Measuring pace of play in elite female soccer

Lotte Bransen[1,2]
Jesse Davis[1]

[1]KU Leuven, Leuven, Belgium
[2]SciSports, Zeist, Netherlands

Background/aim: Soccer scouts must assess how potential signings' skills will translate to a new league which is challenging as the league level and style of play might differ. This is particularly difficult within the women's game due to the rapid developments, lack of open-source market values for all players, and fewer inter-league matches and transfers than in men's soccer (1). To overcome these challenges, we look at a specific aspect of the game that covers multiple skills and could be an indicator of a league's level: pace of play (2). The higher the level, the less time one has to control the ball. We introduce a Pace Metric that measures pace of play as the time in which players move the ball after receiving it. This serves as a proxy for a player's technical, physical and cognitive skills.

Methods: We consider ball event data for all matches (n=3117) played since 2017 in the women's first divisions of England, Spain, Germany, France, and US, and the Champions League. We compute our Pace Metric (PM) for every pass (n=1556140) made after receiving the ball from a teammate. The PM is defined as the time in seconds between the timestamp associated with the teammate's pass and the timestamp associated with the player's pass. We analyze 1218 player transfers to test whether a player's PM at their previous team is correlated to their playing time for their new team. Firstly, we compute a player's median PM for their previous team. Secondly, we compute z-scores comparing these PM values to the average PM in their new league. Lastly, we perform a t-test on Pearson's correlation coefficient between these z-scores and the number of matches played per season for their new team.

Results: The PM value is related to competition quality. First, the Champions League knockout matches have the lowest average PM value (3.84±0.74s). Second, the players' z-scores are significantly negatively correlated ($r=-0.15$, $p<0.01$) with the number of matches played for their new team: players with a lower average PM (playing faster) compared to their new league appear in more matches for their new team.

Conclusions: Our Pace Metric can help with recruitment as it correlates with playing time. However, it has the limitations of ignoring the positioning of other players, tactics, and playing style.