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Opposition Interaction in Creating Penetration during Match Play in Elite Soccer: Evidence from UEFA Champions League Matches

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Abstract

The aim of this study is to compare how penetrations were created between Finalists and Non-finalists by assessing opposition interaction in elite soccer. Sample included data from 12 matches played from the round of 16 to the final of the UEFA Champions League season 2010/2011. Differences in creating dangerous penetrations were found only after controlling for the effects of opponent's defensive balance. Three way repeated measures ANOVA revealed that the interaction of Team status and Opponent's defensive balance had a meaningful effect on the percentage of penetrative ball actions into dangerous spaces ($F_{2,20}$ = 2.9, P = 0.076, partial η^2 = 0.227). Finalists performed a higher percentage of dangerous penetrative ball actions per match than Non-finalists when playing against an imbalanced defence (89.2 ± 14.0 vs. 77.6 ± 13.6), while Non-finalists performed a higher percentage when playing against a balanced (25.8 ± 10.7 vs. 16.1 ± 12.5) and beginning imbalanced (32.8 ± 10.9 vs. 29.1 ± 9.2) defences. Results suggest that effective exploitation of spaces within and behind the last line of opponent's defence is important determinant of successful offensive performance in soccer. The assessment of opposition interaction is of critical importance when analysing elite soccer performance.

Keywords: validity, match performance analysis, playing tactics, playing effectiveness, space utilization, defensive balance, UEFA Champions league

1. Introduction

Research on soccer playing effectiveness focuses more on the evaluation of the outcome rather than the process of match performance (Tenga, 2013). Typical studies involve the analysis of how teams score goals (Pollard and Reep, 1997) or produce shots at goal (Hughes and Franks, 2005). Some broader match outcome measures closely related to goal scoring such as score box possessions (Tenga et al., 2010a; Lago-Ballesteros et al., 2012) and entries into penalty box (Ruiz-Ruiz et al., 2013) have also been used to study soccer playing effectiveness. This attraction to analyse goal scoring or closely related match outcome measures is probably due to the fact that goal scoring is the ultimate measure of soccer playing effectiveness. However, the use of such match outcome measures may undermine the analysis of the process of match performance, i.e. the way teams play rather than how successfully they play. Tenga et al. (2010d) suggested that the analysis of more immediate measures of match performance (e.g.

Vogelbein et al., 2014) have the potential to provide additional process information linked to their outcome.

The tactical choices made by individual players in a specific match situation can reflect the process of match performance in soccer (Gómez et al., 2012). Soccer players, for example, have options whether to perform a penetrative or non-penetrative action each time they win or receive a ball in the course of a match. Other novel approaches to analyse passing effectiveness have considered passing performance together with area controlled by players using Voronoi-diagrams (Rein et al., 2017). Penetrative passes have been found to be more effective than non-penetrative passes in producing goals and shooting opportunities irrespective of defensive conditions played against (Tenga et al., 2010a, 2010b) as well as whether the match was played home or away (Tenga et al., 2010c). Hence, investigating the way players perform penetrative and non-penetrative ball actions during soccer match play between successful and less successful top elite teams is thought to provide useful information about the process of a successful match performance. There are some limitations to previous investigations, for example Gómez et al. (2012) used match outcome retrospectively rather than team quality based on stage of competitions reached by teams. The main limitation of the studies of Tenga et al. (2010a, 2010b, 2010c) is that factors are considered in isolation, which means interactive effects could not be tested.

The assessment of opposition interaction was found to be of critical importance in the evaluation of tactical effectiveness in soccer (Tenga et al., 2010a, 2010b) and we thought that its inclusion in this study could also improve the validity of the analysis of creating penetration. However, to conduct a more appropriate analysis of the process of creating penetration, it is necessary to assess opposition interaction during the process of performance itself. Playing tactics generally relate to a punctual adaptation to new configurations of play and to the circulation of the ball and therefore tactics are adaptations to opposition (Gréhaigne et al., 1999). This implies that a valid observation of the tactical choices, offensively or defensively, made by a player during match play must take into consideration the condition at the moment when a player is actually performing an action (Elias and Dunning, 1966, Gréhaigne et al., 1997). Interacting Performances Theory (O'Donoghue, 2009) states that the process and outcome of performance are influenced by the quality and type of opposition. This would suggest that player in possession of the ball is influenced by the defensive tactics of the opposition. In the context of this study, the quality and the type of opponent means the degree of opponent's defensive balance assessed each time a player performs a penetrative or non-penetrative ball action.

