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Timing of Goals Scored in Selected European and South American Soccer Leagues, FIFA and UEFA Tournaments and the Critical Phases of a Match

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Abstract The purpose of this study was to analyze the timing of goals scored in various soccer leagues around Europe and South America, as well as Federation of International Football Associations' (FIFA) World Cup, Confederation Cup, Union of European Football Associations' (UEFA) Champions League and EURO 2012 matches to derive the latest trends with the hope of improving team preparation for matches and game management by coaches. The study derived data from http://www.soccerstats.com and www.fifa.com data bases. The analysis centered on the big five European leagues including England's Barclays Premier League, Spain's la liga, Germany's Bundesliga, Italy's Serie A, France's lique one; UEFA's Champions League and EURO 2012; Argentina, Brazil and Chile from South America; The FIFA world cup tournaments and the confederations' cup with regard to the timing of goals at 15 minute intervals. Data were analyzed and descriptively presented in form of tables and figure. The results showed that more goals were consistently scored in the second half especially in the last 15 minutes of normal regulation time than any other period of the game. It was concluded that the last 15 minutes of soccer matches is a critical phase of the game hence coaches need to prepare their players and manage the game so as to remain at their peak level throughout a match by enhancing their physical and mental conditioning coupled with timely use of substitutions and game management strategies depending on the score at hand.

Keywords FIFA, Critical phase, Physical and mental conditioning, Substitution, Timing of goals

1. Introduction

The popularity of soccer worldwide is based on the fact that the game is easy to follow, the rules easy to apply and that one requires relatively inexpensive equipment to play and enjoy it. The objective of the game is to score goals and to avoid conceding any. Indeed scoring of goals in the game of association football or soccer is one of the most exciting aspects of the game [1-5]. Spectators love goals and players who score consistently earn most of the acclamation as well as rewards by the team management. Scoring of goals determines whether a team wins or loses a game. The excitement of the game revolves around a team's strategy to out-maneuver an opponent; outscore them and strive to stop them from scoring. According to Leite [6], despite the fact that there are ample studies that have examined the characteristics of goals that have been scored in many tournaments, the need for a constant record and evaluation of football characteristics is prevalent since it presents continuous evolvement and change as far as the mode of the game is concerned. Data collected from researchers through these studies, and transferred to coaches and players, are very important for the design of the training regimens, the choice of the appropriate tactics and their application in the game [6, 7]. National leagues from the premier footballing continents of Europe and South America and the football World Cup and UEFA tournaments represent the pinnacle of the game globally and therefore scoring trends in these leagues and tournaments are worth of study.

It is the aim of every coach to prepare players such that they can score goals to win matches and tournaments. Fans talk about goals scored in one match until the next game to continue with the narrative that binds the billions of fans around the world including the more than 265 million players worldwide and 209 national associations affiliated to FIFA [8]. Throughout the year, national associations organize leagues to determine national champions who then go on to represent their country at continental club championships and eventually win a world title via the FIFA club championships. At national level, the dream is to win the coveted FIFA World Cup, an international soccer competition contested by the men's national soccer teams of the member nations of Fédération Internationale de Football Association (FIFA), the global governing body of football or Club World Championship. The World Cup has been held

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every four years since the first tournament in 1930 with the exceptions in 1942 and 1946 due to World War II [4, 9].

