

Characteristics of effective shots on goal in the games of the first league team of the championship of Ukraine "Helios" Kharkiv

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Purpose: to determine the quantitative indicators of effective shots on goal in the games of the team "Helios" Kharkiv.

Material & Methods: analysis of scientific and methodological literature, registration of technical and tactical actions, methods of mathematical statistics. The research of the competitive activity of the first league team of the championship of Ukraine "Helios" Kharkiv in the season 2017–2018.

Results: in the article the data characterizing the peculiarities of performance of effective shots on goal in the games of the team "Helios" Kharkiv.

Conclusion: data of the conducted research testify to the differences in the quantitative indicators of the effective shots on goal made by the players of the teams of the first league of Ukraine in different intervals of playing time, from different zones of the football field.

Keywords: shots on goal, standard position, free kick, penalty kick, ball transfer, penalty area, gate area.

Introduction

Solving the problem of increasing the effectiveness of attacking actions in football involves studying the features of building a game in attack by teams of different levels [2; 4; 5; 8; 9; 10]. Of particular interest are the data that characterize the completion of the final phase of the attacking actions by professional teams that participated in the Premier League competitions of the Ukrainian championship and the first league of the championship of Ukraine.

Analysis of the attacking actions of teams of different qualifications is devoted to the research of many specialists [2; 3; 5; 6; 7; 11].

As noted by S. Golomazova and B. Chirva [1], the probability of a goal is primarily determined by the probability that the ball hits the target. Players can more often or less often deliver the ball to the shock position, better or worse act during the attack – in any case, the outcome of the match depends on the accuracy of the final blows.

So, according to observations in the games of high-class teams of 10 strikes on the average, the average hit is only after 3–4 hits.

If the football players perform attacks on the goal in non-player conditions (on a stationary ball, when there is no opposition to the opponent, and if the speed of the strike is not needed), the probability of the ball hitting the target strictly linearly depends on the distance of the strikes. However, the strictly linear dependence of the probability of the ball falling into the goal range from the strike distance is violated when the shots are carried out in a real game, and the greatest deviations are observed where the conditions for striking the target are the heaviest, namely in the area of the penalty area line.

So, according to S. Golomazov and B. Chirva [1], the percentage of ball hits on the target range can vary depending on the

level of preparedness and qualification of the players, but in any case, with the increase in the distance of the blows, the accuracy of falling into the target shots will decrease. Calculations show that as the distance is increased by 1 meter, the probability of falling into the target gate in game conditions is reduced by about 3%.

In high-class teams, in some cases, players strike the goal from 1–2 meters, which means that the absolute accuracy of the ball hit the target of the goal in football, obviously, can be achieved when carrying out shots in a very short distance from the goal line – up to 1 meter.

It is established [1] that the probability of getting the ball into the target shots in the game conditions is reduced by approximately 3% with an increase in the strike distance by 1 meter. Thus, the authors argue that when carrying out strikes from 33–35 meters the probability of hitting the target is not more than 5%.

The probability of a goal is determined not only by the probability of the ball reaching the target but also by the actions of the goalkeeper. Of all attacks on the target, not more than 25 meters from the goal (except for head punches from the goal area and penalty shootout), approximately 30% are parried by the goalkeepers regardless of the distance of the blows.

Relationship of research with scientific programs, plans, themes. This work was carried out according to the topic of research of the departments of football and hockey, sports and mobile games and martial arts of the Kharkov State Academy of Physical Culture for 2016–2020 on the theme "Psycho-sensory regulation of the motor activity of athletes of situational sports".

Purpose of the study: to determine the quantitative indicators of effective strikes in the gates in the games of the team "Helios" Kharkov.

Material and Methods of the research

Methods: analysis of scientific and methodological literature, registration of technical and tactical actions, methods of mathematical statistics. The research of the competitive activity of the team of the first league of the championship of Ukraine "Helios" Kharkiv in the season 2017–2018.

Results of the research and their discussion

Data of the tournament table of the first league of the championship of Ukraine show that the team "Helios" Kharkiv after 22 rounds takes 6th place. In this case, the players of the "Helios" team scored 30 goals (on average for the game 1,4 goals) and conceded 20 goals (on average for the game 0,9 goals).