Thus, the aim of this study is to compare how penetrations were created between the Finalists and their match-playing opponents (Non-finalists) by assessing opposition interaction in UEFA (Union of European Football Associations) Champions League soccer matches. The two research hypotheses considered include: 1) There is a difference in mean percentage of penetrative ball actions per match between Finalists and Non-finalists when playing against a balanced defence versus an imbalanced defence; and 2) There is a difference in mean percentage of dangerous penetrative ball actions per match between Finalists and Non-finalists when playing against a balanced defence versus an imbalanced defence.

2. Methods

2.1. Materials

A sample included data fromt 12 matches that involved the two finalists selected out of 29 matches played from the round of 16 to the final of the UEFA Champions League in season 2010/2011. A total of 13754 offensive ball actions performed by the Finalists (n=8406; 61%) and their opponents (Non-finalists) (n=5348; 39%) were collected and grouped into 24 team performances, two from each match.

2.2. Match performance analysis

An offensive ball action was used as a basic unit of performance analysis, while team match performance was used as a unit of statistical analysis (O'Donoghue et al., 2012). An offensive ball action was defined as a deliberate action on the ball by a player from the attacking team when dribbling, moving with the ball, passing, or attempting to score, assessed based on the player's intention in the specific match situation.

Table 1. Variable descriptions and category definitions used in match performance analysis.

Variables and categories
1. Ball action type
Def. A deliberate action on the ball by a player from the attacking team, assessed based on the player's intention in the specific match situation. Penetrative ball actions (categories A & C) are the ones made towards the opponent's goal past opponent player(s) while maintaining control over the ball and otherwise for non-penetrative ball actions (categories B & D).
A. Penetrative pass.
B. Non-penetrative pass.
C. Penetrative running with the ball, including dribbling.
D. Non-penetrative running with the ball, including dribbling.
E. Crossing the ball into the area in front of the opponent's goal.
F. Goal-scoring attempt.
G. Other.
2. Space utilization
Def. Space in the opponent's defence utilized or attempted to be utilized by a player from the attacking team when performing specific action on the ball, evaluated from the start of the ball action. Dangerous ball actions (categories D & E) are the ones made into spaces within or behind the last line of opponent's defence and other spaces for less dangerous ball actions (categories A, B & C).
A. Space in front of the opponent's middle line of defence.
B. Space within the opponent's middle line of defence, i.e. spaces in-between opponent's midfield players.
C. Space between opponent's middle and back lines of defence.
D. Space within the opponent's back line of defence, i.e. spaces in-between opponent's back players (excluding goalkeeper).
E. Space behind the opponent's back line of defence (excluding goalkeeper).
F. Other.
3. Opponent's defensive balance
Def. Degree of balance in the opponent's defence, assessed based on the number of opposing players situated between the ball and opponent's goal (numerical balance) and their positioning along and across the playing field (positional balance). A balanced defence (categories A & E) or beginning imbalanced defence (category D) or imbalanced defence (categories B & C) indicates a defensive condition for each offensive ball action in specific match situation.
A. Set-play balanced, i.e. well-balanced defence against a ball action during set-play.
B. Extra imbalanced, i.e. when both numerical balance and positional balance are clearly not in place.
C. Imbalanced, i.e. when either numerical balance or positional balance is clearly not in place.
D. Beginning imbalanced, i.e. when changed from well-balanced defence to slightly imbalanced defence.

E. Open-play balanced, i.e. well-balanced defence against a ball action during open-play.

F. Other

Match performance analysis was conducted based on three categorical variables, namely Ball action type, Space utilization and Opponent's defensive balance (Table 1). Two fairly experienced soccer analysts each independently analysed the same match, under the same conditions, for the inter-observer reliability test prior to match performance analysis. The test for the variable Opponent's defensive balance was repeated with additional analysis training after failing to register adequate level of reliability on first attempt. All three variables eventually recorded reliability within acceptable limits, with the kappa values showing a good level for Ball action type ($\kappa=0.69$) and a moderate level for Space utilization ($\kappa=0.60$) and for Opponent's defensive balance ($\kappa=0.58$) (Altman, 1991). The performance analysis was done by the help of Interplay-sports Soccer (Pro version) software package and performance data were transferred into SPSS (version 15.0, SPSS Inc., Chicago) for further statistical analyses. The study was given ethical approval by the Norwegian Centre for Data Services (NSD).