To emerge winners of a match, league or tournament, a team has to consistently score goals. Given that the leagues or cup matches at different levels have a lot of social, economic, political and cultural significance, the coaches and players shoulder the responsibility of sharpening their technical, tactical, psychological, physical and mental decision making to be as effective in a match situation as possible culminating in outscoring their opponents over the duration of a match. Matches previously played are watched, analyzed and data derived to help prepare for the next opponent. At lower levels of the game, coaches and players also strive to learn from those who play in high profile leagues thus matches at continental and global level are watched with the hope of deriving tactical and technical skills to be executed at the lower echelons of the game [3-5, 10]. The game is watched and passionately followed by millions of people worldwide. According to Njororai [3], "whereas for most fans, the interest is on the specific players, teams and/or general entertainment value of the spectacle, coaches, researchers and sports scientists focus on learning from it" (p. 326). During sports competitions, researchers want to find out the reasons behind the excellent performances by some teams and derive lessons for developing young talent. Some areas that are of interest to soccer coaches and sports scientists include the goal scoring patterns and the technical, tactical and physical characteristics of the winning teams and the overall technical and tactical innovations during the tournament [3-5, 10-14]. According to Armata et al., [15], the coaching process is enhanced by the provision of additional information that "describes sport performance in detail beyond that which coaches can provide through recall of personal observations" (p. 49). Information derived from a quantitative and descriptive performance analysis can provide useful feedback which can enhance performance if appropriately implemented. A coach has therefore to act on the information derived from match observation.

According to Van Lingen [16], a coach has to focus on a number of issues so as to improve the technical and tactical execution of the players. These areas include the following:

a. Formulating the football problem and making the necessary connections between theory and practice.
b. Analyzing football in such a way that a workable method can be developed in favor of the process of learning, maintaining and improving football techniques based on the reality of football.
c. Making a correct diagnosis of the problem.
d. Making the problem understandable and visible.
e. Formulating the football problem properly.

The focus of the coach and the team is to prepare players to perform at the highest level both effectively and efficiently throughout the duration of a match. Given the long duration of soccer matches, devoid of any time outs as the case is in basketball, an effective coach has to make several decisions starting with choice of the starting team, evaluate the performances of his own players and those of the opponents; change the game plan depending on the scores; make substitutions at half time or even during the game, among many coaching functions. This study therefore aimed at analyzing the timing of goals scored in various national leagues around the world, the champions' league and EURO 2012 of UEFA, FIFA tournaments including the world cup and the confederation cup and deriving some lessons that coaches need to address in practice and game management for effective results. Additionally the study is meant to add to the growing body of literature on association football pertaining to soccer game management theory given the games' worldwide appeal.

The aim of this study was to analyze and quantify, in absolute and percentage terms, the incidence of goals in games of selected European and South American soccer leagues, selected UEFA tournaments and World Cup soccer tournament matches 1930 to 2010; to verify in which periods and half of the games goals happen, over total time of the game; and determine a critical phase of the game with the highest incidence of goals. The data allow us to perform multiple comparisons between different analyzed tournaments. In soccer games, scientific information can be derived from the profile of goals scored in various tournaments. Some aspects, e.g., field location, type of play, time of occurrence or body parts with which the goals are scored, can provide useful information for decisions in training and in game management [3, 5, 7]. Indeed evaluating goal scoring patterns in soccer matches contributes to determining the factors that enable effective preparation and competition performance [3-5, 15, 17]. Due to the importance of goals in world soccer, several researchers have studied various aspects of their occurrence [3-5, 15, 17]. According to Njororai [4, 5], the World Cup is the ultimate stage for player development and a reflection of the level of modern soccer and therefore a useful focus of study. Additionally, the European leagues are the most successful drawing on the talent and skills of players from around the whole world. Indeed Europe is the epitome of the best in football, with South America coming second. The two continents are the only ones that have produced world cup champions since the inception of the tournament in 1930.

The peak experience of any player in a match is to score a goal and more significantly so if it the winning goal. Goals make the game exciting as well as make it possible to win championships. A coach with the desire to win must fashion a team that scores goals. It is no wonder that scorers are usually highly rated and rewarded world-wide. Every coach would want to have the top scorer in the league come from his team – together with a championship medal! Thus coaches and sports scientists in general strive to learn the scoring patterns and the basic situations that prevail during matches so as to improve players' scoring skills [3-7, 10-15, 17]. One key aspect of scoring that the coach and players should pay attention to is the distribution of goals throughout the match. When do most goals occur? What could be the

explanation for such a pattern of goal timing? What are the implications for scoring first? What about conceding first? How does a team sustain a narrow lead? A coach should reflect over these questions and come up with training strategies to prepare a team for any eventuality while aiming to capitalize on the frail positions of the opponent. Thus looking at various soccer championships, the coach needs to know the key aspects of timing of goals so that he or she can tailor the training, player selection, half time team talk, player substitution and deployment, team formation, as well as team tactics appropriately.

