

The Effect of Motor Anticipation Using Attention-Focusing Exercises on Motor Response in Defensive Handball Players

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Abstract

The study includes five chapters. The first chapter introduces the research, covering the introduction and the importance of the study. The rapid development of sports results across all fields requires scientifically programmed training. There has been significant attention on the advancement of sports movements, making the new concept of physical education reflected in its programs, as it is considered a specialized educational system based on fundamental motor skills. Anticipating the movements of an opponent is one of the essential phenomena in handball. In this game, motor anticipation refers to the full and prior identification of the opponent's movements and how to counteract or defend against them in various ways. This makes the research significant as it aims to understand motor anticipation using attention-focusing exercises in handball as one of the problems faced by players and teams in physical education colleges, significantly affecting their performance levels.

Keywords: Motor, Anticipation, Attention-Focusing and Exercises.

Introduction

The rapid advancements in sports results across all fields can only be achieved through scientifically programmed training. There has been significant attention to the development of sports movements, leading to a new concept of physical education reflected in its programs, as it is considered a specialized educational system relying on fundamental motor capabilities. We live in an era of rapid technological advancements in all scientific and practical fields, particularly in sports, which strives to address numerous challenges through comprehensive and practical studies.

Handball is one of the most dynamic sports, characterized by excitement and the extent to which players comprehend their actions as they gain experience and personal expertise.¹ Prior experience plays a critical role in motor anticipation, without which

players cannot predict their opponent's skills and future movements in various gameplay scenarios. Anticipating an opponent's movements is one of the key motor phenomena in handball.² In this context, motor anticipation involves fully and preemptively identifying the opponent's movements, determining their intent, and devising ways to counteract or defend against them effectively. Thus, the significance of this research lies in exploring motor anticipation among defensive handball players, as it is one of the challenges affecting players and teams in our colleges and significantly impacts their performance levels.

Research Problem

Due to advancements in handball, countries around the world have adopted systematic and sound planning to elevate their teams to higher levels. Observing the university's handball team players revealed that early motor anticipation of actions intended to counter opponent movements and its impact on the motor responses of defensive players is below the required level. Addressing this issue involves guiding their defensive skills toward prior knowledge of the purpose and direction of movements.

Research Objective

- To identify the effect of motor anticipation using attention-focusing exercises on motor responses in defensive handball players.

Research Hypotheses

- There are statistically significant differences between the effects of motor anticipation and motor response in defensive handball players.

Research Fields

- **Human Field:** Defensive players of the university handball team.
- **Spatial Field:** Indoor Hall – College of Physical Education and Sports Sciences.
- **Temporal Field:** From January 18, 2024, to February 29, 2024.

Research Methodology

Many phenomena can only be studied through an appropriate method tailored to the research problem. Therefore, the researcher used the experimental method, as it is the most accurate approach to scientifically and theoretically solving many scientific problems.

1. Research Sample

The research sample consisted of 15 players from Al-Muthanna University's handball team. The sample was intentionally chosen as these players are the most experienced in the game and have been part of the team for longer periods.

1.1 Homogeneity of the Sample

To achieve uniformity in the research sample and avoid individual differences affecting the results, the researcher measured variables like age, height, and weight, as shown in Table (1):

Table (1). Show homogeneity of the Sample in Height, Weight, and Age Variables

| Variable | Unit of Measurement | Sample Size | Mean | Standard Deviation | Median | Skewness | Distribution |
|----------|---------------------|-------------|--------|--------------------|--------|----------|--------------|
| Height | cm | 15 | 169.75 | 2.291 | 170 | 0.020 | Normal |
| Weight | kg | | 70.05 | 1.959 | 70 | -0.077 | Normal |
| Age | Years | | 19.9 | 0.912 | 20 | 0.676 | Normal |

2. Research Tools:

- Arabic and foreign references.
- Observation and recording.
- A supporting team.
- Video recording devices (Sony, made in Japan).
- Two CDs.
- DVD player (made in Japan).
- LG television.