2.3. Statistical analysis

Shapiro-Wilk tests revealed that data from 14 of the 18 (3x3x2) percentage variables satisfied the condition of normality ($P>0.05$). Further, Levene's test of homogeneity of variances showed that data in all variables satisfied the condition of equal variances ($P>0.05$). Therefore, parametric inferential procedures were applied. Paired Samples t-Tests were used to compare the total number of actions, the number of penetrative actions, percentage of penetrative actions, the number of dangerous penetrative actions and the percentage of dangerous penetrative actions between Finalists and Non-finalists.

The null hypotheses were tested by using three-way repeated measures ANOVA tests including Team status (Finalists and Non-finalists) and Opponent's defensive balance (Balanced, Beginning imbalanced and Imbalanced) as within-match effects and venue of the Finalist as a between-match effect. Mauchly's test revealed that the percentage of penetrative actions performed violated the assumption of sphericity when analysing Opponent's defensive balance ($P=0.035$). The interaction of Team status and Opponent's defensive balance also violated the assumption of sphericity ($P=0.001$). However, because the interaction was not a significant effect, no adjustment was made to the degrees of freedom as such an adjustment would have increased the chance of a Type II error (O'Donoghue, 2010). The Greenhouse-Geisser adjustment ($\varepsilon=0.672$) was applied on the analysis of the percentage of penetrative actions according to Opponent's defensive balance. Where Opponent's defensive balance was found to have a significant influence, Bonferroni adjusted post hoc tests were employed to compare different pairs of opposition balance conditions. Sphericity was satisfied for the percentage of penetrative actions that were classified as dangerous ($P=0.876$ for Opponent's defensive balance and $P=0.136$ for the interaction of Team status and Opponent's defensive balance). We used a significance level of $P<0.05$ in all tests. Effect sizes were also calculated and augmented to these test results. Partial eta squared (η^2) was used with the ANOVA tests. The fact that penetration into dangerous spaces is directly linked to goal scoring and that the study sample involved teams from the highest level of play with only about 1% goal scoring probability (Tenga et al., 2010d) made us to consider values of $\eta^2 >0.2$ as meaningful. Vacha-Haase and Thompson (2004) argued that researchers should consider nature of variables measured and the context of the study when discussing the practical value of an effect size. Cohen's d was used with the t-tests and interpreted using the Cohen's guidelines, by which 0.2, 0.5 and 0.8 indicating small, moderate and large effects respectively (Ivarsson et al., 2013).

3. Results

3.1. Penetrative actions

Table 2 shows the number of penetrative and non-penetrative actions performed under different conditions of the opponent's defence. Paired Samples t-Tests revealed that the Finalists performed more penetrative actions (t_{11}=3.1; P=0.009; d = 1.61) and actions in general (t_{11}=3.9; P=0.002; d = 2.12) than Non-finalists. However, the Non-finalists had a higher percentage of overall penetrative actions (t_{11}=4.2; P=0.002, d = 1.81) than Finalists (Table 2). Table 3 shows the breakdown of dangerous and less dangerous penetrative actions under different conditions of the opposition's defence. No difference was found between the Finalists and Non-finalists in the number (t_{11}=1.9; P=0.082; d = 0.87) or percentage (t_{11}=0.6; P=0.575; d = 0.28) of overall penetrative actions into dangerous spaces before controlling for the effects of the degree of opponent's defensive balance (Table 3).

Table 2 Frequency and percentage (mean+SD) of penetrative and non-penetrative ball actions performed per match under different conditions of opponent's defensive balance (N=24). Only the percentage values for penetrative ball actions are reported in parentheses as the values for non-penetrative ball actions are just 100% minus penetrative percentages.

Opponent's defensive balance	**Finalists (n=12)**			**Non-finalists (n=12)**		
	Penetrative	Non-Penetrative	Total	Penetrative	Non-Penetrative	Total
Balanced	82.7±40.3 (32.7±9.0%)	166.3±50.5	248.9±80.0	68.7±28.7 (41.7±8.6%)	96.3±33.3	164.9±56.1
Beginning imbalanced	182.1±42.3 (48.3±4.5%)	202.4±74.6	384.5±114.8	131.4±30.1 (57.8±5.9%)	99.9±40.6	231.3±69.0
Imbalanced	25.8±17.5 (77.8±12.8%)	9.7±8.1	35.5±24.5	13.6±8.2 (78.8±13.3%)	4.6±4.1	18.2±11.8
All	290.6±54.8 (44.0±4.4%)	378.3±102.8	668.9±151.0	213.7±40.5 (52.0±4.4%)	200.8±55.8	414.4±88.7

Table 3 Frequency and percentage (mean±SD) of dangerous and less dangerous penetrative ball actions performed per match under different conditions of opponent's defensive balance (N=24). Only the percentage values for dangerous ball actions are reported in parentheses as the values for less dangerous ball actions are just 100% minus dangerous percentages.

