A comparative tournament analysis between the EURO 1996 and 2000 in soccer

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In international tournaments, teams are judged on their ability to win matches. Behind the wins, the teams must have effective ways to win the ball, create successful attacks first to reach the attacking third of the field, create effectively scoring chances and to complete them by scoring goals with a high efficiency.
The purpose of this study was to study selected offensive and defensive variables of field players and goalkeepers in the EURO 2000 and to relate the results to the final team ranking in the tournament.

All matches (n=31) of the EURO 2000 were recorded using video and analysed with computerised match analysis hardware and video playback system for game performance analysis using SAGE Game Manager for Soccer software. The quantitative (number of executions) and qualitative (percentage of successful executions) game performance variables were as follows: passes, receivings, runs with ball, scoring trials, interceptions, tackles, goals and goalkeeper's savings. The total and effective playing times were recorded and the game performance results were standardised for 90 minutes playing time. Team ranking in each variable was used as a new variable. The final ranking order in the WC '98 tournament was explained by calculating the rank correlation coefficients between team ranking in the tournament and ranking in the following variables: ranking of ball possession in distance, passes, receivings, runs with the ball, shots, interceptions, tackles and duels. Selected quantitative and qualitative sum variables were calculated using ranking order of all obtained variables, only defensive variables and only offensive variables. The means and standard deviations of the game performance variables were calculated. Ranking order in each variable was constructed. Spearman's correlation coefficients were calculated between all ranking game performance variables.

The average to have the ball in possession in distance was 5,7 km. Holland was superior in ball possession in distance (8.9 km). During the 90 minutes the average amount of passes per team was 369 and the percentage of the successful passes was 78 %. Team's average number of receivings was 267 and the success per cent was 93 %. In this tournament the amount of the runs with the ball in a match was on average 38 per team and the percentage of the successful runs was 65 %. Shots and headers that lead to a goal scoring opportunity were on average 13 per team in a match. About 9 % of them lead to goal. This means 1.2 goals per team in a match. In this tournament, teams tried to intercept on average 113 times per match per team and the percentage of the successful interceptions was 95 %. The average number of tackles was 134 per team in a match. The percentage of successful tackles was

47 %. The goalkeepers and defenders made on average 3 savings each. In goal scoring opportunities, the goalkeepers saved with the percentage of 69 %. Spearman's correlation coefficients between the tournament ranking and the measured variables were as follows: percentage of the successful passes ($r=1.00$, $p<.001$), the percentage of successful goal scoring trials ($r=.665$, $p<.01$). The correlation coefficients of sum variable of all relative offensive success variables and all defensive and offensive variables were .633 ($p<.01$) and (.572, $p<.05$).

The presented results showed that there was a variable of successful passes at team level that explained the success in the EURO 2000. France was the best team in the performance activity of passes, receivings, runs with ball and tackles. In percentage of the successful passes, France was the top team. The goalkeeper's saving percentage of was seventh best. The strengths of Italy were in defence. The Italians were best in interceptions and third best in tackles. In the passing activity their position was 15th, but in the percentage of successful passes 2nd. In the over all ranking taking into account all analysed variables, Italy was 13th. This analysis would give Holland a better place than third. Holland was 1st in ball possession (8.9 km) and 2nd in the amount of passes and shots and also close to the top place in the corresponding successful executions. Because Holland controlled the ball a lot, it didn't have many chances to interceptions or duels. This can be seen in the amount of interceptions and duels. Germany was traditionally strong in having the ball in possession (2nd), in passing play (2nd) and in the number of goal scoring trials ((4th). However, the weaknesses were found in defence activity of interceptions (16th) and tackles and duels (15th).

1. Introduction

In international tournaments, teams are judged on their ability to win matches. Behind the wins, the teams must have effective ways to win the ball, create successful attacks first to reach the attacking third of the field, create effectively scoring chances and to complete them by scoring goals with a high efficiency.

Brazil was the strongest team in the World Cup of USA '94. In the comparison of Brazil and its opponents, Brazil had the highest number of successful attacking trials to the attacking third (61 vs. 33), the highest number of scoring chances in the vital area (27 vs. 10) and the highest number of shots for scoring goals (17 vs. 7). Relatively Brazil mastered the matches on average in time 56 %, in distance 63 %, in the number of attacking trials inside of the attacking third 65 %, in the number of created scoring chances in the vital area 73 %, scoring trials 71 % and goals 80 % (Luhtanen et al., 1997).