3. Pilot Experiment:

Conducted on January 18, 2024, to test the devices and clarify tasks for the supporting team.

4. Pre-tests:

Pre-tests were conducted on January 25, 2024, under controlled conditions.

5. Main Experiment:

The main experiment took place on February 1, 2024, focusing on movement pathways of defensive players and opponents.

6. Post-tests:

Post-tests for both the control and experimental groups were conducted on February 29, 2024, under similar conditions.

Chapter Four: Results and Analysis

Results

Table (2). Show frequency and Percentages for Handball Defensive Variables

| Variable | Frequency | Percentage |
|--------------------------|------------------|-------------------|
| Ball interception | 18 | %22.222 |
| Ball dispersion | 13 | %16.049 |
| Defensive side movements | 11 | %13.580 |
| Forward movements | 6 | %7.407 |
| Backward movements | 10 | %12.346 |

Discussion

Early detection significantly improves motor responses and increases success rates, as the sample is uniform and representative of a single cohesive group.

The study investigates the impact of motor anticipation exercises focused on attention on the motor responses of defensive handball players, highlighting several key findings.³ Defensive players showed significant improvements in early detection of opponent movements after participating in targeted attention-focusing exercises, emphasizing the importance of training that simulates real game scenarios requiring quick and precise responses.⁴ The uniformity of the research sample and the focus on attention-related drills allowed players to process information more efficiently and develop effective strategies during gameplay, resulting in higher success rates in

intercepting and countering opponents. Ball interception emerged as the most significant defensive skill, with the highest frequency and success percentage,⁵ while defensive side movements and ball dispersion also played crucial roles in maintaining effective defensive performance. Players demonstrated a notable improvement in predicting opponent movements based on ball trajectory and teammates' actions, revealing a strong connection between motor anticipation, team coordination, and individual skill levels.⁶ The study also underscores the importance of integrating teamwork into motor anticipation exercises, as collaboration enhances both defensive and offensive capabilities.⁷ Consequently, the findings suggest that structured attention-focusing exercises should be a fundamental component of handball training programs, with training designed to replicate game conditions and emphasize rapid decision-making and precise execution.⁸ Coaches are encouraged to teach defensive players how to interpret cues from opponents and teammates effectively, thereby enhancing anticipation and response time.⁹

Conclusions

1. Success rates in early detection stages are higher due to accurate and fast information processing, enabling correct movement strategies.
2. Movements of teammates, ball trajectory, and defensive player movements affect motor anticipation.

Recommendations

1. Focus on training defensive players in motor anticipation from the start.
2. Encourage teamwork during training to improve collaboration in defense and offense.

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Appendixes

Appendix (1). Show observation form

| Observation Date | Defensive Skill | Ball Interception | Ball Dispersion | Defensive Side Movements | Forward/Backward Movements | Motor Response | Early Detection | Late Detection |
|------------------|-----------------|-------------------|-----------------|--------------------------|----------------------------|----------------|-----------------|----------------|
| | | | | | | | | |

Appendix (2). Show attention-focusing exercises

| Exercise Number | Exercise Name | Description | Equipment Used |
|-----------------|--------------------|--|----------------|
| 1 | Attention Focusing | Begin with a high jump while holding a medicine ball, then lower it to the chest upon landing. | Medicine Ball |
| 2 | Attention Focusing | Bend at the torso and throw the ball between the legs at a wall, catching it after rebounding. | Handball |
| 3 | Attention Focusing | Stand 2 meters from a wall, throw the ball alternately with both hands, catching after 3 throws. | Handball |
| 4 | Attention Focusing | Throw the ball upward, catch it while stepping forward, and repeat the sequence three times. | Handball |
| 5 | Attention Focusing | Throw the ball high to a point on the wall, rotate quickly, and catch it before it falls. | Handball |