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EVALUATION OF GOALS SCORED IN TOP RANKING SOCCER MATCHES: GREEK "SUPERLEAGUE" 2006-07

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Abstract The aim of this study was to record and analyze goal scoring characteristics in top ranking soccer matches. In particular, 240 matches from the Greek "SuperLeague" (2006-07) were studied, with 558 goals scored. The results revealed that more goals were scored in the second half of the match, with a systematic upward trend in the number of scores as the match progressed. Furthermore, it appeared that the first goal had a strong impact on the final outcome since in 71.43% of the matches the team that scored first won the victory. As concerns home advantage in Greece, it was shown that it was slightly stronger as compared to other leagues (home wins: 47.3%). The results of the present study should not only give coaches a fresh insight into how to create more effective tactical plans, but they also provide useful information on the characteristics of Greek soccer.

Key words: soccer, tactics, goal, video-analysis, Greek League

INTRODUCTION

Owing to its fortuitous nature, it is very difficult to identify precisely the victory and defeat factors in soccer [17]. Nevertheless, evaluating goal scoring patterns in soccer matches may contribute to determining the factors that enable effective competition performance. Despite the fact that there is an ample amount of studies that have examined the characteristics of goals scored in various tournaments [6, 7, 8, 10, 18], the need for constant record and evaluation of soccer characteristics is prevalent, since it reflects continuous evolution and change as far as the mode of the game is concerned [18].

Moreover, to our knowledge there is only one study that examined Greek League. Saltas and Ladis [15] looked into the characteristics of offensive actions (shots and headers) in Greek League matches in the season 1990-91. In particular, it analyzed offensive actions as related to time, the pitch area, prior actions, parts of the body involved, the number of passes, and the first-goal effect on the match outcome. It is clear that there is a lack of information on Greek soccer. Therefore, the aim of the present study was to record and evaluate the goal scoring patterns in Greek "SuperLeague" soccer matches.

MATERIALS AND METHODS

All matches of the Greek "SuperLeague" in 2006-2007 (n=240) were studied. An overall of 558 goals were scored in this tournament. The selected matches were then analyzed by two experienced observers through systematic observation, with the aid of Sportscout video-analysis program for PC. Inter-rater reliability of separate observations was calculated to guarantee the quality of the observation system.

Analysis method assisted in observing:

1) scoring frequency per 45 minutes (*a*. First half plus extra time, *b*. Second half plus extra time),

2) scoring frequency per 15 minutes (*a*. 1-15, *b*. 16-30, *c*. 31-45 plus extra time, *d*. 46-60, *e*. 61-75, *f*. 76-90 plus extra time),
3) first-goal impact on the game outcome for the scoring team (*a*. win, *b*. draw, *c*. defeat).
4) home advantage in tournament (*a*. win, *b*. draw, *c*. defeat for home team).

STATISTICAL ANALYSIS

All data were analyzed using the SPSS 14.0. statistical package for PC (Lead Technologies Inc, USA). Non parametric chi-square (χ^2) analysis was used to determine the statistically significant differences and the level of significance was set at $p<0.05$.

RESULTS

The aforesaid inter-rater reliability was measured and the results yielded the reliability index of 0.94 (intra-class correlation coefficient and kappa index). According to Sachs [14], values greater than 0.80 indicate high agreement between measures and therefore have acceptable validity.

Data analysis showed significantly higher scores in the second half of the matches ($\chi^2=6.42$, $p<0.05$) (Figure 1). As regards the 15-min analysis, a systematic and significant upward trend was observed in the number of goals scored as time progressed (Figure 2).