Table 1 presents the quantitative indicators of goals scored and conceded by the players by the team "Helios" Kharkov in the games of the first league of the championship of Ukraine 2017–2018 in different segments of playing time.

Table 1
Number of goals scored and conceded in different pieces of playing time by the team "Helios" Kharkov in the games of the first league of Ukraine 2017–2018

Time	Goals scored		Goals missed	
	Amount	%	Amount	%
Sum of balls	30	100,0	20	100,0
1-15 minutes	3	10,0	4	20,0
16-30 minutes	9	30,0	2	10,0
31-45 minutes	6	20,0	0	0,0
46-60 minutes	3	10,0	4	20,0
61-75 minutes	4	13,3	6	30,0
76-90 minutes	5	16,7	4	20,0

So, the results of the table show that the players of the "Helios" team scored more goals from 16 to 30 minutes (9 goals), less – from 1 to 15 and from 46 to 60 minutes (3 balls each).

The table shows that the players of the "Helios" team missed more goals in the game segment from 61 to 75 minutes (6 goals), fewer goals – from 31 to 45 (0 goals) and 16 to 30

Number of goals

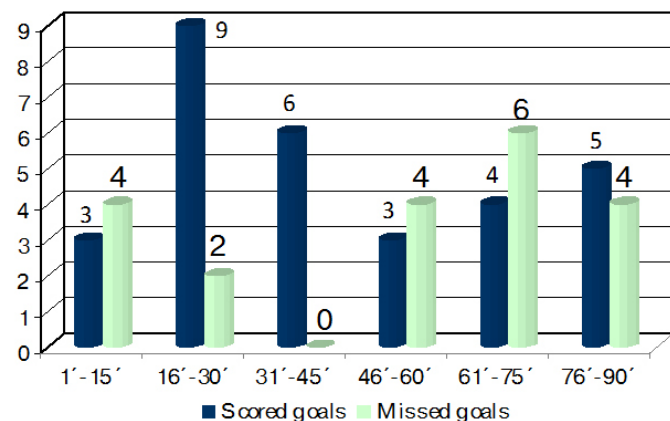


Figure 1. Ratio of goals scored and missed by the team "Helios" Kharkov in different segments of playing time

minutes (2 goals).

As a result of the research of the football field areas, from which the effective strikes were made, it was established (Table 2) that 10 players scored from the area of the goal by the players of the Helios team (34,5%).

Table 2
Number of goals scored and conceded by the team "Helios" Kharkov from different zones of the football field in the games of the first league of Ukraine 2017–2018 biennium

Football field area	Goals scored		Goals missed	
	Amount	%	Amount	%
Goalkeeper's area	10	34,5	4	2,1
Between the goal area and the penalty spot	12	41,4	10	52,6
Between the penalty point and the penalty area line	2	6,9	3	15,8
From outside the penalty area	5	17,2	2	10,5
Sum of goals scored	29	100,0	19	100,0

Remark. Players of the team "Helios" Kharkov scored 29 goals and 1 own goal, conceded 19 goals and 1 own goal.

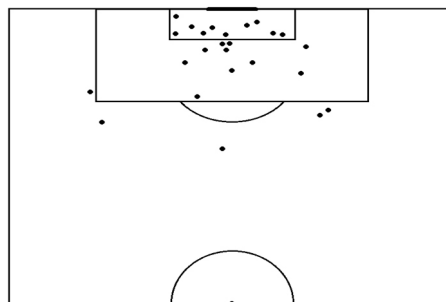


Figure 2. The goals scored by the team "Helios" Kharkov from different zones of the football field

Remark: players of the team "Helios" Kharkiv scored 5 goals from an 11-meter mark

From the area between the goal area and the penalty spot, 12 effective strikes (41,4%) were made. From the area between the penalty spot and the penalty area line, 2 goals were scored (6,9%). Outside the penalty area, the players of the Helios team scored 5 goals (17,2%) (Figure 1).

