Contribution ID: **503** Type: **Poster**

Eye-Tracking Insights During Live Basketball Games: a pilot study

Thursday, September 11, 2025 2:10 PM (20 minutes)

In the field of sports science, eye tracking has emerged as a crucial tool for investigating the visual and cognitive mechanisms underlying athletic performance. However, current literature highlights a significant gap, namely the limited number of eye-tracking studies conducted during live game situations. The majority of existing research has focused on controlled game scenarios.
The aim of this preliminary study was to investigate the visual behavior of coaches and referees during a live basketball game. For data acquisition, we enrolled 5 coaches and 5 referees and employed the Pupil Labs eye-tracking device. A novel system was used for data processing, incorporating two pre-trained Artificial Intelligence (AI) models specifically designed to analyze eye-tracking data in the context of live basketball games. We showed that both in lead and in tail positions the referees presented greater pupillary dilation for the team in defense ($p<0.001$). Regarding coaches, we highlighted a higher number of fixations ($p=0.01$) and a greater dilation ($p=0.04$) when the coach's team plays in their own half of the field.
These preliminary results showed that when referees are required to evaluate defensive movements, they may be subjected to increased cognitive load or stress. In the case of coaches, the factor of 'proximity to the action' appears to play a crucial role in assessing game dynamics. Future research should consider an expanded sample size and improvements in the AI system's ability to recognize other fundamental elements of the game (such as the ball and the basket).

If you're submitting a symposium talk, what's the symposium title?

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

Primary author: MIGLIORE, Simone (Università degli Studi dell'Aquila)

Co-authors: LOZZI, Daniele (University of L'Aquila); MARCACCIO, Martina (Dipartimento di Scienze Cliniche Applicate e Biotecnologiche, Università degli Studi dell'Aquila, L'Aquila, Italia); Dr ALEMANNO, Michela (Università degli Studi dell'Aquila); DI POMPEO, Ilaria (Dipartimento di Scienze Cliniche Applicate e Biotecnologiche, Università degli Studi dell'Aquila, L'Aquila, Italia); CURCIO, giuseppe (Università dell'Aquila)

Presenter: MIGLIORE, Simone (Università degli Studi dell'Aquila)

Session Classification: Lunch and poster 1

Track Classification: Health, sport and wellbeing