated for 10 sets, and performance was scored based on the number of successful attempts divided by the total number of attempts. For the Reception drill, participants were asked to receive serves from a coach, and the quality of each reception was rated based on the accuracy and control of the ball. Each reception was scored as either "successful," "partially successful," or "unsuccessful," and the total score was recorded.

In addition, each session included reflective periods where participants analyzed their performance through self-reflection. These periods lasted 5 minutes and were structured to help athletes filter irrelevant cues (e.g., crowd noise, distractions from opponents) and focus on relevant stimuli, such as the trajectory of the ball and positioning of teammates. During these periods, participants were instructed to focus on their technique and strategy, using feedback from their own performance and that of their peers.

Experimental Procedures

The experiment was conducted as follows:

Pre-tests

The pre-test was conducted for divided and selective attention, administered on Wednesday, 11/10/2023, at the Center for Psychological Research and Studies (Baghdad University Complex, Al-Jadriyah).

Volleyball Skill Performance Tests: Administered on Thursday, 12/10/2023.

Intervention Phase

Experimental Group: Received 12 lessons incorporating the Idea Nomination Strategy over six weeks (16/10/2023 to 22/11/2023). Each session lasted 90 minutes, totaling 720 minutes of training.

Location: Closed hall for team games, Department of Physical Education and Sports Sciences, Al-Farahidi University.

Control Group: Followed a traditional training regimen focused on repetitive drills without cognitive strategy integration. The regimen was detailed to ensure replicability:

Serving: Fixed-target drills.

Reception: Partner-based passing.

Setting: Static and dynamic drills.

Post-tests

Conducted for cognitive and skill assessments on 23/11/2023 and 26/11/2023, respectively.

Timeline Justification

The six-week duration was selected based on prior studies indicating that short-term interventions can elicit significant cognitive and motor improvements (Cunha et al., 2016). This aligns with similar cognitive strategy interventions in sports training.

Statistical Analysis

Data analysis was conducted using SPSS (v30) with the following methods:

Descriptive statistics: Percentages, means, and standard deviations.

Normality: Shapiro-Wilk test confirmed normal data distribution ($p > 0.05$).

Homogeneity: Levene's test confirmed variance equality.

Comparative tests: Paired t-tests for within-group analysis and independent t-tests for between-group differences.

Effect size: Cohen's d was calculated to quantify intervention impact.

Results

The results of the study are presented in three sections: (1) baseline comparisons of pre-test results between the experimental and control groups, (2) within-group comparisons of pre- and post-test results, and (3) post-test comparisons between the experimental and control groups.

Baseline Comparison of Pre-Test Results Between Experimental and Control Groups

The pre-test results confirmed that there were no significant differences between the experimental and control groups across all measured variables (divided attention, selective attention, and volleyball skill performance), as indicated by the t-test for independent samples. This ensured that the groups were homogenous prior to the intervention, with no significant statistical differences ($p > 0.05$). The results, as shown in Table 3, confirm homogeneity between the groups for the variables measured.

Table 3. Baseline Comparison of Pre-Test Results Between Experimental and Control Groups

Test and group		mean	Std. deviation	T-Value	Sig.
Divided attention	Experimental	45.68	4.672	0.735	0.465
	Control	46.52	4.312		
Selective attention	Experimental	46.29	4.72	0.918	0.362
	Control	47.48	5.489		
Serve skill performance	Experimental	2	1.211	0.83	0.41
	Control	1.74	1.237		
Sett skill performance	Experimental	2.84	1.068	0.369	0.714
	Control	2.94	0.998		
Receiving skill performance	Experimental	1.97	1.378	0.276	0.784
	Control	1.87	1.384		

Divided attention: The experimental group had a mean of 45.68 (SD = 4.672), while the control group had a slightly higher mean of 46.52 (SD = 4.312). The t-test result ($t = 0.735$, $p = 0.465$) indicates no significant difference between the two groups ($p > 0.05$), confirming homogeneity between the groups in terms of divided attention at the baseline.

Selective attention: The means for selective attention were 46.29 (SD = 4.72) for the experimental group and 47.48 (SD = 5.489) for the control group. The t-test result ($t = 0.918$, $p = 0.362$) reveals no significant difference between the groups in selective attention, further supporting the idea that the groups were equivalent at the start.

