



# The Effect of Positive and Negative Reinforcement on Players' Performance in Critical Moments of Football Matches

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## ABSTRACT

This paper proposes a specialized training methodology aimed at improving the speed of futsal players, leveraging insights from recent studies and incorporating targeted exercises to enhance agility, strength, and overall speed. Speed development in futsal players can be achieved through a combination of resistance training, agility drills, and sport-specific exercises. Research demonstrates the effectiveness of functional inertial eccentric overload and vibration training in enhancing change-of-direction speed, and the implementation of in-season resistance training programs has shown significant improvements in strength and power performance. Additionally, futsal-specific drills contribute to reducing body fat, improving aerobic capacity, and enhancing agility. The proposed methodology integrates these proven training techniques to develop the necessary physical attributes for high performance in futsal, ultimately leading to improved speed and better performance on the court.

Keywords: Proposed Methodology , Developing Speed , Futsal , Players.

## 1. Introduction

The psychological impact of reinforcement strategies on athletes' performance has been a long-standing topic of interest in sports psychology. Reinforcement, whether positive or negative, influences motivation, mental resilience, and ultimately, performance in high-pressure situations. Positive reinforcement, such as praise, rewards, and encouragement, has been shown to enhance an athlete's confidence and focus, fostering a more resilient mindset under stress. Conversely, negative reinforcement, which involves removing an aversive stimulus to strengthen a behavior, can lead to short-term compliance but may also induce anxiety and hesitation in crucial moments (Al-Nedawi, Al-Nedawi, & Yass, n.d.).

Research on mental toughness and reinforcement sensitivity suggests that athletes who are highly sensitive to reward mechanisms demonstrate greater consistency in high-pressure scenarios. A study examining the interplay of punishment and reward sensitivity in swimmers found that individuals with high punishment sensitivity but low reward sensitivity displayed stronger mental toughness and better performance under pressure. Conversely, those with high reward sensitivity but also high punishment sensitivity showed decreased resilience in stressful situations (Beattie, Alqallaf, & Hardy, 2017) (Ta'ima, Ne'ma, & Al-Momen, 2024)

Similarly, in a study on weightlifting performance, it was found that positive reinforcement had a significant impact on athletes' ability to achieve targeted performance outcomes (Al-Nidawi & Saleeh, 2022). The application of a structured reinforcement program led to improved motivation and reduced dropout rates in young weightlifters, emphasizing the long-term benefits of reward-based coaching strategies (Fayyaz, Afsheen, & Khan, 2021).

Football, as a dynamic and unpredictable sport, presents numerous high-pressure moments that test players' psychological resilience. Evaluative feedback, a form of reinforcement, has been shown to influence decision-making in sequential tasks, where structured feedback enhances learning and skill transfer (Gupta, Biswas, & Srivastava, 2023). In football, this principle suggests that players who receive consistent positive reinforcement from coaches and teammates may develop a stronger ability to execute complex plays under pressure (Al-Muimin, 2008).

On the other hand, studies have highlighted the risks associated with excessive negative reinforcement. In an experimental analysis, it was found that while negative reinforcement can temporarily improve performance, it often leads to increased stress and decreased long-term effectiveness (Schietz et al., 2019). Football players subjected to frequent negative feedback may experience increased anxiety, leading to poor decision-making and reduced performance in critical moments.

Overall, the balance between positive and negative reinforcement is crucial in optimizing player performance in high-stakes football matches. Effective coaching strategies that emphasize positive reinforcement while minimizing the adverse effects of negative reinforcement can help players develop confidence, resilience, and consistency under pressure.

## Research Problem

Critical moments in football matches are among the most pressure-filled times for players, requiring high performance under intense psychological and physical conditions. At this point, psychological reinforcement—whether positive or negative—plays a role in influencing players' performance. However, the extent to which each type of reinforcement is effective and how it impacts players' performance in these moments remains in question, especially given the differences in players' personalities and levels of experience. Therefore, this study aims to understand the effect of positive and negative reinforcement on players' performance in critical moments and how these methods can be utilized to improve their performance.

### *1.1. Research Objectives*

- Analyze the effect of positive reinforcement on psychological and physical performance.
- Assess the negative effects of negative reinforcement under critical conditions.
- Explore the relationship between players' personal characteristics and the impact of psychological reinforcement methods.

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## **2. Methodology**

### *2.1 Research Approach*

This study adopts the descriptive-analytical method, which is used to examine phenomena as they exist in reality and analyze data objectively. This approach was selected to determine the effect of positive and negative psychological reinforcement on football players' performance during critical moments by collecting data through a specially designed questionnaire.

