TACSM Abstract

Visual Focus and Sports Performance

CAROLINA A. ORSI, TAYLOR TODD, and DEVIN STEWRAT

Sensation, Affect, Cognition, and Knowledge Laboratory; Psychology Department; Stephen F. Austin State University; Nacogdoches, TX

Category: Undergraduate

Advisor / Mentor: Estrada, Steven (estradasm@sfasu.edu)

ABSTRACT

Understanding how an athlete's mind and body interact is vital in finding ways to promote maximal athletic performance. Athletes are required to smoothly connect their external environment to internal motor networks for executing sports specific tasks. A study by Corbetta and Shulman aimed to explain how quiet eye (QE) connects with athletic performance. Their study defined QE as the "final fixation to a target during the preparation phase of a goal-directed movement" (2002). Corbetta and Shulman found that QE measurements were longer when maximizing "goal-directed" attention and minimizing "stimulus-driven" attention (2002). PURPOSE: This study analyzes the distance between where an athlete looks and where they kick to understand how gaze correlates with kick accuracy. We hypothesize that shorter kick-to-gaze distances predict higher accuracy kicks due to minimizing external gaze deviation so that internal networks create purer signals that increase penalty kick execution. METHODS: Participants completed a series of 24 penalty kicks, performing 6 penalty kicks within each of four conditions: No Keeper/No Target, Keeper/No Target, No Keeper/Target, and Keeper/Target. Having a target indicates that the participant was required to look at a red cardstock (RC) posted to the center of the crossbar before completing their kick. Eye movements were recorded, along with penalty kick quality and accuracy. Kick quality was measured using ball velocity, while kick accuracy was determined by whether the goal was scored. Eye movement patterns were collected using TOBII eyeglass equipment, which recorded fixation duration and count along with visit duration and count among various areas of interest. There were 7 areas of interest total. 6 areas divide the goal into Top Left (1), Bottom Left (2), Top Center (RC) (3), Bottom Center (4), Top Right (5), Bottom Right (6) regions and one area of interest was assigned for the ball (7). RESULTS: Analyzing where participants looked prior to their kick identified that athletes spend the greatest time looking towards the center region of the goal for all experimental conditions; No Keeper/No Target = 51.3% of kicks, Keeper/No Target =55.1%, No Keeper/Target = 76.9%, and Keeper/Target = 74.3%. Regarding ball landing location, the distance from center decreased the longer a participant looked at the ball prior to kick. Furthermore, the longer a participant looked at the goal prior to kick was found to directly associate with distance from the center. CONCLUSION: With accuracy being defined as in the goal but away from center, our results suggest that the longer a participant spent looking at the ball, the less accurate their kicks. Additionally, the more time an athlete spent looking in the direction of the goal, their accuracy increased. This provides partial support for our hypothesis and suggests that focusing on a target, as opposed to ball, prior to kick led to greater accuracy for our participants. Given participants were skilled soccer players (mean years played = 10.9; SD = 4.2), future studies could examine if this pattern is consistent among novice players.