

Match running performance in professional soccer players: effect of match status and goal difference.

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Soccer | Match | Running performance | Scoreline | Status

Headline

It is now well established that match running performance is affected by many contextual variables (1) including player positions (2), age and maturation (3), playing standard (4, 5), team formation (6), game location (7) and match outcome (7, 8). The effect of match outcome has however only been examined while comparing whole match data (e.g., performance during matches heavily won vs. lost (8)) or when considering overall match status (i.e., winning, losing or drawing) (7). The actual team running performance immediately before and after goals either scored or conceded, with regard to match status (e.g., goal conceded vs. scored but both leading to a draw) has not been examined yet. The effect of goal difference on match running performance before/after goals is also unknown.

Aim. The aim of the present study was to examine team match running performance during the 5 min preceding or following a goal (both scored and conceded) as a function of 1) match status, and 2) goal difference.

Methods

Athletes. These data collected in 384 professional (international) senior players arose as a condition of player monitoring in which their activities are routinely measured over the course of the competitive season (9); therefore, ethics committee clearance was not required. The study conformed nevertheless to the recommendations of the Declaration of Helsinki.

Design. Observational, post-hoc analysis. Data from the sixteen teams participating in the 2011 Asian cup were analyzed at the end of the tournament (n = 64 matches).

Methodology. Match running performance was measured using a semi-automatic multiple-camera (Prozone 10 Hz, Leeds, UK). Since most of the previous studies have shown the effect of contextual variables on match running performance to be the greatest for the higher speed zones (4-8), only team distance covered >14.4 km/h (over 5-min epoch) was used in the present study. Distance ran >14.4 km/h per minute was thus coded as a function of the actual score (winning, losing, drawing, for a total of 79 goals) and goal differences. This allowed to define the 6 following categories for the 5 min pre-goals: just conceded when losing, just conceded when drawing, just conceded when winning, just scored when losing, just scored when drawing and just scored when winning. For the 5 min post-goal: just conceded a goal and now losing, just conceded a goal and now drawing, just conceded a goal but still winning, just scored but still losing, just scored and now drawing and just scored and now winning. Each of these categories (5 min pre- or post-goals) were compared with all other time periods > 5 min from/to a goal within the same sample of matches.

Analysis

Data in the figures are presented as means with standard deviations (SD). All data were first log-transformed to reduce bias arising from non-uniformity error. Between-time period standardized differences in running performance were compared to the smallest worthwhile change (SWC, 0.2 multiplied by the pooled pre-training between-subject deviation, based on Cohen's d principle) using magnitude based inferences. These probabilities were used to make a qualitative probabilistic mechanistic inference about the true effect: if the probabilities of the effect being substantially positive and negative were both >5%, the effect was reported as unclear; the effect was otherwise clear and reported as the magnitude of the observed value. Threshold values for standardized differences were >0.2 (small - 'slightly' is often used in the text), >0.6 (moderate), >1.2 (large) and very large (>2) (10). Polynomial regressions (2nd order) were used to model the relationship between team match running performance and the actual goal difference between the two teams of interest.

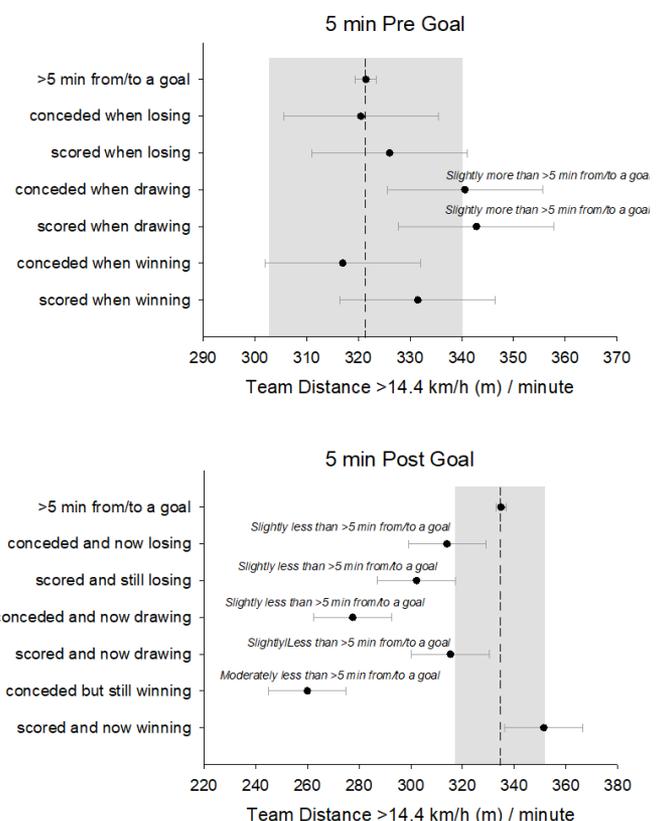


Fig. 1. Team Distance ran >14.4 km/h during the 5 min preceding (Pre) or following (Post) a goal as a function of match status. Grey area represents the smallest worthwhile change.