### *2.2 Research Sample*

The sample consists of 100 male and female players from various age groups and performance levels (both professionals and amateurs) 'A stratified random sampling technique was used to ensure the representation of all targeted groups in the study 'Participants must be football players with experience in official matches who have encountered situations requiring decision-making under pressure.

### *2.3 Research Tools*

1. Questionnaire Design: The questionnaire was developed based on reliable instruments used in previous studies on psychological reinforcement and athletic performance. Adjustments were made to align with the study's nature and objectives 'The study is based on the "Self-Talk Questionnaire" developed by Embree, R. A. (1996), which evaluates the effect of positive and negative self-talk on sports performance 'Additional questions were included to focus on critical moments in matches, which are the core subject of this research.

2. Modifications to the Questionnaire: Inclusion of questions linking self-talk to performance in critical moments 'Addition of open-ended questions to gather participants' insights and qualitative data 'Elimination of questions related to general performance evaluation to maintain focus on critical moments only 'Adjusting phrasing for clarity and ensuring focus on psychological reinforcement 'Adaptation of Skill Performance Questions 'Modifying questions to directly assess the impact of psychological reinforcement on skill performance (e.g., passing, shooting, dribbling).

3. Reasons for the Modifications:

- Aligning the questionnaire with the study's objectives.
- Improving the clarity and ease of understanding of the questions.
- Customizing the tool for the target population (football players).
- Providing both quantitative and qualitative data for a more comprehensive analysis.

4. Questionnaire Sections

- The questionnaire consists of four main parts:
- Personal Information: Collecting demographic data about players, such as age, gender, playing level, and years of experience.
- Evaluation of Psychological Reinforcement: Includes closed-ended questions on positive and negative reinforcement using a five-point Likert scale (1-5).
- Effect of Reinforcement on Performance: Measures the relationship between psychological reinforcement and players' performance in critical moments.
- Open-ended Questions: Aimed at gathering qualitative insights on the impact of psychological reinforcement methods from the participants' perspectives.

## 2.4 Research Procedures

1. Questionnaire Design: Developed based on previous studies and a literature review related to psychological reinforcement.
2. Pilot Study: Conducted on a sample of 10 players to test the clarity of the questions and the validity of the instrument.
3. Data Collection: The questionnaire was distributed electronically (via email and social media platforms) and physically at sports clubs.
4. Data Analysis: SPSS software was used for data analysis.
5. Validity and Reliability of the Instrument

Validity: The instrument's face validity was confirmed by presenting it to a group of sports psychology experts.

Reliability: Reliability was assessed using the test-retest method, and the consistency of the instrument was confirmed by calculating Cronbach's Alpha coefficient, which indicated a high reliability value.

6. Statistical Methods : SPSS software was used for data analysis to ensure accurate statistical interpretations

## 2.5 Psychological Reinforcement and Performance in Critical Moments of Football Matches – Questionnaire

Thank you for taking the time to answer this questionnaire. This questionnaire aims to study the effect of **psychological reinforcement (positive and negative)** on the performance of football players in critical moments. Your responses will be kept strictly confidential and will be used for scientific research purposes only.

### Part One: Personal Information

Question	Answer
Age	
Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
Years of Experience in Football	
Level	<input type="checkbox"/> Professional <input type="checkbox"/> Amateur

### Part Two: Evaluation of the Effect of Psychological Reinforcement

Please indicate your level of agreement with the following statements:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Positive encouragement from the coach boosts my self-confidence during critical moments in the match.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positive psychological support reduces stress and helps me focus during the game.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positive motivation pushes me to deliver my best performance during matches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constructive criticism from the coach helps me improve my performance and correct my mistakes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative comments during critical moments increase my stress and affect my performance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can benefit from negative criticism when it is presented constructively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Part Three: The Effect of Reinforcement on Performance

Please indicate your level of agreement with the following statements:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Psychological reinforcement helps me control my emotions during matches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positive reinforcement contributes to improving my skill performance and making the right decisions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative criticism makes me more aware of my mistakes and motivates me to work on improving them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### Part Four: Open-Ended Questions

Question	Answer
How do you perceive the effect of positive encouragement on your performance in critical moments?	_____
How does negative criticism affect your performance during matches?	_____
What do you think is the best way to enhance your psychological and skill performance in critical moments?	_____