Opponent's defensive balance	**Finalists (n=12)**			**Non-finalists (n=12)**		
	Dangerous	Less dangerous	Total	Dangerous	Less dangerous	Total
Balanced	11.8±10.0 (16.1±12.5%)	70.8±41.3	82.7±40.3	16.0±5.6 (25.8±10.7%)	52.7±27.5	68.7±28.7
Beginning imbalanced	51.8±16.5 (29.1±9.2%)	130.3±38.0	182.1±42.3	42.1±14.6 (32.8±10.9%)	89.3±29.8	131.4±30.1

Imbalanced	21.9±14.9 (89.2±14.0%)	3.9±5.6	25.8±17.5	10.3±6.1 (77.6±13.6%)	3.3±3.0	13.6±8.2
All	85.5±24.4 (30.5±9.5%)	205.1±61.5	290.6±54.8	68.4±14.7 (33.0±8.6%)	144.7±42.0	213.7±40.5

The plot of the multiple curves shows percentage of offensive ball actions increased when playing against imbalanced defence and decreased when playing against balanced defence as spaces were exploited increasingly towards the opponent's goal (Figure 1).

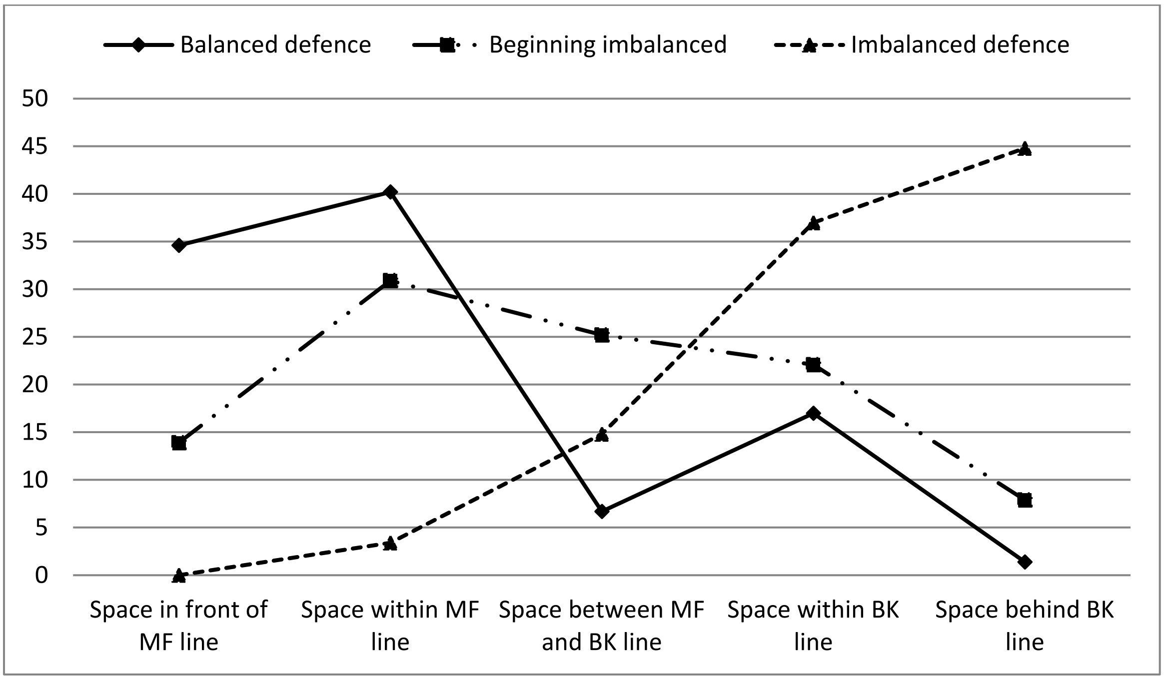

Figure 1. Percentage of overall offensive ball actions performed into different spaces when playing against balanced (n=1811), beginning imbalanced (n=3759) and imbalanced (n=473) defence.

