



ANALYSIS OF COVER DISTANCE DURING OFFICIAL INTERNATIONAL MATCHES BASED ON THEIR PLAYING POSITION

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ABSTRACT

Based on worldwide experience we should take as an example the best athletes to develop and reach the world elite. Based on this hypothesis, we believe that a detailed analysis of motor mobility during top-level football matches will support sports theory and practice. The following study aims to analyze the covered distance from the World Cup 2022 based on players' field positions. The study includes all players with official playing time during the World Cup playing in the main three lines – defenders, midfielders, and forwards. The total number of matches is 64, staged in five stages: groups, round 16, quarterfinals, semi-finals, and final. Based on obtained results we can point out that in contemporary football is obligatory to cover over 10 km per game, and the sum of covered distances by a team must exceed 100 km. We present evaluation models which can be used in sports practice. Also based on this data, we can propose an individual approach based on players' position during condition training.

Key words: football, covered distance, men, world cup

INTRODUCTION

Football is one of the most popular sports worldwide. It is also one of the most analyzed and scientifically studied. All aspects of the game are of interest to scientists, coaches, and sports specialists. All studies trace and reveal changes in the game through different periods of its evolution.

All aspects of the game are constantly improving and the demands from football players are higher than ever regarding their technical, tactical, and physical performance. In our opinion, the last one is one of the most demanding for professional football players.

The mobility of professional football players from different tournaments and different periods is traced and presented by a great number of scientists (1-5).

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In our opinion, the difference between modern football and the one played 20 years ago is mainly in the athleticism of the player – in the ability to cover a greater distance at higher speeds, greater number of sprints, and increased maximum speed abilities. This made us analyze world elite players during international tournaments.

METHODS

The following study aims to reveal the contemporary football player mobility profile. To realize the goal thus set we analyze the indexes presented in Table 1. All studied data is presented by FIFA in the so-called Post match summary report. (Error! Reference source not found.) (6)

We stored in a database and subjected to statistical and expert analysis the data from all individual and team indexes presented in the Individual data (physical). In total, the number of studied cases is 1995 during the World Cup in Qatar 2022, and 126 team cases during the same championship.

Studied indexes are presented in **Table 1** with the units of measurement.

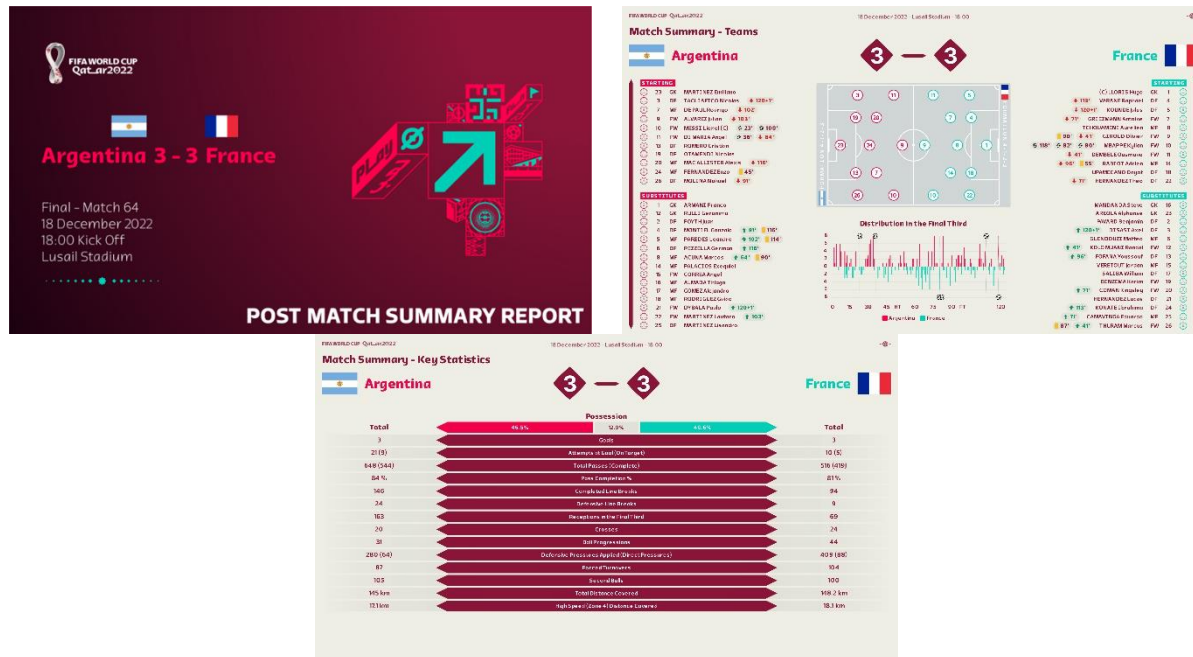


Figure 1. FIFA Post match summary report.