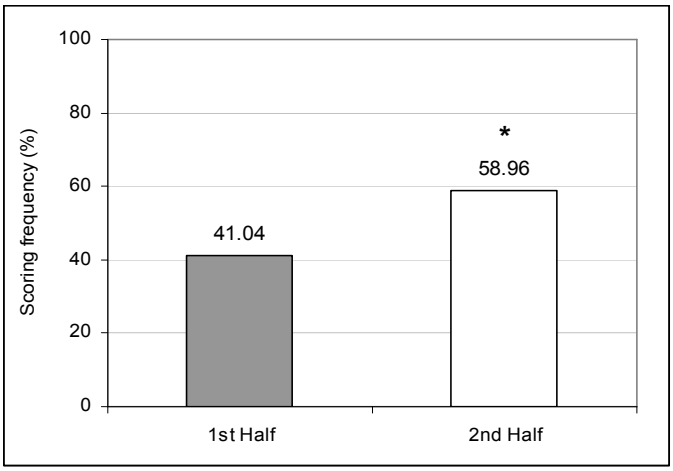

Figure 1. Scoring frequency / 45 min

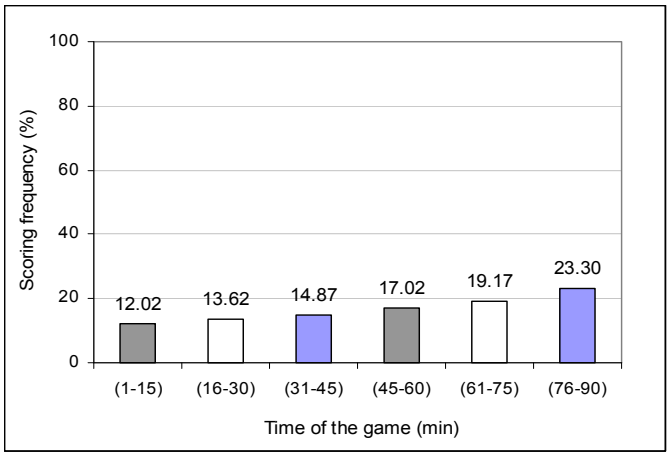

Figure 2. Scoring frequency / 15 min

As for the impact of the first goal on match outcomes, data analysis showed that the team that scored the first goal also won the match (71.43%) and displayed a statistically significant difference versus draw and defeat ($\chi^2=61.97$ and $\chi^2=71.61$ respectively, with $p<0.05$).

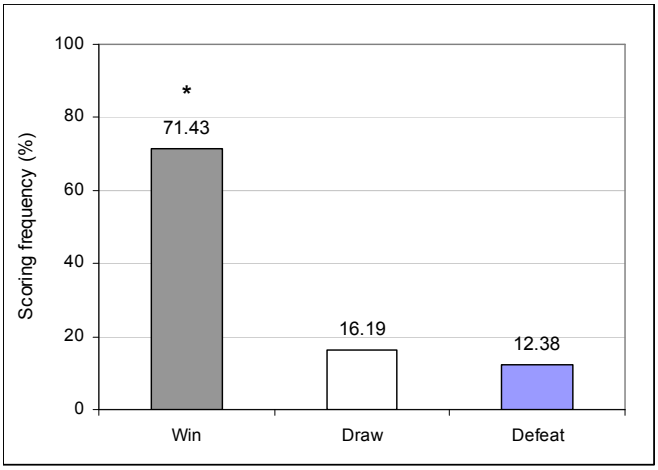

Figure 3. First-goal impact on the match outcome

The results revealed that there was strong home advantage in the Greek League (Figure 4). Thus, home teams won 47.3% of the matches; they drew in 26.34% of the matches and lost 26.4% of matches. Statistical analysis showed significant differences between "win" compared to "draw" and "defeat" (χ^2=9.44 and χ^2=9.38 respectively, with p<0.05).