3.2. Opposition interaction analysis

A three-way repeated measures ANOVA revealed that both Team status ($F_{1,10}$=12.2; P=0.006; partial η^2=0.550) and Opponent's defensive balance ($F_{2,20}$=86.7; ε=0.665; P<0.001; partial η^2=0.897) had influence on the percentage of actions that were penetrative. Bonferroni adjusted post hoc tests revealed differences between all three pairs of opponent's balance conditions (P<0.001). However, there was no significant interaction effect of Team status and Opponent's defensive balance on the percentage of actions that were penetrative ($F_{2,20}$=1.6; ε=0.593; P=0.224; partial η^2=0.139) (Table 2). Furthermore, there was neither a significant venue effect nor a significant effect of the interaction between venue and any other factor on the percentage of offensive actions that were penetrative.

Opponent's defensive balance also had a significant influence on the percentage of penetrative ball actions made into dangerous spaces ($F_{2,20}$=56.6; P< 0.001; partial η^2=0.850) with

Bonferroni adjusted post hoc tests revealing differences between each pair of opponent's balance conditions ($P \leq 0.003$) (Table 3). Team status had no significant effect ($F_{1,11}=0.0$; $P=0.882$; partial $\eta^2=0.002$). The percentage of penetrative actions into dangerous spaces was not significantly influenced by the interaction of Team status and Opponent's defensive balance although the effect was meaningful in real-world terms ($F_{2,20}=2.9$; $P=0.076$; partial $\eta^2=0.227$). Applying the formula for the *number needed to treat* (NNT) (Ivarsson et al., 2013), the calculated success score indicates that it took approximately only nine penetrations against imbalanced defence for the finalists to create one dangerous penetration. The Finalists performed more penetrative ball actions into dangerous spaces when playing against an imbalanced defence, while Non-finalists performed more when playing against balanced and beginning imbalanced defences (Table 3).

4. Discussion

The main outcome of this study was that the assessment of opposition interaction in offensive ball actions revealed differences in the percentage of created penetrations per match between the Finalists and Non-finalists in elite soccer. The Finalists performed a higher percentage of penetrative ball actions into dangerous spaces (within or behind the last line of opponent's defence) per match than Non-finalists when playing against an imbalanced defence, while Non-finalists performed a higher percentage when playing against balanced and beginning imbalanced defences. No difference was found between the Finalists and Non-finalists in penetrative ball actions into dangerous spaces before controlling for the effect of opponent's defensive balance. Thus, these results suggest that teams' ability to create penetrations by effectively exploiting imbalances in the last line of opponent's defence is an important determinant of successful offensive performance in soccer matches. The results reflect a general concept in team games that performance is influenced by a combination of opposition quality and other factors (Lago-Peñas et al., 2013).

This study has strengths worth to be considered. It includes a sample from 12 entire matches played from the round of 16 to the final of the UEFA Champions League, which clearly represents a highest level of play in international club soccer. The current study managed to discover differences in a such homogeneous sample from a high performance level increases the credibility of the assessment of opposition interaction as effective methodological approach. In addition, the eight teams involved were from five European top professional soccer leagues. Consequently, the results obtained reflect different styles of play employed at the highest level of play in European club soccer.

Playing style cannot be classified as easily as team quality. Simple use of match outcomes or stages of tournaments that different teams reach can be used to represent team quality. However, recent research has attempted to classify playing style (Hewitt et al., 2016) and use quantitative measurements to distinguish between different styles of attacking and defending (Fernandez-Navarro et al., 2016). Areas of style are often continuums rather than dichotomous variables which provides an additional challenge for measuring style. The approach used in the current paper was to define tactical behaviour in a categorical manner. The *created penetration* was used as the immediate measure of match performance because of its potential to provide useful information about the process of successful match performance. Tenga et al. (2010a, 2010b) showed that team possessions involving penetrative passes were more effective in producing goals and shooting opportunities than those involving non-penetrative passes regardless whether playing against balanced or imbalanced defence. Similarly, team possessions involving penetrative passes were more effective in goal scoring compared to the ones with non-penetrative passes when playing at home as well as away from home (Tenga, 2010c). Besides, penetration has long been recognised as the superior principle of play in attack necessary for goal scoring in soccer (Olsen et al., 1994).

The combination of offensive ball actions and spaces in the opponent's defence explored in the current represent a natural sequence of events typically happened during a match play. That the Finalists performed less percentage of overall penetrative ball actions per match, but more percentage of overall non-penetrative ball actions per match compared with Non-finalists was not expected. The similarity in number and percentage of overall penetrative ball actions into dangerous spaces was also not expected.