But preparing for a team to last for 90 minutes does not reduce the need to be alert right from the kickoff. It is a terrible setback to concede a goal in the first minute and, of course, extreme joy for the scoring team. The early goal lifts the confidence of a team as it gets to dictate the pace of the game knowing that it is ahead [3, 7]. Teams that scored first went on to win 59.4 percent of the matches where there was a winner, while 9.4 percent eventually lost and 25 percent drew the game in the 2002 World Cup. In the 1994 World Cup tournament, 73.5 percent of teams that scored first went on to win (3), while in the Euro 2012, the teams that scored first went on to win 70.97% of the matches [7]. This illustrates the significance of an early goal.

A team that scores first has less pressure compared to the one trailing. This does not imply that a team finds it easy to be in the lead. Leading during a match can become a burden to a team as it becomes too time conscious. Indeed, to a leading team, time does not seem to move, while for the trailing one, time just flies. The early temptation to sit back and protect the lead allows the opposition to pile on pressure, which could easily lead to an equalizing goal. Ferguson (18: p. 402) captured this in his autobiography well:

> There was no comfort to be gained from thinking we could be demoralized. Leading 1- 0 or 2 – 1, the opposition manager would know he faced a final 15 minutes in which we would go hell for leather. That fear factor was always there. By going for the throat and shoving bodies into the box, we would pose the question: Can you handle it?

Thus a team has to be prepared to believe that so long as there is time on the clock, they can score and in vice versa in terms of refusing to concede last minute goals. Thus when leading, it is important to keep pressing for more. In training, therefore, a coach should subject a team to a situation of playing while in the lead so the players develop the mental strength that is needed to sustain a lead. This can be done through simulated handicapped play, where a team starts a game knowing that they are either ahead by one or trailing by one or two goals. This will enable the coach to assess the reaction of the players in the different situations. For a trailing team, the pressure involves playing an opponent as well as time, which seems to run quickly. In the circumstances, players may resort to urgent passing, tackling to win possession, attacking in numbers in search of an equalizer, fouling and losing their heads with the referee, among others. These may combine to either produce an equalizer or indeed concede another goal, especially when gained on a counterattack. A coach should therefore instill in players the confidence to play relaxed even while trailing. This would minimize the chances of losing players through unnecessary bookings as frustration piles up and allow players to remain focused on the task at hand. Teams that come from behind to win matches always display a sense of calm and relaxation. They play with their normal rhythm and pace. They tend to believe in themselves; hence they do not resort to rushed play.

2. Material and Methods

We analyzed the official summaries of 3454 matches played in the 2013/14 edition of England's Barclays Premier League, Spain's la liga, Germany's Bundesliga, Italy's Serie A, France's lique one; UEFA's Champions League and EURO 2012; Argentina's, Brazil's and Chile's top leagues from South America; all the FIFA World Cup tournament matches from 1930 to 2010 and the 2013 Confederations' Cup. These competitions were purposely selected given their significance to world soccer. In total, we analyzed 8678 goals, noting the period and half of the game in which they occurred as well as the average goals scored per match. The data were obtained from the database of the website of http://www.soccerstats.com [19] and FIFA [20] through official overviews of the games. We collected quantitative data, which are related to the times the goals were scored in the course of the games. The data were presented in tables and a figure. The study was developed through variable analysis: a) dividing the total time of the game into time periods of 15 minutes inclusive of the added times in the last 15 minutes before and at the end of the halves, the playing time was split into 8 periods: 1st - 15th min.; 16th - 30th min.; 31st - 45th min.; 46th - 60th min., 61st - 75th min.; 76th - 90th min.; 1st extra time (91st - 105th min.) and 2nd extra time (106th - 120th min.), b) frequency of goals scored by half of the game (1st and 2nd half). The data analysis included use of descriptive statistics, consisting of a frequency distribution. Statistical data were reproduced with Absolute Frequency (number of goals) and Relative Frequency (percentage of goals) and presented in form of tables and figure.