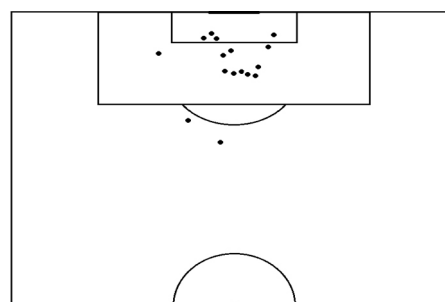


Figure 3. Missed balls by the team "Helios" Kharkov from different zones of the football field

Remark: players of the team "Helios" Kharkov missed 3 goals from the penalty spot

From Figure 2 it can be seen that the "Helios" team missed 4 goals from the goalkeeper's area (2,1%), 10 goals – from the area between the goal area and the penalty spot (52,6%), 3 goals – from the zone between the penalty point and the line penalty area (15,8%), 2 goals – from outside the penalty

area (10,5%).

The results of Table 3 show that the players of the "Helios" Kharkov team from 29 goals of 23 goals (79,3%) scored from the game and 6 goals (20,7%) from standard positions.

Table 3

Number of goals scored and conceded from the game and from standard positions by the players of the "Helios" team of Kharkiv in the games of the first league of Ukraine in 2017–2018

Shots on goal	Goals scored		Goals missed	
	Amount	%	Amount	%
With the game	23	79,3	16	84,2
From standard provisions	6	20,7	3	15,8
Sum of goals scored	29	100,0	19	100,0

Of the 19 conceding goals, 16 goals (84,2%) were omitted from the game and 3 goals (15,8%) from the standard positions by the "Helios" team.

Analysis of the goals scored from the standard positions of the team "Helios" Kharkov testifies (Table 4) that out of 6 goals, 5 goals (83,3%) were scored from 11-meter hits and 1 goal (16,7%) from a free-kick.

Table 4

Number of goals scored and conceded from standard positions by the players of the team "Helios" Kharkov in the games of the first league of Ukraine 2017–2018

Standard Provisions	Goals scored		Goals missed	
	Amount	%	Amount	%
A penalty kick	5	83,3	3	100,0
Free kick	1	16,7	0	0,0
Sum of goals scored	6	100,0	3	100,0

Analysis of the goals scored by the foot and the head with players in the games of the first league teams testifies (Table 5) that 16 goals (55,2%) of the 29 goals of the "Helios" team were scored with the right foot, 6 goals (20,7%) – left foot and 7 goals (24,1%) – head.

Table 5

Number of goals scored and missed by the foot and the head of the team "Helios" Kharkov in the games of the first league of Ukraine 2017–2018

Shots on goal	Goals scored		Goals missed	
	Amount	%	Amount	%
Right foot	16	55,2	9	47,4
Left foot	6	20,7	4	21,1
Head	7	24,1	6	31,6
Sum of goals scored	29	100,0	19	100,0

In turn, the opponents of the "Helios" team of 9 goals scored 9 goals (47,4%) were scored with the right foot, 4 goals (21,1%) – the left foot and 6 goals (31,6%) – head.

Table 6 shows the data of the number of assists in the gates from the game in various game situations. It can be seen from the table that out of 23 effective hits from the game of the players of the "Helios" team, 18 goals (78,3%) were scored after transferring the ball from the partner and 5 goals (21,7%) after

the ball rebounded from the goalkeeper, defenders, barbells or crossbeams. In turn, out of 16 goals scored by the opponents of the Helios team, 10 goals (62,5%) were scored after the ball was transferred from the partner and 6 goals (37,5%) after the ball was rebounded from the goalkeeper, defenders, bar or crossbar.

Table 6

Situations in which effective strikes were made to the goal (from the game) by the players of the teams of the first league of the championship of Ukraine 2017–2018

Shots on goal	Goals scored		Goals missed	
	Amount	%	Amount	%
After passing the ball from the partner	18	78,3	10	62,5
After bouncing the ball from the goalkeeper, defenders, barbells or crossbar	5	21,7	6	37,5
Total per game	23	100,0	16	100,0

Table 7 shows the quantitative indicators of effective shots in the goal from the game, performed in various ways (first touch, after receiving the ball, after the dribbling).

Table 7

Ways to perform effective strikes against the gate (with the game) by the players of the teams of the first league of the championship of Ukraine 2017–2018

Shots on goal	Goals scored		Goals missed	
	Amount	%	Amount	%
First touch	13	56,5	12	75,0
After receiving the ball	8	34,8	2	12,5
After dribbling	2	8,7	2	12,5
Total per game	23	100,0	16	100,0

It can be seen from the table that most of all the goals of the "Helios" team were scored by Kharkiv with the first touch (56,5%). At the same time after receiving the ball, 34,8% of the goals were scored, and after the dribbling was scored 8,7%.

