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Research Article

Improvement of Speed-Strength Qualities in Young Football Players Aged 12-13

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ABSTRACT

The development of speed-strength qualities, or "explosive power," is very important for young football players aged 12-13 who want to be successful in the game. This study looks at how effective different training methods are for improving these abilities. We used key training approaches, such as plyometric exercises, resistance training, and dynamic drills with weights, to help build explosive power.

The research focused on exercises with various types of weights above, equal to, and below what players usually lift so they can improve their skills and mimic real game situations. We tested the players abilities in vertical and horizontal jumps, multi-jump series, and strength during resisted movements. The results showed that the players made significant progress in explosive power. This study highlights the importance of using a variety of training methods to help young athletes develop the speed and strength they need to perform better on the field.

Keywords: Speed-strength qualities; Explosive power; Young football players; Physical conditioning; Jumping exercises resistance training; Football age 12-13; Training methodology; Eye-foot visual reaction times of young soccer players; Visual-Motor Reaction Time (VMRT)

INTRODUCTION

Football is one of the most popular sports in the world. It requires players to be physically fit, especially in areas like speed and strength. For young football players aged 12-13 this is a crucial time for their development. During these years it is important to not only support their physical growth but also to use effective training methods that will help them improve their performance [1].

Speed and strength are key factors for success in football young players need to be able to start quickly accelerate and change direction fast research shows that qualities like explosive power and agility play a significant role in how well players perform during games.

This study focuses on the impact of specific training methods like box jumps on developing speed and strength in young football players plyometric exercises which are designed to build explosive power can greatly enhance a player's physical ability and improve their skills on the field [2].

The goal of this research is to evaluate how effective box jumps are in the training process for young football players aged 12-13. We will analyze the training results and look at how these exercises affect the speed and strength of the players. We hope that the findings will help improve training programs for young footballers and create better ways to prepare them for the game. Eye-Foot Visual Reaction Time (EF-VRT) refers to the time it takes for an individual to respond visually to a stimulus (often a ball or an object) with the foot, commonly assessed in sports like soccer. It is an essential skill for young soccer players as it influences their ability to react quickly and accurately in dynamic game situations. EF-VRT includes both visual perception and motor coordination, which are vital for skills like dribbling, passing, and shooting [3].

We forget about Visual-Motor Reaction Time (VMRT) refers to the ability to perceive visual stimuli and immediately respond with motor actions. In sports like soccer, this ability is crucial for performing various actions such as dribbling, passing, shooting, and blocking opponents' attacks. Visual-motor reactions consist of two main components: visual perception (detecting and

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processing visual information) and motor execution (reacting with appropriate physical movements) [4].

MATERIALS AND METHODS

Methods for improving visual-motor reaction times:

Training with visual stimuli: Drills that involve the use of the ball, coordination exercises, or video-based training can help athletes enhance their reaction times by simulating game situations.

Physical training: General physical conditioning and coordination exercises help improve overall motor control and reaction speed. Agility training, balance drills, and plyometric exercises are useful for enhancing visual-motor reaction times [5].

Psychological training: Improving concentration and attention through mental exercises, such as mindfulness or reaction-based video games, can help athletes react more quickly in high-pressure situations.

Game-specific drills: Incorporating game-like scenarios in practice sessions that require players to react to changing situations (e.g., defending, passing, or shooting in dynamic conditions) can help improve their reaction time under real match conditions.

RESULTS AND DISCUSSION

Visual-motor reaction time is a critical component of athletic performance, particularly in fast-paced sports like soccer. Improving this skill requires a multifaceted approach that includes physical, technical, and psychological training. Enhancing visual-motor reactions can significantly boost an athlete's ability to make quick and accurate decisions during gameplay, improving their overall effectiveness on the field [6].

Eye-foot visual reaction times methods

Ball control drills: Ball control drills help young players improve their ability to react to the ball and coordinate their footwork accordingly. These exercises focus on both speed and accuracy (Figure 1).

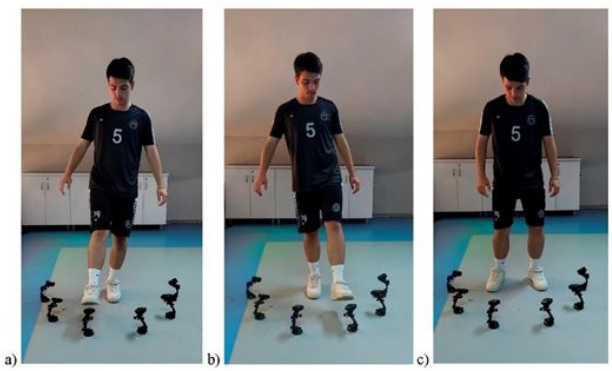


Figure 1: Ball control drills.

Examples:

- **Passing and receiving:** Set up passing drills where players must quickly receive and pass the ball with different surfaces of their feet (inside, outside, sole). The key is to react swiftly to the ball and deliver precise passes.
- **Cone dribbling:** Players dribble the ball through cones at varying speeds. This will help them improve foot-eye coordination by forcing them to focus on the ball while maintaining control with their feet.
- **Close-control dribbling:** Players dribble the ball while constantly changing direction to simulate game-like situations, improving reaction time to visual cues.

Method: These drills should vary in difficulty, incorporating changes in direction, speed, and pressure. Incorporating a partner or coach who randomly calls out instructions or passes will help simulate real-game situations.

Reaction time exercises with visual cues

Exercises that use visual cues to prompt a response will help improve both visual tracking and foot-motor response. These exercises should focus on improving the ability to react to a visual stimulus with the appropriate motor action [7].