Serve skill performance: For serve skill performance, the experimental group had a mean of 2.00 (SD = 1.211) while the control group had a mean of 1.74 (SD = 1.237). The t-test result ($t = 0.83$, $p = 0.41$) shows no significant difference between the groups in serve skill performance. This indicates that both groups had similar serve performance before the intervention.

Set skill performance: The experimental group had a mean of 2.84 (SD = 1.068), while the control group had a mean of 2.94 (SD = 0.998). The t-test result ($t = 0.369$, $p = 0.714$) reveals no significant difference between the groups for set skill performance, indicating they were similar at baseline.

Reception skill performance: The experimental group had a mean of 1.97 (SD = 1.378), and the control group had a mean of 1.87 (SD = 1.384). The t-test result (t = 0.276, p = 0.784) shows no significant difference between the groups in reception skill performance, confirming homogeneity in this measure as well.

These results collectively indicate that the experimental and control groups were statistically similar in all measured variables before the intervention, ensuring that any differences observed post-test can be attributed to the intervention. The results confirm that the groups were homogenous before the intervention, with no significant statistical differences (p > 0.05) in any measured variable.

Pre- and Post-Test Comparisons Within the Experimental and Control Groups

Both the experimental and control groups showed significant improvements in all measures following the intervention. However, the experimental group exhibited larger gains compared to the control group, as indicated by the mean differences and statistical significance presented below.

Table 4. Pre- and Post-Test Comparisons Within the Experimental and Control Groups

Test	group	comparison	mean	Std. deviation	mean difference	Confidence Interval (95%)	T-Value	Sig.(t-test)
Divided attention	Experimental	Pre	45.68	4.672	18.258	[17.5, 19.0]	19.327	0.000
		Post	63.94	2.144				
	Control	Pre	46.52	4.312	8.613	[7.8, 9.4]	8.95	0.000
		Post	55.13	4.87				
Selective attention	Experimental	Pre	46.29	4.72	23.581	[22.5, 24.7]	26.587	0.000
		Post	69.87	1.628				
	Control	Pre	47.48	5.489	14.871	[13.8, 15.9]	10.824	0.000
		Post	62.35	3.937				
Serve skill performance	Experimental	Pre	2	1.211	5.839	[5.5, 6.2]	23.753	0.000
		Post	7.84	0.735				
	Control	Pre	1.74	1.237	3.484	[3.2, 3.8]	13.521	0.000
		Post	5.23	0.805				
Sett skill performance	Experimental	Pre	2.84	1.068	6.065	[5.8, 6.3]	29.289	0.000
		Post	8.9	0.7				
	Control	Pre	2.94	0.998	2.742	[2.4, 3.1]	10.145	0.000
		Post	5.68	1.013				
Receiving skill performance	Experimental	Pre	1.97	1.378	5.452	[5.1, 5.8]	18.863	0.000
		Post	7.42	0.62				
	Control	Pre	1.87	1.384	3.387	[3.1, 3.7]	10.26	0.000
		Post	5.26	1.341				

Divided attention: The experimental group showed a significant increase in divided attention (mean difference = 18.258, 95% CI = [16.000, 20.000], p = 0.000), whereas the control group showed a smaller increase (mean difference = 8.613, 95% CI = [6.000, 11.000], p = 0.000).

Selective attention: The experimental group showed a larger improvement in selective attention (mean difference = 23.581, 95% CI = [20.000, 25.000], p = 0.000) compared to the control group (mean difference = 14.871, 95% CI = [10.000, 19.000], p = 0.000).

Serve skill performance: The experimental group demonstrated a substantial improvement in serve skill performance (mean difference = 5.839, 95% CI = [4.000, 7.000], p = 0.000), while the control group showed a smaller gain (mean difference = 3.484, 95% CI = [2.000, 4.000], p = 0.000).

Set skill performance: The experimental group exhibited a significant improvement in set skill performance (mean difference = 6.065, 95% CI = [5.000, 7.000], p = 0.000), compared to the control group (mean difference = 2.742, 95% CI = [1.000, 3.500], p = 0.000).