As a result of the analysis of the conceded goals of the "Helios" team, it was found that Kharkiv was missed most of all goals by the players of the "Helios" team after hitting the goal with the first touch (75,0%). After strikes at the gate with a second touch and after the dribbling was played by the team "Helios" was skipped over 12,5%.

Table 8 shows the indicators of effective shots in the gate, performed in different conditions (kick the ball from the ground and hit the flying ball). Thus, it is established that the players of the "Helios" team of 29 goals of 20 goals (69,0%) were hammered by the ball from the ground and 9 goals (31,0%) by a blow on the flying ball.

From the table it can be seen that the players of the rival teams from 19 goals of 12 goals (63,2%) were scored after hitting the ball from the ground and 9 goals (36,8%) – after a strike on the flying ball.

Table 9 presents the quantitative indicators of effective strikes at the goal, executed by the players of the teams of the first

Table 8
Conditions in which the effective strikes to the goal of the players of teams of the first league of the championship of Ukraine 2017–2018

Shots on goal	Goals scored		Goals missed	
	Amount	%	Amount	%
On the ball from the ground	20	69,0	12	63,2
On a flying ball	9	31,0	7	36,8
Total per game	29	100,0	19	100,0

league of the championship of Ukraine in different areas of the gate. It can be seen from the table that the players from the Helios team from 29 goals scored 4 goals (13,8%) were scored in the top of the goal, 8 goals (27,6%) in the middle section of the goal and 17 goals (58,6%) – in the lower part of the gate.

In this case, the players of the "Helios" team of 19 goals conceded 5 goals (26,3%) were passed to the top of the goal, 5 goals (26,3%) – in the middle section of the gate and 9 goals (47,4%) – in lower part of the gate.

Conclusions

1. The results of the research show that the players of the "Helios" team scored 1,4 goals on average per game. More goals were scored from 16 to 30 minutes (30,0% of goals), less – from 1 to 15 and from 46 to 60 minutes (10,0% of goals). Of the gate area, the players of the "Helios" team scored 34,5% of goals. 41,4% of the goals were scored from the area between the goal area and the penalty spot. 6,9% of the goals were scored from the zone between the penalty spot and the penalty area line. Out of the penalty area, the players of the "Helios" team scored 17,2% of the goals. 78,3% of the goals of the players of the "Helios" team were scored after the transfer of the ball from the partner and 21,7% of the goals after bouncing the ball from the goalkeeper, defenders, bar

Table 9
Area of the goal, in which the effective strikes by the players of the team "Helios" Kharkiv in the games of the first league of Ukraine in 2017–2018.

Part of the gate	Amount		%	
	Amount	%	Amount	%
Upper part of the gate	4	13,8	5	26,3
Middle part of the gate	8	27,6	5	26,3
Lower part of the gate	17	58,6	9	47,4
Total per game	29	100,0	19	100,0

or crossbar. The first touch was scored 56.5% of the heads, after receiving the ball was scored 34,8% of the goals, and after dribbling – 8,7%.

2. It was found that the team "Helios" on average for the game missed 0,9 goals. More goals were missed from 61 to 75 minutes (30,0% of goals), fewer goals – from 31 to 45 (0,0% of goals) and from 16 to 30 minutes (10,0% of goals). From the area of the goal players of the "Helios" team missed 2,1% of the goals. 52,6% of the goals were missed from the area between the goal area and the 11-meter mark. From the zone between the penalty spot and the penalty area line, 15,8% of the goals. Out of the penalty area, the players of the "Helios" team missed 10,5% of the goals. 62,5% of the goals of the players of the "Helios" team were missed after the transfer of the ball from the partner and 37,5% after the ball was rebound from the goalkeeper, defenders, bar or crossbar. After hitting the goal, 75,0% of the goals were missed by the first touch, after striking the goal with a second touch and after the ball was played by the team "Helios" was missed 12,5%.

Prospects for further research. Further studies will be devoted to the study of the peculiarities of the performance of effective strikes against the players in games among the teams of the second league of Ukraine and the Premier League of the Ukrainian Championship.

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