Our current findings suggest that, compared to Non-finalists, the Finalists were more effective in exploiting imbalances in the last line of opponent's defence. This happened despite the fact that Finalists actually performed less percentage of overall penetrative ball actions (44.0±4.4 vs. 52.0±4.4) as well as similar percentage of overall penetrative ball actions into spaces within or behind the last line of defence (30.5±9.5 vs. 33.0±8.6) compared with Non-finalists. In contrast, compared to the Finalists, Non-finalists appeared to perform more penetration attempts against balanced last line of opponent's defence. Therefore, the ability of the Finalists to create imbalances when playing against a balanced defence and that of utilizing even small opportunities of imbalance exposed in the line of opponent's defence may both be decisive for the Finalists' higher efficiency in creating dangerous penetrations. This agrees with the finding of Liu et al. (2015a; 2015b) that there are differences in performance variables between teams reaching different stages of tournaments. Unfortunately, the lack of temporal analysis in the current study makes it not possible to differentiate between these two possible explanations.

Tenga et al. (2010a, 2010b) reported that offensive tactic Counter attack (high degree of exploiting imbalance in opponent's defence) had a higher probability of producing a goal and a shooting opportunity than the opposite tactic Elaborate attack (low degree of exploiting imbalance in opponent's defence) when playing against an imbalanced defence, but not against a balanced defence. These findings may suggest that utilizing opportunities exposed in the opponent's defence (Counter attack) is more effective than creating imbalance directly from a balanced defence (Elaborate attack). However, these previous studies used samples from a lower level of performance than the one used in the current study. Therefore, it could also be possible that more skillful players from successful top elite teams are more capable of creating imbalances when playing against a balanced defence, i.e. by using Elaborate attack, than those from lower levels of performance. Such players with different and/or better tactical and technical proficiency often possess the ability to consistently perform successful dribbling, including runs with the ball, and passing precision at top speed, skills necessary to outplay opponent players from a balanced defence. Indeed, possessions with five passes or more managed to distinguish between successful and less successful teams in studies with samples from World Cup finals or European Championships matches (Hughes and Franks, 2005; Hughes and Snook, 2006), but not with the sample from the Norwegian top professional soccer league (Tenga and Sigmundstad, 2011). In support, Jones et al. (2004) suggested that a higher ability to avoid tackles, make slightly difficult passes and anticipate players' movement and ball direction quicker account for this difference. On the other hand, Harrop and Nevill (2014) concluded that to be successful a team from level one of the English professional league should perform fewer overall passes and dribbles but complete more successful passes and shots. Also elsewhere, *recovering ball possession* was found to be important determinant of successful defensive performance, with successful teams demonstrated lower reaction times compared to less successful teams (Vogelbein et al., 2014).

The current findings may indicate why previous studies on ball retention fail to find *ball possession* as a consistent determinant of team success (Collet, 2013). The inclusion of assessment of opposition interaction in the current analysis revealed how number and percentage of ball actions changes significantly according to different degrees of defensive balance and space utilizations, both independently and with interaction effect, in the course of a match play. Similarly, Long possessions (five or more passes) were reported to be more effective in scoring goals and producing shooting opportunities than the opposite tactic Short possessions (two or less passes) when playing against an imbalanced defence, but not against a balanced defence (Tenga et al., 2010a, 2010b). It seems therefore apparent that, to be more valid, the analysis of the effect of *ball possession* should consider the application of opposition interaction on the process of ball retention during match play. Other potential influencing factors such as situational variables (Gomez et al., 2013; Paixão et al., 2015) are assumed to influence players before or just prior to players' actions during a match play and that their effects, positive or negative, are naturally integrated in the analysis of players' match performance. Consequently, the assessment of opposition interaction enables to incorporate the effects of all potential influencing factors and makes it possible to study match performance in its natural context without necessarily having to consider different influencing factors isolated from each other.

Future research could explore further the process of match performance by investigating other meaningful combinations of events as they typically happened, offensively and defensively, during a soccer match play. Another aspect worthy exploring is incorporating the time aspect in the analysis. This will provide a more specific evaluation. For example, the ability of offensive ball actions to create imbalance directly from a balanced defence, to increase imbalance from beginning imbalanced to complete imbalanced defence, and the ability to utilize opportunities of imbalance exposed in the opponent’s defence can all three be studied separate from each other.

