RELATIONSHIPS BETWEEN MATCH PERFORMANCE INDICATORS AND MATCH OUTCOME IN 2014 BRAZIL FIFA WORLD CUP

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INTRODUCTION

Identifying correlations between match performance indicators and match result is a challenging but important task in football match performance analysis (Sarmento, Marcelino, Anguera, Campaniço, Matos, & Leitão, 2014). Employing the generalised linear model, the current study aimed to determine relationships between 24 match performance indicators and the match outcome (win, loss and draw) in games of the group stage of 2014 Brazil FIFA World Cup.

METHOD

All the 48 matches from the group stage of the 20th FIFA World Cup were chosen as the sample. After a k-means cluster analysis, 38 matches with goal difference of less than three goals were defined as close games and were proceeded to the further statistical analysis. The selected performance indicators were divided into three groups: (1) eight variables related to goal scoring, (2) 11 variables related to passing and organizing, and (3) five variables related to defending (See Figure 1) (Lago-Peñas, Lago-Ballesteros, Dellal, & Gómez, 2010; Lago-Peñas, Lago-Ballesteros, & Rey, 2011; Liu, Hopkins, Gómez, & Molinuevo, 2013). In order to include the game results of win, draw and loss, the cumulative logistic regression was run in the model taking the logarithm of the odds of winning as dependent variable and the value of each performance indicator as independent variable. Relationships were assessed as effects of a two-standard-deviation (SD) increase in the value of each indicator on the change (%) in the probability of a team winning a close match (Higham, Hopkins, Pyne, & Anson, 2014). Two-SD increase stands for the change in an indicator from a typical low value (-SD) to a typical high value (+SD) (Hopkins, Marshall, Batterham, & Hanin, 2009). Magnitude-based inferences were employed and were evaluated by using the smallest worthwhile change: a 10% change which represents one extra win or loss in every 10 close matches was defined as a smallest worthwhile change (Higham et al., 2014; Hopkins et al., 2009).

RESULTS

As displayed in Figure 1, for the variables related to goal scoring, Shot, Shot on Target, Shot from Counter Attack, Shot from Inside Area were those that had clear positive relationships with the probability of winning, Shot Blocked and Shot from Open Play showed trivial effects, while effects of Shot from Set Piece and Shot from Outside Area were unclear. For the variables related to passing and organizing, Ball Possession, Pass, Short Pass and Average Pass Streak had clear positive relationships with the winning likelihood, Cross had clear negative relationships, others showed either trivial or unclear effects. For the variables related to defending, Tackle had a clear positive relationship with the probability of winning, while Yellow Card had a clear negative relationship. Effect of Aerial Advantage was trivial, and effects of Foul and Red Card were unclear.

DISCUSSION

Our results showed that Shot and Shot on Target had clear positive relationships with the probability of winning which are in agreement with prior studies which indicate that the frequency and efficiency of shots were associated with the winning and losing of a football game (Lago-Peñas et al., 2010; Lago-Peñas et al., 2011; Yue, Broich, & Mester, 2014). We also found the importance of the development (Shot from Counter Attack) and pitch zone (Shot from Inside Area) of shots in the determination of game results. Ball possession, pass, successful pass and cross were variables that had been found to discriminate winning and losing teams in UEFA Championship League (Lago-Peñas et al., 2011) and Spanish Professional Football League (Lago-Peñas et al., 2010). Accordingly, results of current study showed that variables of Ball Possession, Pass, Short Pass and Average Pass Streak had clear positive relationships with the winning probability, while Cross had clear negative relationship. These findings may reflect that keeping the ball on the ground and passing it accurately are the means of winning in the group stage of the 20th FIFA World Cup. Yellow card was previously found to be significantly differentiated among winning, drawing and losing teams, but was not attributed to discriminate the game outcome (Lago-Peñas et al., 2010; Lago-Peñas et al., 2011), while our result showed that Yellow Card had a clear negative relationship with the winning likelihood. And what is more, the variable Tackle was found positively related to winning, which can be supported by prior studies which claimed that regaining ball possession promptly and directly from interceptions and tackles is associated with the success in football matches (Almeida, Ferreira, & Volossovitch, 2014; Vogelbein,

Nopp, & Hökelmann, 2014). Information from the modelling can be provided to coaches and performance analysts for evaluating the own team's post-match performance and for scouting upcoming opposition (Lago-Peñas et al., 2010).

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