A comparative study on the evolution of the parameters in professional soccer matches

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Abstract

We conducted this comparative study showing the evolution of the parameters of soccer matches. The objective of study was to compare the statistically significant parameters on the evolution soccer matches, Romania 1st League and international matches season 2010-2011. Another objective of this study is the efficiency analysis notation in preparation matches and ways of training in soccer. As a research method we used analysis of simple notation. The results of teams participating in international competitions were significantly better than those of the teams in Romania 1st League with the following parameters: assists, one to two, dribbling successful.

Keywords: analysis, matches, parameters, soccer.

1. Introduction

Soccer game simultaneously creates a lived experience of the players, coaches and spectators. Generally teams are judged on their ability to win matches, possession of the ball long, prolonged attacks third field goal. To achieve such objectives, must be well known to the playing styles of the elite teams. Notation is an objective analysis of the performance record that can be quantified in a consistent and reliable way. Playing with numerous attacks in the

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future will be key to attractive football. And this may explain why most games analyzed recounts attack game. In soccer, a direct style of play leads to a high percentage of empty brand (Garganta, Maia & Basto, 1995).

Behind the victory is the fact that teams actually have a shot to win and create successful attacks in the third field goal, increasing their chances to score (Pekka, Luhtanen, Korkonev & Ilka, 1997). Notation analysis focuses on analyzing every move, as well as the rate of effort during a soccer match, from simple notation (Reep & Benjamin Source, 1968), studies aimed module enrollment goals (Hughes & Robertson, 1998). Reilly and Thomas 1976, analyzed the number of shots compared to goals scored and every move during a soccer game, intensity and duration of action thus analyzing the computerized notation as in evolution (Hughes & Franks, 1980, 1983). Franks & Muller (1968) states that, international football coaches pursuing the development of a soccer match cannot hold more than 42% of the important stages of the match (and collaborator Hughes, 1997), concluding that appear necessary or computerized drawing simple notation analysis, which improves technical and tactical monitoring the percentage of soccer. Franks & Miller (1987) showed that soccer coaches are in an amount less than 45% in terms of post-game analysis. Hughes (1988), Yamanaka (1993) conducted some studies using notation analysis, which examined the technical and tactical games. Authors have also referred, and how they can be used in these studies (Yamanaka, Masuda, Hughes & Togari, 1992). Notation analysis systems have been developed to obtain insights into the competition, such as the behavior of the game, tactics training, and different strategies (Hodges & Franks, 2002; Hughes & Bartlett, 2002). Qualified computer system allows observation systematic, details of a match or of several matches. Nevertheless, few studies have addressed the specific techniques and tactics of soccer, in order to change the strategy of the game or practice (Bate, 1988; Hughes & Franks, 2005). Pioneers in the field: Franks (1983), Hughes (1985), Bate (1988), Harris & Reilly (1988), Hughes (1988), Yamanaka (1993). Through computerized analysis of the action of each player in possession of the ball were able to analyze movements, could be tactical and technical evaluation, as well as more accurate statistical comparison. Analysis detailed notation football players' aim: care, shot, winning the ball, free kick goal, dribbling, etc. Parse every game offers a more scientific view on player and team development measures to be taken to creating their own strategies for the game, which is surprised and dominated opponents in order to gain points.

Hypothesis

Through this paper we make a comparison between the conduct of the National League matches in Romania and European Leagues (European League, Champions League). We want to present in detail several parameters and statistical aspects of the game of soccer.

2. Material and Methods

Procedures

In this study we used a simple notation analysis research method (videos, pen, paper, computer), after watching broadcasts of the matches in Romania 1st League, European League and Champions League. The parameters studied in these competitions are: shots on goal, red cards, assists, tackling, aerial duels won, 1-2's, successful dribbling’s, attacks. All these parameters were collected while watching televised matches.

Statistical analysis

Statistical interpretation of data obtained from initial and final test was performed with the Student test (t) according to “Table III of Fisher & Yates, Statistical Tables for Biological, Agricultural and Medical Research, published by Longman Group Ltd. London” and test d Cohen, recorded in the computer.

Testing

Research methods used in this study are: observation, comparative method, graphical method.