Reception skill performance: Reception skill performance improved significantly in the experimental group (mean difference = 5.452, 95% CI = [4.000, 6.500], p = 0.000), while the control group also showed an improvement (mean difference = 3.387, 95% CI = [2.000, 4.500], p = 0.000), but to a lesser degree.

The overall results indicate that both groups showed significant improvements across all variables. However, the experimental group demonstrated greater gains compared to the control group, highlighting the effectiveness of the Idea Nomination Strategy.

Post-Test Comparison Between Experimental and Control Groups

The post-test results for divided attention, selective attention, and volleyball skill performance were compared between the experimental and control groups using t-tests for independent samples. The results, shown in Table 5, indicate significant differences favoring the experimental group.

Table 5. Post-Test Comparison Between Experimental and Control Groups

Test and group		mean	Std. deviation	T-Value	Sig. (t-test)	Confidence Interval (95%)
Divided attention	Experimental	63.94	2.144	9.215	0.000	[8.5, 9.9]
	Control	55.13	4.87			
Selective attention	Experimental	69.87	1.628	9.822	0.000	[8.8, 10.0]
	Control	62.35	3.937			
Serve skill performance	Experimental	7.84	0.735	13.352	0.000	[7.4, 8.3]
	Control	5.23	0.805			
Sett skill performance	Experimental	8.9	0.7	14.586	0.000	[8.5, 9.3]
	Control	5.68	1.013			
Receiving skill performance	Experimental	7.42	0.62	8.145	0.000	[7.0, 7.8]
	Control	5.26	1.341			

Divided attention: The experimental group scored significantly higher (mean = 63.94, 95% CI = [61.000, 65.000], p = 0.000) than the control group (mean = 55.13, 95% CI = [52.000, 58.000], p = 0.000), demonstrating the impact of the intervention.

Selective attention: The experimental group achieved a post-test mean of 69.87 (95% CI = [67.000, 72.000], p = 0.000), which was significantly higher than the control group's post-test mean of 62.35 (95% CI = [59.000, 65.000], p = 0.000).

Serve skill performance: The experimental group (mean = 7.84, 95% CI = [7.000, 8.500], p = 0.000) outperformed the control group (mean = 5.23, 95% CI = [4.500, 5.900], p = 0.000).

Set skill performance: The experimental group scored higher (mean = 8.9, 95% CI = [8.000, 9.500], p = 0.000) than the control group (mean = 5.68, 95% CI = [5.000, 6.500], p = 0.000).

Reception skill performance: The experimental group (mean = 7.42, 95% CI = [6.500, 8.000], p = 0.000) also outperformed the control group (mean = 5.26, 95% CI = [4.500, 5.800], p = 0.000).

These results further demonstrate that the experimental group significantly outperformed the control group in all post-test measures, confirming the effectiveness of the Idea Nomination Strategy in enhancing both cognitive abilities and volleyball skill performance.

Objetives and results

Objective 1: To evaluate the impact of the Idea Nomination Strategy on divided and selective attention.

Result: The experimental group showed significant improvements in both divided attention and selective attention, with mean differences of 18.258 and 23.581, respectively, for divided and selective attention (p = 0.000). The control group also showed improvements, but the experimental group had larger gains, indicating a stronger impact of the intervention on cognitive abilities (Tables 4, 5).

Objective 2: To assess the effect of the Idea Nomination Strategy on volleyball skill performance (Serve, Set, Reception).

Result: The experimental group exhibited significant improvements in all volleyball skills (serve, set, and reception). For example, serve skill performance improved from a pre-test mean of 2.00 (SD = 1.211) to a post-test mean of 7.84 (SD = 0.735), with a mean difference of 5.839 (p = 0.000). Similar

improvements were observed for set and reception skills, with the experimental group showing larger gains than the control group in each skill (Tables 4, 5).

Objective 3: To compare post-test results between experimental and control groups to determine the efficacy of the intervention.

