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Relationship between gaze behaviour and decision making during on-field sport situations in professional vs young elite rugby league players.

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INTRODUCTION:

This study was initiated by a rugby league coach who wanted to gain insight about the visual cues that expert players use to make decision in a specific 3 vs 2 game situation, in order to provide better guiding cues for perception and decision performance of young elite players. Our aim was to study gaze behaviour in relation with the quality of decision, during on-field offensive situation [1], and to compare between professional and young elite players.

METHODS:

Four male professional and international rugby league players (mean age 30+/-1 years) and 4 male young players (mean age 17+/-1 years) from a national talent development program participated. All had normal vision. On a 10 x 10m delimited area, three attackers had to bring the ball over two defenders. The ball carrier, equipped with a wearable eye tracker (Tobii Pro Glasses 2), had to either run with the ball, or pass it to one of his teammates, depending on the situation. An experienced coach coded the relevance of the decision and the quality of the action performed. Eye tracking data was analysed by means of Tobii Pro Lab software. Seventeen areas of interest (AOI) were defined, representing the various locations of fixations in the visual scene. Repeated measures ANOVAs were performed on the relative duration of the fixations. The link between quality of decision and action performance was analysed by a chi-square test.

RESULTS:

Only AOI had a significant main effect ($F_{16,96}=6.87$; $P<0.01$). The space between defenders was fixated for longer time than others areas. A significant interaction expertise level x AOI ($F_{16,96}=4.13$; $P<0.01$) showed that professional players and young elite players had different gaze patterns. Experts spent more time fixating the outsider defender and defenders' shoulders whereas younger elite players focused on the space between defenders and defenders' lower body. The quality of decision had no effect on fixation relative duration. The decision quality was linked to performance in professional players ($\chi^2=9.77$; $P<0.01$), whereas no significant link was found in young players ($\chi^2=0.56$; $P>0.05$).

CONCLUSION:

Visual fixations on the space between defenders may represent a visual pivot or gaze anchor [2] allowing players to take information on surrounding areas. Both professional players and young elite players spent time fixating defenders' bodies, allowing them to anticipate the running direction and detecting deceptive movement [3]. Visual information pick-up was not clearly linked to decision quality in this explorative study. For professional players, a good choice always lead to a good performance, but not for young athletes: an issue of motor skill or of timing of decision making?

1. Dicks et al. (2010) 2. Klostermann et al. (2020) 3. Brault et al. (2009)

Topic: Statistics and Analyses

Presentation Poster

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