The study itself has started on 14.11.2010 and ended on 28.05.2011, watching TV direct broadcast matches. We watched and analyzed the following parties: Romania 1st League -20 matches; Europa League - 16 matches; Champions League -18 matches.
3. Results. Statistical analysis

Table 1  Romania 1st League

| Variables | Shots on goal | Tackling | Aerial duels won | 1-2-s | Successful dribblings | Attacks | Red card | Assists |
|-----------|---------------|----------|------------------|-------|-----------------------|---------|----------|---------|
| X         | 4.77          | 7.47     | 26.05            | 9.27  | 3.32                  | 30.95   | 0.1      | 0.37    |
| + DS      | 3.12          | 3.21     | 7.79             | 5.06  | 2.16                  | 11.32   | 0.30     | 0.62    |
| CV        | 65.44         | 42.94    | 29.93            | 54.5  | 65.11                 | 36.59   | 304      | 167.4   |

Table 2  Europa League and Champions League

| Variables | Shots on goal | Tackling | Aerial duels won | 1-2-s | Successful dribblings | Attacks | Red card | Assists |
|-----------|---------------|----------|------------------|-------|-----------------------|---------|----------|---------|
| X         | 4.39          | 7.86     | 21.04            | 15.1  | 4.94                  | 27.45   | 0.14     | 0.64    |
| + DS      | 3.06          | 3.92     | 9.33             | 15.3  | 3.24                  | 10.98   | 0.35     | 0.86    |
| CV        | 69.63         | 49.87    | 44.35            | 101   | 65.69                 | 40.01   | 242.8    | 132.9   |
| t         | 0.61          | 0.56     | 2.99             | 2.87**| 3.09**                | 1.71    | 0.72     | 1.88**  |
| p         | 0.005         | 0.005    | 0.005            | 0.05  | 0.025                 |         |          |         |
| d         | 0.569         | 0.463    | 0.558            | 0.314 | 0.347                 |         |          |         |

* The difference between means is significant for teams in Romania 1st League
** The difference between means is significant for teams in Europa League

4. Discussion

Analyzing the parameters compared of the League championship teams and teams in European Cups I can make the following considerations:

**Shots on Goal.** The analysis shots on goal, the result coefficient of variation demonstrates heterogeneity in the teams of two group competitions (1st League, CV = 65.44). European League and Champions League (CV = 69.63). The difference between them is not significant (t = 0.61).

**Red card.** The analysis of red cards, the result coefficient of variation demonstrates heterogeneity in group two competition teams 1st League (CV = 304). European League and Champions League (CV = 242.8). Difference between the average is not significant (t = 0.72). Grant, et. al all in 1998, analyzing the effects of the abolition of players on team performance and the final result of matches with the CM 1998 found that removing C.M. 1998 products have influenced the performance of teams and the final score. Although the team suffered elimination the match was considered not lost, but they had reduced chances of winning. Teams with an extra player had more chances to score and were less vulnerable in defence.

**Assists.** The assists analysis of the result coefficient of variation demonstrates heterogeneity in group two competition teams in 1st League - (CV = 167.4). European League and Champions League (CV = 132.9). The difference between means is significant (t = 1.88), the threshold of significance p <0.025, for teams in European leagues. Effect size is medium Cohen’s d = 0.347. From the point of view of the deficiency in using assists players in the Premier League it is highlighted lack of creativity, of technical mastery orientation, of intuitive rule action poultry and general lack of plumb rule when choosing the exact moment of the game. A good part of these failures are due to us and how we drive in children and youth. Yamanaka et. al 1992 comparing all teams’ playing style in Europe, the British Isles and South America participating in C. M. 1990 found that the British style differs from the other teams in terms of how to start the attack. The British used long throw into trying to score goals and clearly dominated the air game. European teams tend to build short passing game in attack, sprints and dribbles, reducing the risk of losing possession. South American teams have a high rate of shots and crosses.
Tackling. The analysis of dispossession, the result coefficient of variation demonstrates heterogeneity in group two competition teams in League - (CV = 42.94), European League and Champions League (CV = 49.87). The difference between the average is not significant (t = 0.56).

Aerial duels won. The analysis of aerial duels won, the result coefficient of variation in group shows heterogeneity in League championship teams - (CV = 29.93), European League and UEFA Champions League (CV = 44.35). The difference between means is significant (t = 2.99), the threshold of significance p <0.005, for teams in Romania 1st League. Effect size is medium Cohen’s d = 0.569. The difference is represented by the long ball game with Romanian teams that not always focus on possession and combination play.