3. Results

A total of 8678 goals were analyzed based on 3354 matches. The results showed that on average 2.6 goals were scored per match. There were 1826 matches from the 2013/14 season played in the big five leagues of Europe including England (380), Spain (380), Germany (306), Italy (380) and France (380) yielding 1826 goals thereby averaging 2.75 goals per match. From South America, the matches played in the top leagues in Argentina (190), Brazil (69), and Chile (153) totaling 412 matches yielding 981 goals thereby averaging 2.4 goals per match were analyzed.

In addition, 1116 matches drawn from the world cup (772), Confederation cup [32], UEFA champion's league (250) and Euro 2012 (62) yielding 2714 goals thereby averaging 2.43 goals per match were analyzed.

Table 1 shows the scoring trend throughout the matches during 2013/2014 season in the five major European soccer leagues in England, Spain, France, Italy and Spain.

Table 1 shows that the scoring peak was the 76 – 90 minutes' period with 1093 (21.73%) goals scored followed by the 61 – 75th minutes' (894, 17.77%) interval of matches. It is apparent that scoring increased as the matches progressed especially in the last 30 minutes of matches.

Table 2 shows the data on the timing of the goals in three South American leagues in the 2013/14 season.

Table 2 shows the timing of goals scored in the South American top leagues in Argentina, Brazil and Chile. The results show that 981 goals were scored averaging 2.4 goals per match. In terms of goal distribution over the 90 minutes period, the 76th to the 90th minute had the highest proportion of goals scored/conceded, 243 (24.8%), followed by 18.1% for the 61 to 75th minute. Indeed it is interesting that the scoring tended to increase with match progression. The last 15 minutes were particularly decisive in Argentina and Chile where the proportion of all goals scored were 25.8% and 25.2% respectively. On goal scoring average, Chile registered 2.8 goals compared to the very low scores in Argentina (2.11) and Brazil (2.22) per match.

Table 3 shows the timing of goals scored in the FIFA World Cup tournaments, 2013 Confederation Cup, 2013/14 UEFA Champions League and the EURO 2012 Championship.

Table 3 shows the tournaments that follow a league cum knock out phases which include extra time in case of a tie in the knock out phase. The results for 1116 matches with 2714 goals scored during the World Cup competitions, 2013 Confederation Cup, 2012 Euro and 2013/14 UEFA Champions League. The average goals scored per match were 2.43 ranging from a mere 1.2 in Euro 2012 to 2.9 for all world cup matches between 1930 and 2010. Regarding the timing of the goals over the match duration, the 76th to 90th minute was most decisive as it had 21.1% of all goals scored/conceded, followed by the period between the 61 and 75th minutes. The trend reflects an increase of scoring as the match progressed especially in the second half. The Confederation Cup had the highest proportion (23.5) of goals coming in the last 15 minutes of regulation time whereas the Euro 2012 tournament had the least proportion of goals in the 1st 15 minutes of matches (9.2%).

Table 1. The timing of the goals in the five major EUROPS top leagues 2013/2014 season

Time interval	England goals	%	Spain goals	%	Germany goals	%	Italy goals	%	France goals	%	Total goals	%
1 – 15	127	12.1	126	12.1	123	12.7	132	12.8	112	12.0	620	12.33
16 – 30	156	14.8	144	13.8	153	15.8	162	15.7	130	14.0	745	14.81
31– 45*	180	17.1	185	17.7	161	16.7	176	17.0	163	17.5	865	17.20
46 – 60	178	16.9	163	15.6	164	17.0	153	14.8	155	16.6	813	16.16
61 – 75	183	17.4	200	19.1	163	16.9	188	18.2	160	17.2	894	17.77
76– 90*	228	21.7	227	21.7	203	21.0	224	21.6	211	22.7	1093	21.73
Total	1052		1045		967		1035		931		5030	100
Goal average	2.77		2.75		3.16		2.72		2.45		2.75	
Total matches	380		380		306		380		380		1826	

