

FACTORS INFLUENCING REFEREES' RATINGS OF PERCEIVED EXERTION DURING COMPETITIVE SOCCER MATCHES

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Introduction

Ratings of perceived exertion (RPE) are an accurate means of monitoring exercise intensity (Borg, 1982), and provide a gestalt measure representative of both internal and external load (Coutts et al., 2007). However, external load in high-level sport is characterised by both technical and physical demand. The aim of this preliminary investigation was to examine the role of these demands on referees' RPE scores following competitive soccer matches.

Methods

Data were collected from 17 elite referees for 283 Premier and Football League matches over the duration of the 2008/09 English soccer season. The referees recorded their RPE (CR10 scale) 30-min after each match ended to obtain a global intensity rating for the entire match (Foster, 1998). A priori we defined four variables representing the technical and physical match demand: 1) disciplinary points (10 points per yellow card; 25 points per red card); 2) distance from the ball (m); 3) total referee high-speed running (speed >19.8 km•h⁻¹); 4) total player high-speed running (speed >19.8 km•h⁻¹). The running variables were determined using a computerised, semi-automatic video match-analysis image recognition system (ProZone®). We computed the mean for each variable from the set of repeat matches for each referee (range: 9 to 23 matches). The technical and physical predictor variables were then regressed on the log-transformed RPE outcome in the n=17 cases. The magnitude of the effect of predictors was represented by the partial correlation (the square root of the fraction of variance explained by the predictor after adjustment for all other predictors [Hopkins et al., 2009]).

Results

Regression diagnostics revealed no degrading collinearity between predictors. The predictor variables combined explained 76% of the variance in match RPE scores (R=0.91, adjusted R-squared=0.76). Partial correlations were -0.88 for distance from the ball, 0.86 for total player high-speed running, 0.75 for match disciplinary points, and -0.55 for total referee high-speed running. These effect sizes are large to very large. For example, after controlling for match physical demands, an increase in disciplinary points equivalent to awarding a yellow card is associated with an increase in RPE of 17%.

Discussion

The results of this preliminary investigation demonstrate for the first time that elite soccer referees' global match RPE scores are influenced by both the technical and physical match demand.

References

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