France was the winner in the World Cup France '98. The results showed that there is not any single event that could explain the success in the World Cup '98 (Luhtanen et al., 1999). France was best only in the amount of shots towards the opponent's goal and in the amount of opponent's shots against the own goal (least shots). Also in the number and in percentage of the successful interceptions France was placed close to the top. The goalkeeper's saving percentage of France was third best. The strengths of

Brazil were the control of passing game and the successful passing play. Also the opponents shot against Brazilian goal fourth least. Taffarel's savings percentage in the play situations was in the team comparison the 26th. One has to remember that Taffarel made the decisive saves in penalty shoot-out against Holland before Brazil got to the final. The greatest weaknesses of Brazil were found in their defensive play. They were the 26th in the amount of interceptions and tackles. No analysed variable showed that Croatia would earn the bronze medal in France '98. This analysis would give Holland a better place than the fourth. Holland was the 1st in ball possession (9.1 km), the amount of passes and receiving and also quite highly placed in the corresponding successful executions. Holland created thirdly most goal scoring opportunities and it's opponents shot thirdly least against it's goal. Because Holland controlled the ball a lot, it didn't have many chances to interceptions or tackles. This can be seen in the amount of interceptions and tackles. When considering the successes in interceptions and tackles, Holland kept it's high position.

The purpose of this study was to compare selected offensive and defensive variables of field players and goalkeepers between the EURO 1996 (England) and EURO 2000 (Belgium and Holland) and to relate the results to the final team ranking in the respective tournaments.

2. Methods

All matches (n=31) of the EURO 1996 and 2000 were recorded using video and analysed by three trained observers with computerised match analysis system for game performance analysis using SAGE Game Manager   for Soccer software (Ilkka & Luhtanen, 1996). The written definitions of each event (pass, receiving, run with the ball, shot, scoring trial, defending against scoring trial, interception and tackle) were applied in analysing the matches. The intra- and inter-observer reliability of all defined variables were calculated using Pearson's correlation coefficients. A total match included round 2000 single events. The dimensions of each pitch were used to calculate how the ball was in possession for each team in distance. The inter- and intra-observer correlation coefficient were significant and their ranges were as follows: in player identification r=.89-.98, in event identification r=.91-.99, in success of the event , r=.74-.94 and in the distance covered by the ball concerning possession of the ball per a team r=.97-.99.

The quantitative (number of executions) and qualitative (percentage of successful executions) game performance variables were as follows: passes, receivings, runs with ball, scoring trials, interceptions, tackles, goals and goalkeeper's savings. The total playing times were recorded and the game performance results were standardised for 90 minutes playing time.

Team ranking in each variable (quantitative and qualitative) was used as a new variable (see Tables 1-4). The final ranking orders in the EURO 1996 and EURO 2000 tournaments were explained by calculating the rank correlation coefficients between team ranking in the tournament and ranking in the following variables: ranking of ball possession in distance, passes, receiving, runs with the ball, shots, interceptions, tackles and tackles. Selected quantitative and qualitative sum variables were calculated using ranking order of all obtained variables, only defensive variables and only offensive variables.

> The means and standard deviations of the game performance variables were calculated. Ranking order in each variable was constructed. Spearman's correlation coefficients (95 % CI) were calculated between all ranking variables describing game performance.

3. Results

The team ranking results of quantitative (derived from number of executions) variables of all participating teams in the EURO 1996 and EURO 2000 tournaments are shown in Table 1 and 2, respectively. The team ranking results of qualitative (derived from percentage of the successful executions) variables of each participating teams in the EURO 1996 and 2000 tournaments are shown in Table 3 and 4, respectively.

Table 1. The selected team ranking results of quantitative (derived from number of execution) variables of all participating teams in the EURO 1996.

TEAM	Ranking	Ball in possession	Passes	Receives	Runs with ball	Shots	Interceptions	Tackles
GER	1	6	7	8	14	9	2	5
CZE	2	15	14	10	8	10	11	9
ENG	3	7	8	11	9	15	8	11
FRA	4	10	10	6	3	7	4	3
CRO	5	5	6	5	11	4	3	15
POR	6	3	2	1	10	5	5	13
SPA	7	9	9	9	5	3	7	2
HOL	8	2	1	2	2	1	12	12
DEN	9	12	15	15	16	11	14	8
ITA	10	8	5	7	13	2	6	14
BUL	11	11	12	12	4	12	1	1
SCO	12	14	11	14	6	13	15	6
SUI	13	16	16	16	15	16	13	10
RUS	14	4	3	3	7	8	10	16
ROM	15	1	4	4	1	6	9	7
TUR	16	13	13	13	12	14	16	4

Table 2. The selected team ranking results of quantitative (derived from number of execution) variables of all participating teams in the EURO 2000.