Table 2. The timing of the goals in three South American top leagues 2013/2014 season

Time interval	Argentina Goals	%	Chile goals	%	Brazil goals	%	Total goals %	%
1 – 15	54	13.5	42	9.8	22	14.4	118	12.0
16 – 30	57	14.3	65	15.2	17	11.1	139	14.2
31– 45*	53	13.3	70	16.4	28	18.3	151	15.4
46 – 60	62	15.5	66	15.4	24	15.7	152	15.5
61 – 75	71	17.8	77	18.0	30	19.6	178	18.1
76– 90*	103	25.8	108	25.2	32	20.9	243	24.8
Total	400		428		153		981	100
Goal average	2.11		2.80		2.22		2.4	
Total matches	190		153		69*		412	

• Only 69 out of 380 (18%) of matches by the time of the study had been played in Brazil (May 26 2014).

Table 3. The timing of the goals in the FIFA World Cup tournaments, Confederation Cup, UEFA Champions League and Euro 2012 Championship

Time interval	World Cup		Confederation Cup		UEFA Champions league	%	Euro 2012		Total goals	%
		%		%				%		
1 – 15	300	13.6	8	11.8	43	11.9	7	9.2	358	13.2
16 – 30	332	15.0	8	11.8	54	14.9	13	17.1	407	15.0
31– 45*	319	14.5	12	17.6	53	14.6	12	15.8	396	14.6
46 – 60	355	16.1	13	19.1	67	18.5	15	19.7	450	16.6
61 – 75	387	17.5	11	16.2	62	17.1	13	17.1	473	17.4
76– 90*	460	20.8	16	23.5	80	22.1	16	21.1	572	21.1
91 - 105	28	1.3							28	1.0
106 -120	27	1.2			3				30	1.1
Total	2208		68		362		76		2714	
Average	2.9		2.1		1.5		1.2		2.43	
Total matches	772		32		250		62		1116	

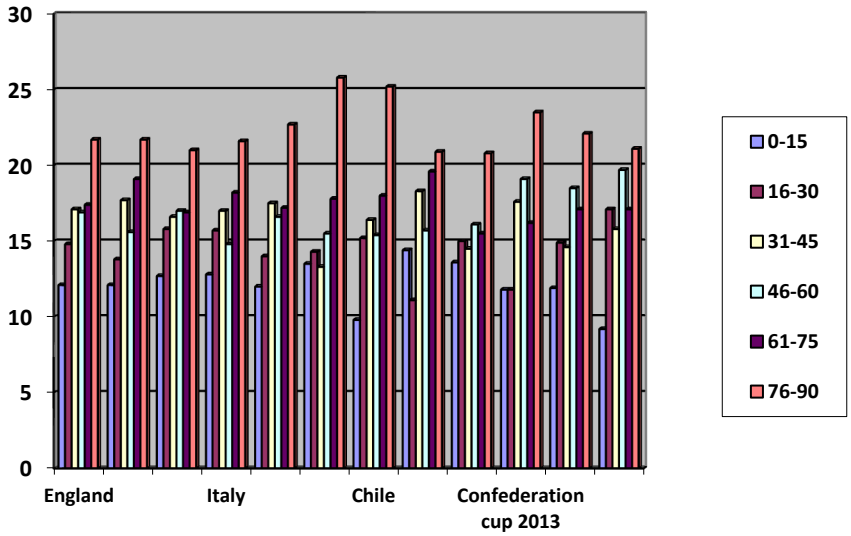

Figure 1. Timing of goals in percentage in various leagues and tournaments over a 90 minutes duration

Figure 1 shows the trends of the timing of goals in the top leagues in England, Spain, Germany, Italy, France, Argentina, Chile, Brazil, and major tournaments including the World Cup, Confederation Cup, Champions League and Euro 2012. The graph presents a visual impression of the increased scoring towards the end of the regulation matches in soccer.