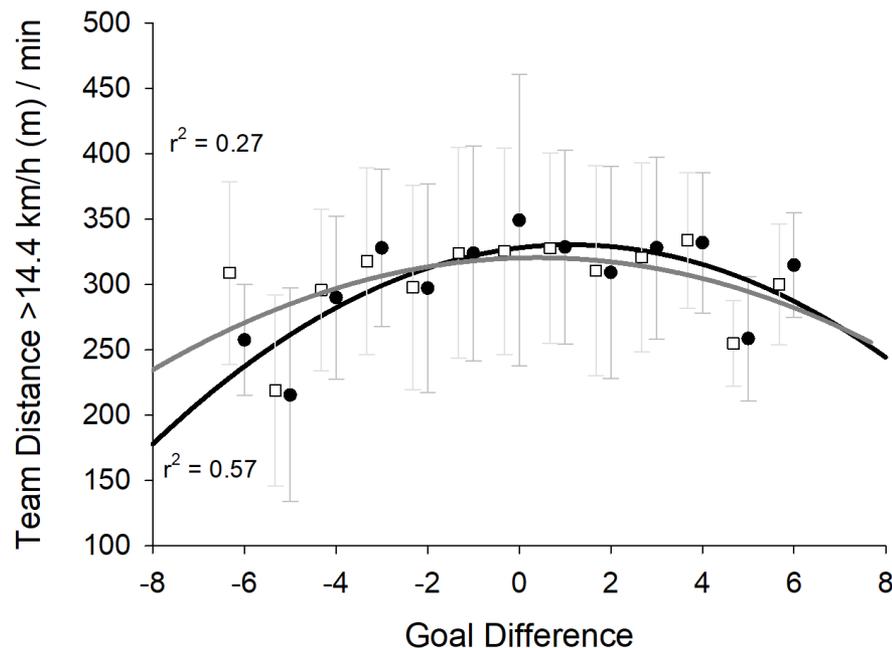


Fig. 2. Team-average distance running >14.4 km/h (SD) as a function of goal difference between the teams during the 5-min period preceding (white squares) or following (black circles) goals.

Results

Compared with all moments >5 min from/to a goal, distance ran >14.4 km/h was slightly greater (i.e., small magnitude) during the 5 min preceding a goal (conceded and scored) when drawing compared with winning or losing (Figure 1, upper panel). Following a goal, distance ran >14.4 km/h was systematically slightly-to-moderately lower compared with all moments >5 min from/to a goal, except when a team scored to be winning (Figure 1, lower panel). When it comes to goal differences, the greater the goal differences between the two teams, the lower the running performance for both teams (for both Pre and Post-goal data, Figure 2).

Discussion

The first finding of the present study was that match running performance during the 5 min preceding a goal was slightly greater when teams were drawing than winning or losing (Figure 1, upper panel). This is likely related to the fact that when teams are drawing, both teams likely maintain high-speed running to try to make a difference, likely through transitions play. There was, however, no substantial difference in the 5 min before a goal was scored vs. conceded, which supports findings which indicate that match running performance is a poor predictor of success (11).

Following a goal that was either scored or conceived, teams tended to systematically run slightly-to-moderately less, irrespective of the match status (Figure 1, lower panel) – except when a team scored to be winning. These results can be explained by the fact that after a goal, team tend to get re-organized and may try to assume a ball possession strategy and construct new chances for successful attacks, keeping the game slower, which results, in turn, in lower speeds (8). The

greater running distance for the teams that scored to be winning may in contrast be related to celebration runs!

The third finding of the present study was that the greater the goal differences between the two teams, the lower the running performance for both teams (Figure 2). This confirms previous findings were winning teams were reported to run less than their opponents (7), or when large differences in match status (heavily won vs. lost) were associated with position-specific changes in running performance (e.g., defenders running less and attackers running more when teams their team was clearly dominating) (8).

Practical Applications

- The small-to-moderate effects of match status and goal difference on match running performance need to be accounted for when monitoring players' within-match physical performance.
- Since the lower the goal differences between the two teams, the greater the running performance for both teams, the need for optimal physical conditioning is likely greater for less goal-prolific teams (more likely to be 'fighting' to draw and winning by a small amount of goals).
- When it comes to prepare players for the most intense periods of match-play, game status should be considered as a moderating factor.

Limitations

- Since the present data were collected during a single tournament (i.e., Asian cup 2011), whether those results could be generalized to typical leagues matches (e.g., EPL, Liga, Ligue 1, Bundesliga) or other tournaments (e.g., world cup) needs to be confirmed.
- The effect of playing positions on the observed effects should be the topic of future researches.

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