TEAM	Ranking	Ball in possession	Passes	Receives	Runs with ball	Inter-ceptions	Tackles	Shots	Shots of opponent
FRA	1	5	1	1	1	2	1	3	7
ITA	2	15	15	15	16	1	3	13	14
HOL	3	1	2	2	5	15	12	2	4
POR	4	6	7	6	3	10	14	8	9
SPA	5	4	5	4	4	14	7	6	6
TUR	6	13	11	9	12	3	6	15	16
ROM	7	7	6	7	10	8	11	5	3
YUG	8	10	14	11	6	12	16	10	13
NOR	9	16	16	16	15	7	5	16	10
CZE	10	12	12	13	11	11	9	9	12
ENG	11	14	13	14	14	9	13	14	15
BEL	12	3	4	5	2	4	8	1	1
SLO	13	11	9	12	13	6	2	11	2
SWE	14	8	8	8	9	5	4	7	11
GER	15	2	3	3	7	16	15	4	5
DEN	16	9	10	10	8	13	10	12	8

The average ball possession in distance was in the EURO 1996 and EURO 2000 6.4 km and 5.7 km, respectively. Holland was superior in ball possession in distance in both tournaments (8.0 km and 8.9 km). During the 90 minutes, the average amounts of passes per team were 366 and 369 with the success rates of 74 % and 78 %, respectively. Team's average numbers of receiving the ball were 283 and 267 with the success rates of 95 % and 93 %, respectively.

The amounts of the runs with the ball in a match was on average 66 and 38 with the success rates of 71 % and 65 %, respectively. Shots and headers that lead to a goal scoring trial were on average per team only 12 and 13 with the success rates of 8 % and 9 %, respectively.

The teams tried to intercept on average 79 and 113 times per match per team and the percentage of the successful interceptions were 89 % and 95 %, respectively. The average number of tackles was 71 and 134 times per team in a match. The percentage of successful tackles was 51 % and 47 %. In the EURO 2000, the goalkeepers made on average only 4 saves in goal scoring opportunities. Their percentage for the successful saves was 69 %.

Table 3. The selected team ranking results of qualitative (derived from percentage of the successful executions) variables of each participating team in the EURO 1996.

TEAM	Ranking	Passes	Receives	Runs with ball	Shots	Interceptions	Tackles
GER	1	6	11	8	2	4	12
CZE	2	11	15	11	6	10	7
ENG	3	4	1	3	1	5	5
FRA	4	10	9	9	9	9	3
CRO	5	5	13	14	8	6	10
POR	6	3	10	16	7	1	15
SPA	7	14	8	5	11	3	1
HOL	8	2	7	1	13	14	4
DEN	9	8	3	6	3	7	16
ITA	10	12	14	15	10	13	8
BUL	11	15	12	4	5	2	2
SCO	12	9	6	2	14	11	14
SUI	13	16	16	12	12	8	9
RUS	14	1	5	13	4	12	6
ROM	15	7	4	7	15	15	11
TUR	16	13	2	10	16	16	13

Correlation analysis for the EURO 1996 indicated that mostly the defensive variables would predict success in the tournament. The significant Spearman's correlation coefficients between the tournament ranking and ranking in the measured variables were as follows: number of interception trials ($r=.515$, $p<.05$), success rate of the interceptions ($r=.553$, $p<.05$) and success rate in all defensive trials ($r=.628$, $p<.01$)

For the analysis of the EURO 2000, the significant Spearman's correlation coefficients between the tournament ranking and ranking in the measured variables were as follows: percentage of the successful passes ($r=1.00$, $p<.001$), the percentage of successful goal scoring trials ($r=.665$, $p<.01$). The correlation coefficients of sum variable of all relative offensive success variables and all defensive and offensive variables were .633 ($p<.01$) and (.572, $p<.05$).

Table 4. The selected team ranking results of qualitative (derived from percentage of the successful executions) variables of each participating team in the EURO 2000.

TEAM	Ranking	Pass	Receives	Run with ball	Inter- ceptions	Tackles	Shot	G.K. save
FRA	1	1	9	3	7	5	4	7
ITA	2	2	13	15	14	13	5	2
HOL	3	3	3	5	5	7	7	3
POR	4	4	1	7	15	9	2	6
SPA	5	5	7	11	1	11	6	15
TUR	6	6	15	10	11	6	9	4
ROM	7	7	6	4	2	15	11	16
YUG	8	8	10	13	8	12	3	12
NOR	9	9	14	16	10	14	12	1
CZE	10	10	5	9	6	1	10	5
ENG	11	11	16	6	4	2	1	8
BEL	12	12	8	2	12	3	14	9
SLO	13	13	4	1	16	4	8	13
SWE	14	14	11	14	9	10	13	11
GER	15	15	2	8	3	8	15	14
DEN	16	16	12	12	13	16	16	10

4. Discussion

The presented results showed that there was a variable of successful passes at team level that explained the success in the EURO 2000. France was the best team in the performance activity of passes, receiving, run with the ball and tackles. In the percentage of the successful passes, France was the top team. The goalkeeper's saving percentage of was the seventh best. The winner of the EURO 1996, Germany was not the best in any analysed variable. The second best ranking was observed in the success rate of shots for goal scoring and in the activity of interceptions. Germany was the 4th best in the success rate of interceptions and the 5th best in the number of tackles.