Table 4 shows the goals scored in the first half compared to those scored in the second half of matches in the English Premier league, France Lique one, Spain's La Liga, Italy's and Germany in Europe; Argentina, Chile and Brazil from South America; and World Cup, Confederation Cup, Euro 2012 and European Champions League.

Table 4 shows that the majority of goals were scored in the second half across all the leagues and competitions. Overall, 3776 (43.8%) were scored in the first half while 4844 (56.2%) were scored in the second half. The greatest scoring ratio difference between the first and second half of matches is in Argentina where only 41% of goals came in the first half and 59% in the second half.

4. Discussion

The findings of this study show that the highest proportion of goals are scored between the 76th and 90th minute with added time inclusive. Table 1 shows the timing of goals in the five major European leagues. The trend of having more goals in the last 15 minutes of normal regulation time in soccer matches is a universal trend worldwide [3, 5, 11, 12, 15, 17, 21-23] even though Jinshan et al., [10), Michailidis et al., [35] and Michailidis et al., [7] found no statistical significance. Given such a predictable occurrence, it behooves the coaches and scouts to pay extra attention on the pattern of scoring and conceding of goals over the duration of a match by their opponents so that they can tailor team preparations appropriately. For a coach, it is vital that the physical, psychological and tactical preparation of the team bear these scoring trends in mind. The increased scoring

towards the end of the second half of matches is attributed to pronounced physiological deterioration of defenders as compared to forwards [3, 11, 13, 15, 17, 21-23]. Nepfer [24-26] also attributed scoring of more goals towards the end of a match to good or poor physical condition, lack of concentration in defense due to mental and physical fatigue and all or nothing efforts to decisively influence match outcome.

Studies by Armata et al., [15, 17] identified a number of factors that could explain the increased scoring in the second half and especially towards the end of a match. According to the authors, goal scoring was time dependent. The critical factors contributing to the increased scoring in the second half included fatigue and physical deterioration; the increasing tempo of soccer matches; tactical roles of the players; dehydration and hyperthermia; diminished cognitive function which all combine to compromise decision making hence increased defensive errors as well as loss of concentration. This is because, during a 90-minute game, elite-level players run about 10km at an average intensity close to the anaerobic threshold (80–90% of maximal heart rate). Apart from the endurance context, there are numerous explosive bursts of activity demanded of the player, including jumping, kicking, tackling, turning, sprinting, changing pace, and sustaining forceful contractions to maintain balance and control of the ball against defensive pressure. All these diverse movements and activities can wear down a player thereby compromising technical and tactical executions as well as mental lapses [27, 30, 31]. Indeed tired players are prone to errors of judgment in terms of timing of passes, marking, meeting crosses, timing of tackles, passing back to the goal keeper and defensive clearances.

Football is an intermittent game, characterized by sprinting, walking, jogging, cruising, jumping, among other locomotor activities. Doing all these activities over a 90 minutes period can be tiring. Hence, a coach should instil in players the potential for rest while controlling the game. The match tempo is decisive factor. Teams with similar physical ability could express themselves differently depending on game management over the match duration. This is a principle that Jose Mourinho uses in his team preparation [28]. According to Mourinho in Lourenco (28: p. 127), "training was always intense. We practiced specific situations in order to know at any moment whether we should take a risk and attack as soon as we got the ball, or whether we should keep the ball moving because it didn't seem as if the conditions were there to create danger". This control of pace allows players time to catch their breath before launching another attacking play.

The exertions while chasing to regain possession can be physically draining if a team resorts to launching an attack immediately upon getting passion. Thus Mourinho's tactics are to take time, pass the ball so as to recover before raising the match tempo when a decisive moment arises. This flexibility in exertion and rest are vital components of managing the players' energy sources as well as the time during a given match. The modern day pressure and pressing tactics are very tiring and therefore it is difficult for the players to keep up all the time. It is necessary for them to rest on the field. According to Mourinho in Lourenco [28], "it's what I call 'resting with the ball'. With the pace of play that we impose, it's necessary to rest; otherwise no one will make it to the end of the match. The best way to do this, and run fewer risks, is to rest when we have the ball" (p.125).