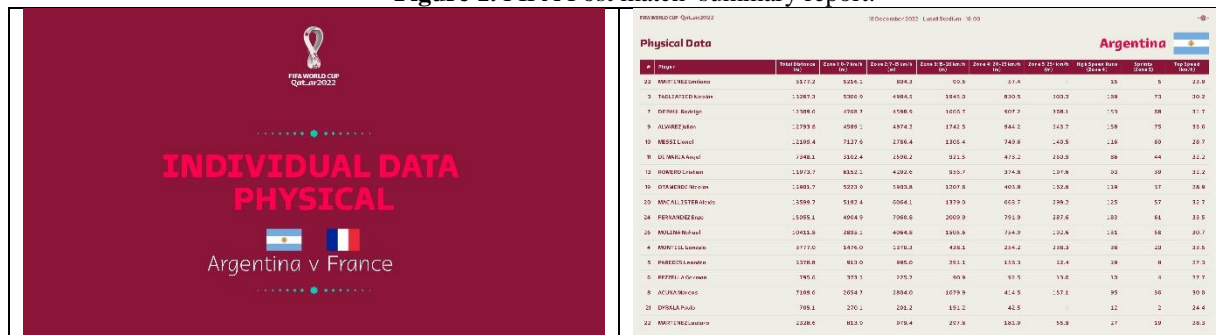


Figure 2. Individual data – physical.

Table 1. Studied indexes.

Index	Measured in:
Total Distance	<i>m</i>
Zone 1: 0-7 km/h (m)	<i>m</i>
Zone 2: 7-15 km/h (m)	<i>m</i>
Zone 3: 15-20 km/h (m)	<i>m</i>
Zone 4: 20-25 km/h (m)	<i>m</i>
Zone 5: 25+ km/h	<i>m</i>
High-Speed Runs	<i>count</i>
Sprints	<i>count</i>
Top Speed (km/h)	<i>km/h</i>

RESULTS

Guided by the fact that football is a team sport, we will first look at the team data presented by In games finished during regular playing time, the average sum of the total covered distance is 127

FIFA and subjected by us to descriptive analysis (Table 2 and Table 3) km, and it varies between 102 and 127 km. On the other hand, matches that finished after playing

additional time cover a total of 145 km, ranging between 142 and 148 km.

The other analyzed indexes reveal modern-day football dynamics – the sum of high-speed distance covered by players (sum of speed in speed zones from 3 to 5) – for regular playing time

around 15 km and slightly higher value for additional playing time – almost 18 km.

Figure 3 reveals a graphical comparison between regular and additional playing time studied team physical data indexes average values.

Table 2. Descriptive statistics of matches finished in regular playing time.

	N	R	Min	Max	X	S	V%	As	Ex
Total Covered Distance (km)	118	24,70	102,30	127,00	112,67	5,16	4,58%	0,26	-0,28
High-Speed Distance Covered (km)	118	8,10	11,40	19,50	14,93	1,66	11,10%	0,32	0,22

Table 3. Descriptive statistics of matches finished after playing extra time.

	N	R	Min	Max	X	S	V%	As	Ex
Total Covered Distance (km)	10	6,00	142,20	148,20	145,62	2,34	1,61%	-0,62	-1,52
High-Speed Distance Covered (km)	10	4,50	15,60	20,10	17,82	1,30	7,32%	-0,19	0,29

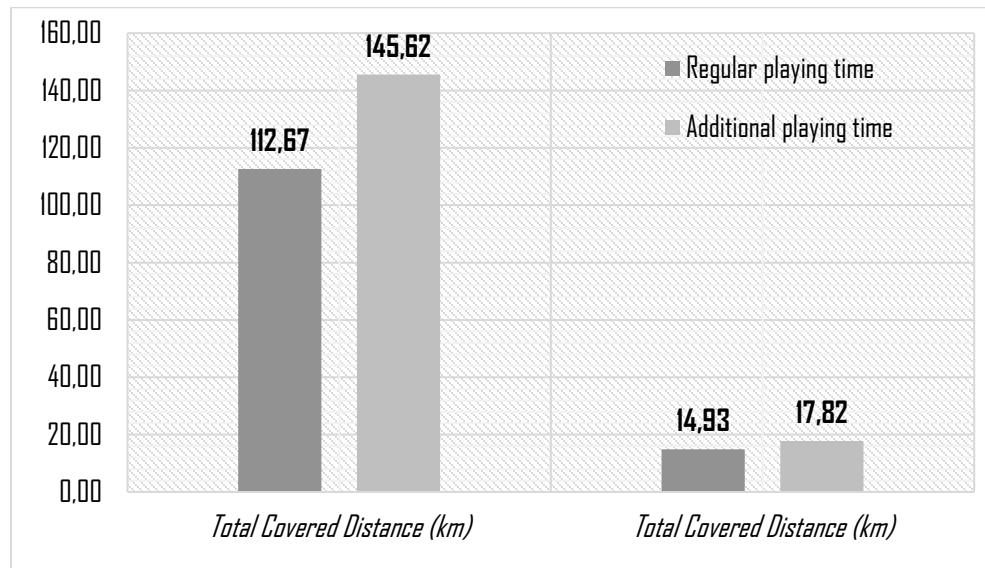


Figure 3. Comparison between average team values of matches finished in regular and additional playing time.