The present findings have some practical implications. The revealed information has the potential to increase soccer practitioners' awareness of how specifically a team should train in order to improve its ability to create penetrations effectively. The controlled match-like practice sessions, with drills such as those involving a combination play with quick precise passes and initiative runs through the last line of opponent’s defence and early crosses into spaces behind the last defensive line can be both specific and effective in this regard. This is emphasized with the fact that teams in modern soccer are generally well organised defensively making it possible to maintain useful defensive balance even when defenders are outnumbered, provided that players in the last line of defence are positioned correctly (Olsen et al., 1994).

That the combined effect of score-line and match location was not considered in the analysis may represent a limitation in the current study. This is despite the fact that the sample used included equal number of away and home matches. Further, the analysis of performance in this study lacks temporal aspect. As such, offensive ball actions were analysed without a possibility of monitoring changes between different categories in each variable. We are for example unable to assess the ability to create imbalances or increase imbalances in the opponent’s defence, i.e. either a change from balanced to imbalanced defence or from beginning imbalanced to imbalanced defence.

5. Conclusions

This study shows that the Finalists performed a higher percentage of penetrative ball actions into dangerous spaces (within or behind the last line of opponent's defence) per match than Non-finalists when playing against an imbalanced defence, while Non-finalists performed a higher percentage when playing against balanced and beginning imbalanced defences. This implies that the Finalists were more effective in exploiting imbalances in the last line of opponent's defence compared to Non-finalists. These results suggest that teams' ability to create penetrations by effectively exploiting spaces within and behind the last line of opponent's defence is an important determinant of successful offensive performance in soccer match play. The current study demonstrates that assessment of opposition interaction is of critical importance also to the analysis of the process of match performance in elite soccer.

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7. References

Altman, D. G. (1991), Some common problems in medical research. In Altman, D. G., (Ed.) **Practical statistics for medical research** (pp. 403-409). London: Chapman & Hall.

Collet C. (2013), The possession game? A comparative analysis of ball retention and team success in European and international football, 2007–2010, **Journal of Sport Sciences**, 31, 123–136.

Elias, N. and Dunning, E. (1966), Dynamics of group sports with special references to football. **British Journal of Sociology**, 17, 388-402.

Fernandez-Navarro, J., Fradua, L., Zubillaga, A., Ford, P. R. and McRobert, A. P. (2016), Attacking and defensive styles of play in soccer: analysis of Spanish and English elite teams, **Journal of sports sciences,** 34, 2195-2204.

Gómez, M. Á., Gómez-Lopez, M., Lago, C. and Sampaio, J. (2012), Effects of game location and final outcome on game-related statistics in each zone of the pitch in professional football, **European Journal of Sport Science,** 12, 393-398.

Gómez, M. Á., Lago-Penas, C. and Pollard, R. (2013), Situational variables. In McGarry, T. O'Donoghue, P. and Sampaio, J. (Eds.) **Routledge Handbook of Sports Performance Analysis** (pp. 259-269). London & New York: Routledge Taylor & Francis Group.

Gréhaigne, J. F., Bouthier, D. and David, B. (1997), Dynamic-system analysis of opponent relationships in collective actions in soccer, **Journal of Sport Sciences**, 15, 137-149.

Gréhaigne, J.F., Bouthier, D. and Godbout, P. (1999), The foundations of tactics and strategy in team sports, **Journal of Teaching in Physical Education**, 18, 159-174.

Harrop, K. and Nevill, A. (2014), Performance indicators that predict success in an English professional league one team, **International Journal of Performance Analysis in Sport**, 14, 907-920.

Hewitt, A., Greenham, G. and Norton, K. (2016), Game style in soccer: what is it and can we quantify it?, **International Journal of Performance Analysis in Sport,** 16, 355-372.

Hughes, M. and Franks, I. (2005), Analysis of passing sequences, shots and goals in soccer,