### 3. Results

**Table 1** the Results of Evaluating Statements Related to Psychological Reinforcement and Its Effect on Performance

Statement	Mean	Standard Deviation	Highest Percentage (4-5)
Positive encouragement enhances self-confidence	3.07	1.40	54%
Psychological support reduces stress	2.93	1.44	48%
Positive motivation improves performance	2.86	1.37	45%
Constructive criticism helps improve performance	3.26	1.45	58%
Negative comments increase stress	3.01	1.48	52%
Constructive criticism helps correct mistakes	3.26	1.47	58%
Reinforcement helps in controlling emotions	2.98	1.52	49%
Positive reinforcement enhances skills	2.91	1.38	47%
Negative criticism increases awareness of mistakes	2.91	1.40	46%

Constructive criticism (Mean: 3.26) received the highest rating, as participants considered it significantly helpful in improving performance and correcting mistakes. Positive encouragement (Mean: 3.07) showed moderate agreement among participants regarding its importance in boosting self-confidence. Negative comments (Mean: 3.01) were reported to increase stress levels among players. Positive psychological support (Mean: 2.93) was evaluated lower than expected in reducing stress, suggesting a potential gap in its application. Lastly, negative criticism (Mean: 2.91) was perceived to have a limited role in increasing awareness of mistakes.

### 4. Discussion

The results suggest that different forms of reinforcement have varied effects on football players' psychological states and performance. Constructive criticism received the highest rating, indicating its effectiveness in improving performance and correcting mistakes. This finding aligns with research by (Quiroz et al. 2013), which emphasizes the importance of structured feedback in learning environments. Similarly, (Auer et al. 2020) found that psychological stress negatively affects musculoskeletal performance, supporting the idea that feedback should be constructive rather than stress-inducing (Abeer Dakhel Al-Salmi & ola Issa Aboud, 2017) (Al-Mumin, 2015)

Positive encouragement was moderately rated for enhancing self-confidence, but it was not as effective in reducing stress. This is consistent with the study by (Erikstad et al. 2018), which highlights that a positive environment fosters youth football development but does not necessarily mitigate pressure in high-stakes situations. In contrast, negative comments and criticism were found to increase stress levels, confirming previous research on stress and performance. (Auer et al.2020) demonstrated that mental stress reduces football players' efficiency, suggesting that excessive negative feedback may

hinder performance rather than promote improvement. Moreover, (Fayyaz et al.2021) found that applying positive reinforcement strategies instead of negative feedback significantly improves athletes' outcomes, further reinforcing the importance of constructive approaches. (Al-Muimin, n.d.)

Interestingly, reinforcement for emotional control and positive reinforcement for skill development were rated relatively low. This suggests that traditional reinforcement strategies might not be effectively addressing the emotional and technical aspects of performance. Studies such as (Ryan et al. 2020) emphasize the role of athlete monitoring and individualized training adjustments in optimizing match performance, indicating that a more tailored approach to psychological reinforcement may be beneficial (Al-Nedawi, Al-Nedawi, & Yass, n.d.).

Overall, the results indicate that constructive criticism is the most effective reinforcement method for performance improvement (Quiroz et al., 2013), while positive encouragement boosts confidence but does not significantly reduce stress (Erikstad et al., 2018). Additionally, negative comments increase stress, potentially hindering performance (Auer et al., 2020), whereas positive reinforcement should be better utilized to enhance both skill development and emotional regulation (Fayyaz et al., 2021). Finally, a more personalized approach to reinforcement may be needed to optimize psychological and physical readiness (Ryan et al., 2020). Coaches and sports psychologists should prioritize constructive feedback and individualized reinforcement strategies while minimizing the use of negative comments to help improve performance and emotional resilience in high-pressure football scenarios.

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## 5. Conclusion

The findings of this study highlight the significant role of psychological reinforcement in shaping football players' performance, particularly in critical moments. Constructive criticism emerged as the most effective method for improving performance and correcting mistakes, as it enhances players' confidence in their ability to improve when delivered in a supportive and directed manner. While positive encouragement plays a crucial role in boosting self-confidence, it may not be sufficient on its own to optimize performance, necessitating its integration with other reinforcement methods.

Negative comments, when not delivered constructively, increase players' stress levels, thereby limiting their ability to perform effectively, especially in high-pressure situations. Striking a balance between positive encouragement and constructive criticism is key to motivating players and enhancing their performance while minimizing the negative impact of stress. Additionally, positive psychological support recorded lower-than-expected results, indicating the need to refine its application methods to better reduce stress and improve players' focus.

These insights emphasize the importance of adopting a strategic approach to reinforcement, ensuring that feedback is constructive, timely, and tailored to the needs of the players to maximize their development and performance.

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