The individual physical analysis will start with an in-depth review of differences in studied indexes according to playing positions presented by variance analysis (in %). The most uniform is the data concerning the sum of all covered distances and the increase of zone speed decreases the level

of uniformity. This reveals differences in speed endurance and obtaining speed abilities through a full 90-minute game. The ability to reach top speed is at a similar level considering individual game positions and their specific requirements.

Table 4. Variance coefficient of the studied index according to playing position in matches finished in regular playing time.

	Goalkeepers	Defenders	Midfielders	Forwards
Total Distance (m)	13,7%	7,4%	7,9%	12,2%
Zone 1: 0-7 km/h (m)	11,0%	7,4%	10,3%	11,8%
Zone 2: 7-15 km/h (m)	33,4%	13,2%	16,0%	24,8%
Zone 3: 15-20 km/h (m)	47,9%	22,1%	22,6%	28,8%
Zone 4: 20-25 km/h (m)	87,7%	33,8%	27,3%	28,9%
Zone 5: 25+ km/h	275,8%	66,4%	61,9%	52,9%
High-Speed Runs	42,1%	19,9%	18,1%	24,8%
Sprints	76,9%	31,9%	24,5%	27,2%
Top Speed (km/h)	10,8%	5,8%	6,0%	6,4%

The average values of all studied indexes sorted by playing positions are presented in

Table 5. From there we can note the highest levels of covered distance in total distance and speed zones from 2 to 4 and the number of high-speed runs is set by midfielders. Forwards have the highest average values in the covered distance in speed zone 1 and 5 and reach the highest

number of speeds during the match and are most likely to reach maximal top speed compared to other playing positions. Defenders due to the specifics of the playing position and the players' physical potential are close to midfielders and forwards values but do not score the highest result in either of the studied indexes. The goalkeeper's playing position is specific and differs greatly from field players.

Table 5. Average values of studied indexes according to playing position in regular playing time matches.

	Goalkeepers	Defender	Midfielders	Forwards
Total Distance (m)	4619,3	10014,2	11291,9	10389,6
Zone 1: 0-7 km/h (m)	3569,4	3848,1	3636,9	4026,0
Zone 2: 7-15 km/h (m)	905,6	4255,2	5088,2	4084,1
Zone 3: 15-20 km/h (m)	113,3	1172,1	1700,1	1340,4
Zone 4: 20-25 km/h (m)	27,9	536,7	677,2	658,9
Zone 5: 25+ km/h	3,4	202,0	189,5	280,1
High-Speed Runs	13,90	107,59	144,63	119,69
Sprints	2,74	42,56	50,74	52,29
Top Speed (km/h)	23,8	31,3	30,8	32,1

In **Table 6** we present the maximal registered values of studied indexes according to playing positions. From it, we find the assumed physical abilities of modern football players. They exceed

34 km/h as top speed, run over 12 km as total distance, make over 200 high-speed runs, and over 80 maximum velocity sprints.

Table 6. Maximal registered values of studied indexes according to playing position in regular playing time matches.

	Goalkeepers	Defender	Midfielders	Forwards
Total Distance (m)	6037,8	12004,0	13740,0	12703,5
Zone 1: 0-7 km/h (m)	4494,5	4833,0	4699,9	5202,3
Zone 2: 7-15 km/h (m)	2037,1	5703,8	7522,3	6194,1
Zone 3: 15-20 km/h (m)	282,3	1973,8	3212,4	2302,4
Zone 4: 20-25 km/h (m)	117,3	1044,9	1295,4	1063,3
Zone 5: 25+ km/h	75,0	957,2	603,0	663,7
High-Speed Runs	31	175	222	209
Sprints	9	81	87	81
Top Speed (km/h)	30,9	35,4	34,4	35,6

CONCLUSION

Contemporary sport and especially football is becoming more and more demanding regarding players' physical potential. This is proven by the last FIFA World Cup in Qatar 2022. The tournament was played in December – not specific for this type of tournament period and although this fact players presented respectful results in all studied indexes.

In summary, modern field players must cover without problem distances greater than 10 km, to be able to work in speed zones over 15 km/h around 2,5 km, and be able to make over 100 high-speed runs and 40 sprints during matches. The fact that assumes us most is top speed, required elements, and must exceed 30 km/h.

We recommend the following results to be used for modification of the training process and especially individual training process for improving players' positions' specific requirements.

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