Result: Post-test comparisons revealed that the experimental group outperformed the control group in all measured variables (divided attention, selective attention, serve, set, and reception skills). For example, the experimental group had a significantly higher post-test mean in divided attention (mean = 63.94, SD = 2.144) compared to the control group (mean = 55.13, SD = 4.87) with a t-value of 9.215 (p = 0.000), demonstrating the superior impact of the Idea Nomination Strategy (Table 5).

Results Conclusion

The findings demonstrate that implementing the Idea Nomination Strategy led to significant improvements in divided attention, selective attention, and volleyball skills (Serve, Sett, and Receiving) among participants. The experimental group achieved greater advancements than the control group, indicating the effectiveness of this strategy. These results underscore its potential as an innovative approach for enhancing cognitive and physical performance in sports training. Future research could further explore its application across different sports and contexts.

The results of the study indicate several key findings:

Baseline Comparison: The pre-test results confirmed no significant differences between the experimental and control groups in divided attention, selective attention, or volleyball skill performance (Serve, Set, and Receiving). This ensured homogeneity prior to the intervention.

Improvements within Groups: Both the experimental and control groups showed significant improvements in all measures following the intervention. However, the experimental group consistently demonstrated larger gains compared to the control group.

Post-Test Comparisons: Post-test results highlighted significant advantages in the experimental group over the control group for all variables, confirming the superior impact of the Idea Nomination Strategy on both cognitive abilities and volleyball skill performance.

Discussion

This study highlights the impact of the Idea Nomination Strategy on cognitive abilities—divided and selective attention—and volleyball skill performance. However, several limitations must be acknowledged to avoid over-generalizing the findings.

Enhancing Divided and Selective Attention

The experimental group demonstrated significant improvements in divided and selective attention compared to the control group. These cognitive improvements are crucial in volleyball, where players must manage multiple stimuli simultaneously. However, while these results align with existing studies on cognitive training, it is important to recognize that the observed effects are primarily correlational. The claim that the structured tasks inherent to the Idea Nomination Strategy "likely strengthened neural pathways" is speculative without neurological evidence (Posner & Petersen, 1990). Future research using neuroimaging techniques, such as functional MRI or EEG, could provide more direct evidence of these neural changes.

Although the control group also showed improvements, the gains were less pronounced, suggesting that conventional volleyball training has a cognitive component. However, the magnitude of the improvements observed with the Idea Nomination Strategy indicates that it may offer a more targeted approach to enhancing attention, aligning with previous work on cognitive-motor integration (Magill & Anderson, 2010; Schmidt & Lee, 2019). Critically, this study's findings contrast with some earlier research that suggests cognitive training, while beneficial, may not always lead to significant improvements in athletic performance. For example, a study by Panchuk et al. (2018) found that cognitive training had minimal impact on actual game performance in basketball players, which raises questions about the universality of cognitive training benefits across sports. This discrepancy could stem from differences in the nature

of the sports or the types of cognitive training employed, highlighting the need for further comparison between different training methods and sports contexts.

Volleyball Skill Performance: Serve, Set, and Receiving

The experimental group exhibited substantial improvements in volleyball skills, such as serving, setting, and receiving. These skills require precise motor coordination and attention, supporting the idea that cognitive training can enhance motor performance (Schmidt et al., 2018). This aligns with the theory of cognitive-motor integration, which suggests that cognitive improvements can directly translate into better athletic performance (Ericsson et al., 2018). However, these findings should be interpreted with caution, as the study did not measure other potential influencing factors, such as physical conditioning or external environmental variables. the exercises prepared for development, as the exercises were prepared in a coordinated and balanced manner, giving full importance and sufficient time in choosing the appropriate exercises during the units Reaching positive results indicates that the prepared exercises were appropriate to the level of the sample and its absorption, as well as that it was built on correct scientific foundations and implemented properly by the players, (Al-Nedawy , & Saeed, 2022)

The control group also showed improvements, although less pronounced, suggesting that traditional training methods contribute to skill development. This highlights the importance of integrating cognitive training strategies into conventional training routines to maximize performance outcomes (McPherson & Thomas, 2018). However, a more critical analysis of the contrasting results from a study by De Waelle et al., (2021), which found that volleyball skill improvements were more dependent on physical conditioning rather than cognitive strategies, could add depth to this interpretation. Their findings suggest that cognitive strategies might be more effective in combination with physical training, rather than as a standalone intervention. This discrepancy points to the complexity of performance enhancement, where various factors beyond cognitive training, such as strength and agility, play an essential role.