Journal of Sports Sciences, 23, 509-514.
Hughes, M. and Snook, N. (2006), Effectiveness of attacking play in the 2004 European Championships. In H. Dancs, M. Hughes and P. G. O'Donoghue (Eds.) **Proceedings of World Congress of Performance Analysis of Sport 7** (pp. 46-62). Cardiff: CPA UWIC Press.
Ivarsson, A., Andersen, M. B., Johnson, U. and Lindwall, M. (2013), To adjust or not adjust: Non parametric effect sizes, confidence intervals, and real-world meaning, **Psychology of Sport and Exercise,** 14, 97-102.
Jones, P. D., James, N. and Mellalieu, S. D. (2004), Possession as a performance indicator in Soccer, **International Journal of Performance Analysis in Sport**, 4, 98-102.
Lago-Ballesteros, J., Lago-Peñas, C. and Rey, E. (2012), The effect of playing tactics and situational variables on achieving score-box possessions in a professional soccer team, **Journal of Sports Sciences,** 30, 1455-1461.
Lago-Peñas, C., Gómez, M. Á., Viaño, J., González-García, I. and Fernández-Villarino, M. d. L.Á. (2013), Home advantage in elite handball: the impact of the quality of opposition on team performance, **International Journal of Performance Analysis in Sport, 13,** 724-733.
Liu, H., Yi, Q., Giménez, J. V., Gómez, M. Á. and Lago-Peñas, C. (2015a), Performance profiles of football teams in the UEFA Champions League considering situational efficiency, **International Journal of Performance Analysis in Sport,** 15, 371-390.
Liu, H., Gomez, M. Á., Lago-Peñas, C. and Sampaio, J. (2015b), Match statistics related to winning in the group stage of 2014 Brazil FIFA World Cup, **Journal of sports sciences,** 33, 1205-1213.
O'Donoghue, P. (2009), Interacting Performances Theory, **International Journal of Performance Analysis in Sport**, 9, 26-46.
O'Donoghue, P. (2010), **Research methods for sports performance analysis**. London and NewYork: Routledge Taylor & Francis Group.
O'Donoghue, P., Papadimitriou, K., Gourgoulis, V. and Haralambis, K. (2012), Statistical methods in performance analysis: an example from international soccer, **International Journal of Performance Analysis in Sport**, 12, 144-155.
Olsen, E., Larsen, O. and Semb, N. J. (1994), **Effektiv fotball**. Norway: Gyldendal Norsk Forlag A/S.
Paixão, P., Sampaio, J., Almeida, C. H. and Duarte, R. (2015), How does match status affects the passing sequences of top-level European soccer teams? **International Journal of Performance Analysis in Sport,** 15, 229-240.
Pollard, R. and Reep, C. (1997), Measuring the effectiveness of playing strategies at soccer, **The Statistician**, 46, 541-550.
Rein, R., Raabe, D., & Memmert, D. (2017). "Which pass is better?" Novel approaches to assess passing effectiveness in elite soccer, **Human Movement Science,** 55, 172-181
Ruiz-Ruiz, C., Fradua, L., Fernandez-Garcia, A. and Zubillaga, A. (2013), Analysis of entries into the penalty area as a performance indicator in soccer, **European Journal of Sport Science**, 13, 241-248.
Tenga, A. (2013), Soccer. In McGarry, T. O'Donoghue, P. and Sampaio, J. (Eds.) **Routledge Handbook of Sports Performance Analysis** (pp. 323-337). London & New York: Routledge Taylor & Francis Group.
Tenga, A., Holme, I., Ronglan, L.T. and Bahr, R. (2010a), Effect of playing tactics on achieving score-box possessions in a random series of team possessions from Norwegian professional soccer matches, **Journal of Sports Sciences**, 28, 245–255.
Tenga, A., Holme, I., Ronglan, L.T. and Bahr, R. (2010b), Effect of playing tactics on goal scoring in Norwegian professional soccer, **Journal of Sports Sciences**, 28, 237-244.

Tenga, A., Holme, I., Ronglan, L.T. and Bahr, R. (2010c), Effects of match location on playing tactics for goal scoring in Norwegian professional soccer, **Journal of Sport Behavior**, 33, 89–108.

Tenga, A., Ronglan, L.T. and Bahr, R. (2010d), Measuring the effectiveness of offensive match-play in professional soccer, **European Journal of Sport Science**, 10, 269–277.

Tenga, A. and Sigmundstad, E. (2011), Characteristics of goal-scoring possessions in open play: Comparing the top, in-between and bottom teams from professional soccer league, **International Journal of Performance Analysis in Sport**, 11, 545-52.

Vacha-Haase, T. and Thompson, B. (2004), How to estimate and interpret various effect sizes, **Journal of Counseling Psychology**, 51, 473-481.

Vogelbein, M. Nopp, S. and Hökelmann, A. (2014), Defensive transition in soccer – are prompt possession regains a measure of success? A quantitative analysis of German Fußball-Bundesliga 2010/2011, **Journal of Sport Sciences**, 32, 1076–1083.