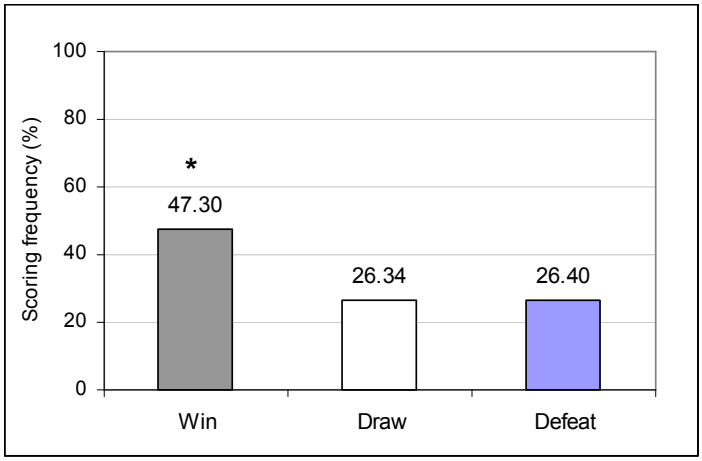

Figure 4. Home advantage

DISCUSSION AND CONCLUSIONS

Concerning the relationship between game time and goal scoring patterns, the results revealed that more goals were scored as time progressed. The review of relevant studies showed that the frequency of goals scored during a match is time dependent, while others purport that there is no immediate correlation [7, 8]. Thus, Yiannakos and Armatas [18] in their study for Euro 2004 found that 57.4% of goals were scored in the second half (p<0.05), Abt and his colleagues [1] concluded that the frequency of goals scored during soccer matches is time dependent. Moreover, a systematic and significant upward trend was observed in the number of goals scored as time progressed. Also, Armatas and his colleagues [3] studied exclusively the correlation between time and goal scoring in the three latest World Cups and concluded that statistically more goals were scored in the second half of the matches and in the last 15-minute periods. Another study that examined the three latest women's World Cups showed similar results [2]. The only study of the Greek soccer league matches disclosed uniform distribution in the goals scored without any statistically significant differences [15].

The results could be attributed to physiological and tactical factors of the game. According to Reilly [12], defenders display a greater deterioration in physical condition (thereby providing attackers

with an advantage) and lapses in concentration. From a purely physiological perspective there is a strong body of knowledge supporting a reduction in physical condition over the course of a match leading to a state of fatigue and reduced physical performance [4, 16]. Additionally, the same author reports that play may become urgent towards the end as teams chase a result. Although "urgent" play is difficult to quantify, it would appear that the players are more willing to take greater risks towards the end of the match in order to affect the outcome [1]. Finally, it is also possible that the losing team pushes players forward in order to create scoring opportunities, thereby either scoring themselves or conceding further goals [13].

As for the first-goal effect on the match outcome for the team that scored it, the results disclosed that when a team scored the first goal, they managed to be victorious in greater percentage (73.21%). The final standings of the Greek League (2006-07) showed great differences (in points and goals) between top teams as compared to the rest. Maybe the above results could be attributed to the qualitative characteristics of the teams. Respective percentages from the season 1990-91 were 70.3% wins, 11.2% draws and 18.5% defeats [15].

The analysis of home advantage in the Greek Soccer League showed that home teams won 47.3% of matches. Although the result is in accordance with other studies, the percentage seems to be diminished. Moreover, Courneya and Carron [5] presented home advantage figures, involving a quantitative synthesis of studies that had examined home advantage in major team sports in terms of the win percentage of decisive games, reporting 69% for soccer. A retrospective analysis of home advantage was conducted by Pollard and Pollard [11] for English soccer. Thus they found that the early years of the Football League in England saw home advantage averaging close to 70%. There was then a decline to values below 65%, but by the 1930s home advantage was averaging around 67%. However, the 7-year suspension of the league during the Second World War was followed by an immediate drop in home advantage to its lowest ever value of 60.0%. A slight increase followed, but since the late 1980s annual values below 60% have not been uncommon. In particular, the years 2000-01, 2001-02 and 2002-03 were reported by the same researchers with the percentages of 62.8%, 57.4% and 62.0% respectively.

Nevill and Holder [9] proposed four factors that differentially impact on the teams competing at their own versus the opponent's venue. These include crowd factors, an acknowledgement that generally competitors at home have more support from spectators than do visiting competitors, learning/familiarity factors, an acknowledgement that competitors at home are generally more familiar with their own venue and also have the opportunity to modify that venue temporarily in order to capitalize on their perceived strengths (e.g. soften the pitch through excessive watering). Moreover, there are travel factors, an acknowledgment that visiting competitors generally must undergo the inconvenience of some travel, and rule factors, an acknowledgment that in some sports the rules may favor the home team. Further studies, probably retrospective, are needed to investigate the possible existence of home advantage in Greek soccer.

The results should provide useful information to coaches in order to design more effective tactical and conditioning training as well as to plan an efficient game tactic. Besides, the results provide helpful insight into the characteristics of Greek soccer that has been lacking. In conclusion, the present study showed that the frequency of goals scored during a match is time dependent, that the first goal in the match plays a significant role in the final outcome while the effect of home advantage in the Greek Championship seems to be slightly strong.

PRACTICAL APPLICATION

Coaches should pay more attention to the later period of the match where most goals appear to be scored. They should train their players better in order to confront fatigue in the later stages of the match, as well as prepare an effective tactical plan. Further, coaches should prepare their team's tactical and psychological reaction after getting back in the score sheet as well as when playing away from home ground.

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