Examples:

- **Color reaction drills:** Lay out colored cones or objects on the field. Call out a color, and players must react by moving towards that color as quickly as possible, simulating the need to quickly track and react to game scenarios.
- **Visual reaction lights or devices:** Some specialized training devices use lights that flash randomly. The player must react by kicking a ball to the flashing light or moving towards it. This helps improve reaction time to unpredictable visual stimuli.
- **Ball toss with reaction:** A coach or partner tosses the ball in the air or at different speeds. The player has to react by quickly kicking the ball, catching it with the feet, or making another controlled action based on where the ball is going.

Method: Perform 3-5 sets of 10-15 repetitions with varying speeds and randomization of cues to simulate real match conditions.

Agility and coordination drills

Agility drills combined with ball control are an excellent way to improve reaction time. These drills emphasize the connection between eye-hand or eye-foot coordination while increasing overall speed and agility [8].

Examples:

- **Ladder drills:** Using an agility ladder, players perform various footwork patterns while keeping their eyes on the ball. The player must quickly change direction or speed as they move through the ladder, simulating in-game movement.
- **Zig-zag cone dribbling:** Set up cones in a zig-zag pattern, and have players dribble around them as fast as possible. The player must keep their head up, tracking the ball and making quick decisions about movement.
- **Shuttle runs with ball control:** Players perform shuttle runs while dribbling the ball back and forth between two points. This improves their ability to control the ball while moving quickly and reacting to changing distances and directions.

Method: Perform 4-6 sets of agility drills with short rest periods, gradually increasing speed and complexity. Add ball control tasks to increase difficulty.

Visual tracking drills

These drills focus on the ability to track a moving object, like a ball, and then execute a motor response. Tracking moving objects and reacting accordingly is a critical skill for soccer players [9].

Examples:

- **Tennis ball drop:** A partner or coach drops a tennis ball from a height. The player must catch it with their feet before it touches the ground. This helps improve reaction times by forcing the player to visually track the ball and react with their feet.
- **Ball juggling:** Juggling a ball in the air (using feet, thighs, or head) while maintaining eye contact helps players improve their coordination and reaction time, as they must react quickly to keep the ball in the air.

Method: Start with simpler drills and progress to more challenging tasks (e.g., increasing ball speed or the number of juggles required). Players should aim for consistent success rates.

Small-sided games with visual reaction focus

Small-sided games (e.g., 3v3 or 5v5) are perfect for training visual-motor reaction times. These games simulate actual match conditions and force players to react quickly to visual stimuli like the ball, teammates, and opponents.

Examples:

- **1v1 dribbling games:** In a small-sided 1v1 game, players must react to the ball's movement and their opponent's position. The player with the ball needs to quickly decide when to dribble, pass, or shoot based on visual cues.
- **Reaction-based possession games:** In a small-sided possession game (e.g., 4v4), players must make quick decisions based on the movements of teammates and opponents. The game can be modified by adding conditions like only allowing passes to be made after a specific visual cue is given.

Method: Encourage players to focus on visual cues (e.g., positioning of teammates or opponents) and their decision-making in these fast-paced situations. Keep the games dynamic and introduce new rules to challenge their reaction times.

Eye-tracking exercises

Eye-tracking exercises can help players improve their ability to visually follow objects and then respond with appropriate motor actions. These exercises are crucial in soccer when tracking the ball or following the movement of opponents.

Examples:

- **Ball-tracking with peripheral vision:** Have players follow a ball rolling or bouncing from side to side with only their eyes, not their body. This helps improve the ability to track the ball and anticipate its movement.
- **Ball and object focus:** Set up drills where players must focus on a ball while simultaneously watching an object or another player. This can help improve their ability to track the ball while keeping awareness of other important elements on the field.

Method: Perform short, repetitive drills where players must visually track a moving ball or object, gradually increasing the complexity.

In this study, we focused on improving the speed and strength of young football players aged 12-13. We created two groups of athletes, Group A and Group B, each with 15 players Both groups had the same average height (140 cm) and weight (34 kg). In add new program

Training program:

Group A: This group performed specific training that included box jumps, using a box that was 50 cm high. resistance training, and dynamic drills with weights. This group performed specific training three times a week for two weeks, totaling six training sessions. These exercises were designed to build explosive power and improve speed. We used weights that were sometimes heavier, the same as, or lighter than what the players usually lift. This helped them learn how to move quickly and effectively in real game situations.

Group B: This group did not follow the special training program. They continued with their regular practice without any added exercises to improve speed and strength.

Testing at the beginning and end of the training program, we tested both groups. We measured their vertical and horizontal jumps, as well as their strength during resisted movements. One of the key tests was a 50-meter sprint This allowed us to see how much each group improved over time.

By comparing the results from both groups, we aimed to find out how effective the training methods were for developing speed and strength in young football players.

Here is our analysis of how we conducted the study it was done in school 71 first we took children to conduct a test and this led to the fact that we now have the result 0.83%=83%. This indicator showed that Group A was able to achieve such results within two weeks. Jumping off the table helped us achieve this result.

CONCLUSION

To effectively improve eye-foot visual reaction times in young soccer players, a combination of ball control drills, reaction-based exercises, agility training, visual tracking, and small-sided games should be employed. These exercises focus on enhancing the coordination between visual stimuli and motor responses, essential for fast decision-making and precise actions on the field. The methods should gradually increase in complexity and intensity as players improve, ensuring they are prepared for the fast-paced nature of real match situations.

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