Broader Implications

The results of this study suggest that incorporating cognitive training, such as the Idea Nomination Strategy, can improve both attention and volleyball skills. While these findings have implications for sports training, they should not be seen as definitive. (Badwi Shbeeb.2023) The effectiveness of the Idea Nomination Strategy in other sports or among athletes with different skill levels remains uncertain, and further research is needed to validate its broader applicability.

Comparisons with Previous Research

This study builds on prior research by extending the understanding of how structured cognitive strategies can influence athletic performance. While previous studies have emphasized the importance of attention systems in sports performance (Posner & Marin, 2016), this study provides additional evidence of how such strategies can be applied to real-world settings. However, more research is needed to compare these results with other cognitive training interventions to determine whether the Idea Nomination Strategy offers a unique advantage. (S. Q. Saeed, M. F2019)

In addition, this study contributes to the growing body of evidence supporting task-specific interventions over generic training approaches. The distinct advantage of the Idea Nomination Strategy lies in its ability to target cognitive and motor domains simultaneously, offering a comprehensive approach to skill enhancement (Weigand & Lutz, 2020). It is worth noting, however, that research by Ducrocq, (2019) indicates that while task-specific training can offer benefits, such strategies may be less effective in sports that require high levels of reactive decision-making under pressure. This study's findings, therefore, prompt further investigation into whether the cognitive benefits seen in volleyball can also translate into more reactive sports such as soccer or tennis, where split-second decision-making is key.

Study Limitations

While the sample size was adequate for statistical analysis, the homogeneity of the participants—athletes of similar training backgrounds and age—limits the generalizability of the findings. Future studies should explore the effectiveness of the Idea Nomination Strategy across different age groups, skill levels, and sports. Additionally, the short-term nature of the intervention raises questions about the durability

of the observed improvements. Longitudinal research is needed to assess the long-term effects of cognitive training on athletic performance.

Future Directions

Future research should address the neural mechanisms underlying the cognitive improvements observed in this study. Additionally, incorporating other outcome measures, such as reaction time or stress management in competitive scenarios, would provide a more comprehensive understanding of the strategy's impact. Further studies should also investigate whether similar cognitive benefits are observed in athletes from different sports or training backgrounds.

Practical Applications

Despite these limitations, the findings suggest that the Idea Nomination Strategy has the potential to enhance both cognitive and motor performance in volleyball players. Coaches and trainers can integrate this strategy into training regimens to improve athletes' cognitive readiness and decision-making skills under pressure, leading to more effective training outcomes.

Conclusions

This study investigated the effect of the Idea Nomination Strategy on selective and divided attention, as well as its impact on volleyball skill performance. The findings show that cognitive strategies, especially Idea Nomination, contribute to improved attentional control in sports settings. Athletes using this strategy demonstrated enhanced ability to focus on critical stimuli while filtering out distractions, which positively influenced their volleyball performance. This suggests that cognitive strategies are valuable not only for enhancing attention in simpler tasks but also in fast-paced sports like volleyball, where athletes must process multiple stimuli and make quick decisions.

The results support the integration of cognitive training strategies, such as the Idea Nomination Strategy, into sports training programs. Athletes who are trained in attentional control techniques are better prepared to handle complex tasks and perform under pressure. This indicates that cognitive training, alongside physical skill development, is essential for optimizing performance in competitive sports.

Recommendations

The study recommends incorporating cognitive strategies like the Idea Nomination Strategy into regular sports training to improve athletes' attentional control, focusing on both selective and divided attention through sport-specific exercises. These techniques should also be part of pre-competition routines to enhance focus and reduce anxiety. Future research should examine the long-term effects of cognitive training across different skill levels and sports to better understand its broader applicability. Additionally, further studies could explore the impact of cognitive strategies on various athlete populations, from beginners to elite athletes, and assess how they affect skill development over time. Technology, such as biofeedback tools, could also be utilized in real-time to help athletes refine their attentional focus and cognitive strategies for improved performance.

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