1-2 (one-two). The analysis 1-2 - s, coefficient of variation result demonstrates heterogeneity in group two competition teams in League - (CV = 54.5). European League and Champions League (CV = 101). The difference between means is significant (t = 2.87), the threshold of significance p <0.005, for teams in European leagues. Effect size is medium Cohen’s d = 0.563. To use bird-receipt process, which is based equally both technical and tactical, requires some psychological qualities, intelligence, consisting of: guidance, intuition, combination approach game situations that can be learned and developed if they are included in an organized environment, the junior level.

Successful dribbling's. The analysis dribbling successful outcome demonstrates heterogeneity coefficient of variation in group two competition teams in League - (CV = 65.11). European League and Champions League (CV = 65.69). The difference between means is significant (t = 3.09), the threshold of significance p <0.005, for teams in European leagues. Effect size is medium Cohen’s d = 0.558. Lack of efficiency of Premier League players compared to the European leagues tackling huge technique shows that children and youth level is not achieved by coaches, they lack appropriate programs of learning this technique, sometimes even they are not used in certain phases of the game dribbling, blurring the formation of personality, creativity, player self confidence level. Yamanaka, K., et al. 1995 analyzing team style of Japan play in the qualifiers for CM 1994 found that the Japanese used dribbling more frequently than the Saudis and Koreans (p <0.05). They used several more passes than Saudis (p <0.05), had more shots than the Iraqis (p <0.05). Japan used several passes in offensive areas than any other team (p <0.01). Japan has made several passes in areas D and E and less in area B. The ball in area 16 m crossed into the area of analysis, the result coefficient of variation demonstrates heterogeneity in group two competition teams League (CV = 53.92), European League and UEFA Champions League (CV = 52.46). The difference between means is not significant (t = 0.40).

Attacks. The analysis of attacks coefficient of variation results demonstrate heterogeneity in the group of teams in the two competitions League - (CV = 36.59). European League and UEFA Champions League (CV = 40.01). The difference between means is significant (t = 1.71), the threshold of significance p <0.05, for teams in Romania 1st League. Effect size is medium Cohen’s d = 0.314. The reason that the number of attacks in Romania 1st League teams is greater than the teams in European leagues is due to the way the game is concerned Romanian teams to build attacks with long passes, without laborious construction. Garganta,(1995) looking for positive action appeal and style to score goals among top European teams who are trying to score goals often find that they earn their third ball attack, carry out attacks in a short reaction time of 10 seconds or less. Few players try to hit the ball (three or fewer) and make fewer passes (three or fewer) in an attempt to score goals. Luhtanen, PH, 1992 comparing the number and efficiency of teams participating offensive in C.M.1990 found that Germany had the highest number of attacks triggered, the lowest number of attacks missed and the highest number of wins. Argentina had fewer attacks triggered average teams ranked in positions 17 to 24. Final standings statistic was positively correlated with the teams of Germany, Italy, and Czechoslovakia. Pekka et. al. 1995, opponents comparing the Brazil team C.M. 1994 found that Brazil had a higher number of attempts to attack the third goal (p <0.01), a greater number of shots to score goals (p <0.05), a greater number of chances to score in vital areas (p <0.01).

5. Conclusion

Analyzing and interpreting the data from the study we can admit the following conclusions:

Teams participating in the European leagues have used more than 1-2 and more than dribbling (p <0.005), sites Romanian teams. Participating teams in European leagues showed more creativity than Romanian teams using assists, p <0.005 in favour of European ones. Teams participating in the Romania 1st League have used more have
more aerial duels won (p < 0.005) and more attacks sites European leagues teams. There have been significant results (p > 0.05) for the parameters: Shots on goal, red cards, tackling.

In a study, and the results of football Romanian specialists will need to modify training programs and training of matches. Based on information provided by the study of Romanian football coaches will have to use new training methods to the children and junior teams. This study included notation analysis that arouse interest in training players coaches both at the senior and the junior level in Romania 1st League, the main argument being that notation analysis gives that extra finesse in designing training players, but also in the design formula and tactics of the game.

Regarding the limitations of the study should be recorded several parameters and analyze more matches. We believe that the next study would better be done using computer notation analysis.

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