Table 4. 1st half goals compared to those in the second half

Serial	*Competition*	*1st half goals – No*	*Percent %*	*2nd half goals*	*Percent %*	*Total goals*
1. a.	England	463	44	589	56	1052
b.	France	405	43.5	526	56.5	931
c.	Spain	455	43.5	590	56.5	1045
d.	Italy	470	45.4	565	54.6	1035
e.	Germany	437	45.2	530	54.8	967
	Sub-total	2230	44.33	2800	56.67	5030
2. a.	Argentina	164	41.0	236	59.0	400
b.	Chile	177	41.4	251	58.6	428
c.	Brazil	44	41.5	62	58.5	106
	Sub-total	385	41.22	549	58.78	934
3. a.	World cup	951	44.2	1202	55.8	2153
b.	Confederations cup	28	41.2	40	58.8	68
c.	European Champions league	150	41.8	209	58.2	359
d.	Euro 2012	32	42.1	44	57.9	76
	Sub-total	**1161**	**43.7**	**1495**	**56.3**	**2656***
	Overall total	**3776**	**43.8**	**4844**	**56.2**	**8620**

• Excluding the goals scored in extra time to break a tie.

Alex Ferguson, also applied this principle while at Manchester United. According to him [18], the last 15 minutes of a match are critical moments for taking risks. Thus the tactical risks that coaches are willing to take and the all-out offensive execution contribute to the higher proportion of goals in the last 15 minutes of matches. According to Ferguson [18], taking risks to attack in the last 15 minutes did not always pay off, but when it did, "you got the joy that came with a late conquest. It was always worth the gamble" (p.47). Thus the risk taking in the last 15 minutes of a game makes it a decisive phase of the game in general. Hence coaches need to pay more attention to it and manage the players and the game tactics carefully to win matches and also conversely minimize conceding of goals. A team therefore should be exposed to extreme pressure training so that player technique, physical and mental conditions do not deteriorate in actual matches. This means that the approach to training should mirror the actual competitive play.

Related to scoring most goals in the last 15 minutes of matches, it is worthwhile to point out that more goals also tend to be scored in the second half [3, 5, 6, 7, 15, 17]. In virtually all the leagues in Europe and South America, as well as other FIFA and UEFA tournaments, there are more goals in the second half with the peak being between the 76th and 90th minute. The last 15 minutes account for between 20.3 in Germany to 25.8 percent of goals in Argentina when a match is divided into six 15-minute intervals. Thus a coach should work on the physical and mental conditioning of a team. Overall, 3776 (43.8%) were scored in the first half while 4844 (56.2%) were scored in the second half. The greatest scoring ratio difference between the first and second half of matches is in Argentina where only 41% of goals came in the first half and 59% in the second half. These findings corroborate the findings from the 2002 Soccer World Cup in Japan- South Korea where more goals were scored in the second half (91, 57.59 percent) compared to the first half (67, 42.41 percent) [3].

Some studies have reported reductions in physical performances between the first and second halves of a soccer match as well as temporal changes in the technical aspects of game-play over the duration of a match. Indeed, studies that compared the rates of effort between the first and second half have shown reduced performance of players. There is a 5% reduction in the total distance of the second half compared to the first [40, 41]. Thus, it has been demonstrated that the amount of sprinting high-intensity running and distance covered are lower in the second half than in the first half of the game [37, 38, 39, 41]. A study by Russell et al [29] showed that the speed of passing and shooting reduced between halves. The authors argued that although their finding reflected declining performance, the extent to which ball speed impacts upon success during match play remained unclear. However, the authors emphasized that skills performed in the second half have been observed to be less successful than skills performed in the first half during match play. It is therefore not surprising that there are more goals in the second half than in the first one and that teams are prone to conceding more goals as the game moves towards the 90 minutes of regulation time. Additionally, Mohr et al., [37] observed that the amount of high-intensity running reduced in the final 15 minutes of top-class soccer games. This could be a factor in scoring and conceding goals.

