**Scoping exercise**

Research Question:

How does the amount of possession a team has determine the outcome of a game of Rugby Union?

Introduction:

Traditionally in Rugby Union, possession is king. Recently in International Test matches observationally teams seem to be adopting a game plan where they would rather play without the ball, using kicks to move the ball forward and backing their defence to create scoring opportunities. This scoping review will look at current research about whether you do need the ball to achieve success.

Background:

Rugby is an “invasion sport” (Watson et al, 2020) consisting of multiple interactions between players on attack and defence in the endeavour of scoring points. Many factors influence the possession statistic in a game (e.g. weather, quality of each team, gender, game plan, scoreboard, and game venue) and can be gained or started in many ways (Restarts, set-piece, turnovers, contestable kicks). Understanding these dynamics is an important clue to achieve success in Rugby.

Current Research:

A study conducted by Hughes et al (2017) looked at performance factors based on the knockout stages of the 2015 men’s and 2014 women's world cup. They noted that since the 2003 (men’s) World Cup, where a possession-based game was successful, subsequent World Cup success has been achieved by using a territory-based game plan. When in the opposition 22-50m zone men’s team often opted for a kick into the ‘22’ to gain territory whereas, in women’s games in the same zone, they favour possession to gain territory.

A validation study conducted by Watson et al (2017) looked at whether traditional stats provide significant information to those wishing to improve team performance. They found that possession did relate to winning, which differed from previous studies. They found that winning teams hold onto possession better, hinting that total possession may not be as important as how careful a team is with it. They noted that a key component of possession for winning teams is that they have it or gain it inside the opposition 22,

A study by Watson et al (2020) aimed to apply machine learning to the tactical decision-making process. They pointed out that rugby has a sequential series of events and modelled this to try and figure out which strategy was best for certain scenarios. They found that traditional KPIs in rugby don’t always show the whole picture because they don’t consider the events surrounding each play or where they happened.

Conclusion

The literature shows varying levels of research involving the possession statistic. Hughes et al (2017) noted there was more research to be undertaken comparing performance indicators across all levels as their study solely focused on World Cup knockout stages. Watson et al (2017) concluded that more research was needed into the micro-events within Rugby to dial down the interactions between traditional KPIs. While Watson et al (2020) didn’t directly conclude anything about the importance of possession they provide a glimpse into how machine learning can influence the next phase of research into Rugby Union analytics.

References:

Hughes, A., Barnes, A., Churchill, S., & Stone, J. (2017). Performance indicators that discriminate winning and losing in elite men’s and women’s Rugby Union. *International Journal Of Performance Analysis In Sport*, *17*(4), 534-544. <https://doi.org/10.1080/24748668.2017.1366759>

Watson, N., Durbach, I., Hendricks, S., & Stewart, T. (2017). On the validity of team performance indicators in rugby union. International Journal Of Performance Analysis In Sport, 17(4), 609-621. https://doi.org/10.1080/24748668.2017.1376998

Watson, N., Hendricks, S., Stewart, T., & Durbach, I. (2020). Integrating machine learning and decision support in tactical decision-making in rugby union. *Journal Of The Operational Research Society*, *72*(10), 2274-2285. <https://doi.org/10.1080/01605682.2020.1779624>