   In the Euro 2000, the strengths of the silver team Italy were in defence. The Italians were the best in interceptions and the third best in tackles. In the passing activity their position was the 15th, but in the percentage of successful passes the 2nd. In the over all ranking taking into account all analysed variables, Italy was the 13th. The silver team of the EURO 1996, Czech Republic was mostly lower than the average, especially in the activity variables. Their best rankings were the 6th in the success rate of goal scoring trials and the 7th in the success rate of tackles.

   In the EURO 2000, this analysis would give Holland a better place than third. Holland was the 1st in ball possession (8.9 km) and the 2nd in the amount of passes and shots and also close to the top place in the corresponding successful executions. Because Holland controlled the ball a lot, it didn't have many chances to interceptions or tackles. This can be seen in the amount of interceptions and tackles. In the EURO 1996, the most attacking activity and success rate variables would predict for Holland a better place than they received. An important exception was the 13th place in the success rate of goal scoring trials. In all the defensive activity variables Holland was lower than the average. It may be partly due to the high activity in the attacking play.

In the EURO 2000, Germany was traditionally strong in having the ball in possession (2nd), in passing play (2nd) and in the number of goal scoring trials (4th). But the final ranking was as low as the 15th. The weaknesses of Germany were found in defence activity of interceptions (16th) and tackles (15th). In the success rate of the goal scoring trials Germany was the 15th.

In both EURO tournaments, the rank correlation analysis has indicated different relationships describing success. In the EURO 1996, mostly successful team work in defence predicted success in the tournament. In the EURO 2000, on the contrary the offensive team work variables predicted success in the tournament. Many more and different relationships were found in the World Cup France '98 (Luhtanen et al. 1999). The significant Spearman's correlation coefficients between the tournament ranking and the selected new variables were as follows: percentage of the successful shots ($r=.699$, $p<.001$), the percentage of successful savings of the goalkeeper ($r=.352$, $p<.05$). The correlation between the ranking and the new sum variables were as follows: sum variable of all variables ($r=.528$, $p<.005$), sum variable of all defensive variables ($r=.431$, $p<.05$), sum variable of all offensive variables ($r=.452$, $p<.01$), sum variable, which describes the success of the defensive play ($r=.489$, $p<.005$), sum variable, which describes the success of the attacking play ($r=.531$, $p<.005$) and sum variable, which describes the success of goal scoring opportunities in the both ends of the pitch ($r=.773$, $p<.001$).

In the World Cup France '98 (Luhtanen et al. 1999), the analysis would also give Holland a better place than fourth. Holland was the 1st in ball possession (9.1 km), the amount of passes and receiving and also quite highly placed in the corresponding successful executions. Holland created thirdly most goal scoring opportunities and it's opponents shot thirdly least against it's goal. Because Holland controlled the ball a lot, it didn't have many chances to interceptions or tackles. This can be seen in the amount of interceptions and tackles. When considering the successes in interceptions and tackles, Holland kept it's high position. Italy (silver in USA '94 and France '98) reached also in France a better place that the analysis would predict. However this place was a disappointment for Italy. The place of Germany (gold in Italy '90 and EURO 96) was in line with the team activities. However, in France Germany was more a team that played with easier passes than a team that challenged the opponent by runs with the ball. In tackling Germany was good like usual, but this time it was not enough. Denmark's place in France (gold EURO 92) doesn't correspond to the results of the analysis on a whole. The decisive factor in the success of Denmark was that they succeeded to score goals with the highest success per cent, even if it was only the 25th in the amount of shots.

In summary, the speculating comparison between the EURO 1996 and EURO 2000 was possible and understandable conclusions can be drawn. The basic reasons that any absolute comparison between the tournaments can not be done are because the teams of the participating countries in the consecutive tournaments have changed as well as their opponents. The coaches also play an important role in selecting the playing style and tactics for the teams based on the strengths of their players and possible weaknesses of the opponents. However, the results indicated that Holland has been regularly in all tournaments one of the best offensive teams. A similar kind of trend has been seen in the games of France. The defence of France has been more compact than the defence of Holland. If there has been an unexpected and successful team in a tournament then their play has been based on the strong defence and high success rate in the goal scoring trials.

5. References

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