Research has also shown that teams tend to deteriorate in their physical condition during the competitive season [1, 42]. The coaches tend to concentrate on perfecting tactics as well as recuperating the team in readiness for the next matches. This emphasis on technical and tactical matters to the exclusion of the physical as well as the psychological condition of the players should be reconsidered. There has to be a balance to allow a team to work on their aerobic and anaerobic endurance, speed, reaction time, flexibility, strength endurance and agility as well as the mental focus, decision making, will power, and endurance of the players so as to perform close to peak level throughout a match. One of the critical periods of conditioning for players is the preseason. This is a time for laying the fitness foundation of each individual player. Teams that have weak performances in the 2nd half of matches thereby conceding goals could have issues with their inadequate programming for physical preparation during the preseason phase of a season [28].

It is therefore apparent that coaches have to use substitutions carefully to cope with physical, technical and mental deterioration of the starting players. Using substitutes, who bring fresh legs into the game, could also be a contributory factor to increased scoring towards the end of matches [3, 4, 5, 22and 32]. Sound use of substitutes helps to maintain peak performance by a team. Pulling out players who appear to have flagged in their efforts at the right time can help sustain a team's tempo or even provide a lift [22]. Judicious use of substitutes contributes enormously toward the outcome of a match. Of course, substituting is a gamble and one only knows how well the decision worked after the game. According to Njororai [5], in the 2006 and 2010 World Cup tournaments, substitutes scored 23 and 15 goals respectively. There is therefore an important goal scoring contribution that substitutes bring into the game. In the 2006 World Cup, Germany came from behind to eliminate Argentina in the quarterfinals due to substitutions. Whereas Argentina's substitutions were ineffective, those of Germany thrived. In the 1990 World Cup, Roger Milla thrived as a "super sub" and propelled Cameroon to the quarterfinals and only few minutes away from eliminating England [5].

5. Conclusions and Recommendations

The peak for scoring and conceding goals is between the 76th and 90th minutes of the game making it a decisive phase that requires proper planning and management of the part of coaches and players. Coaches should therefore be aware of the higher rate of scored and conceded goals in the second half of matches and particularly the last 15 minutes. The latter period is critical in a match that is relatively balanced. A coach should therefore prepare a team's all around

capacity in terms of physical condition, technique, tactical sophistication and mental concentration so that one can withstand the varied situations in a match in terms of leading or trailing in scores.

The use of proper diet and recuperative therapies during match preparation throughout the tournament are also vital in sustaining a player's physical and mental state. Above all, coaches should monitor and focus the players to remain in peak condition in the last second half of the game by using strategic substitutions during the game [4, 5, 30, 31, 34]. A decline between the first and second half in the physical performance of players has been observed and it is associated with a decline in technical executions involving passing and receiving the ball [31, 32].

Several factors combine to lead to increased goal scoring in the second half of matches including the onset of fatigue, tactical choices, fluid balance and lapses in concentration. A coach should therefore monitor the distance as well as the work rate of players so as to change the tactics or even make a substitution to avoid the opposition exploiting this emerging physical and mental weakness. Substitution of players before the onset of fatigue towards the end of the game may restore the imbalances in work rate. According to Carling et al. [33], substitute players have been shown to cover significantly more ground at high intensity during the final 15 minutes than the other players already on the pitch.

Overall, it is clear from this analysis that more goals are scored and conceded in the second half of matches especially in the last 15 minutes of the game. Additionally, teams that score first have a higher chance of winning the match. Given these scenarios, it behooves the coaches to focus on improving the athletic and psychological condition of their players to be strong bases to sustain their technical and tactical abilities to enhance their endurance to enable them play out the entire game without declining in performance leading to goals in the 2nd half especially the last 15 minutes of matches.

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