

Analysis and comparison of the goalkeeper's role in past and modern soccer: a pilot study.

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Abstract

In modern soccer, performance control and regulation are regarded as relevant methodological procedures to maximize match performance results. Speaking of the role and technical-tactical quality among different generations of goalkeepers, they are often referred to a comparison based on personal beliefs and not on scientific data analysis evaluation. The purpose of the pilot study is to compare the technical and tactical performance of some elite goalkeepers, in two time periods and in different championships (Italian and European). Such comparison has been performed through a scientific analysis of the data collected to verify if there have been any significant changes on the tactical function of today's goalkeepers compared to the past. Data was collected both from the match and analysis the interactive online football video library (www.footballia.net), which has an archive of over 15.000 games. Therefore, it was possible to carry out a careful observation and evaluation of the matches and specific technical actions of the goalkeepers. Eight goalkeepers participated in this study and they have been divided into two groups (Group A: Donnarumma, Reina, Neuer and Ter Stegen; Group B: Zoff, Rossi, Buffon and Tafariel). The information was collected concerning six professional goalkeepers: two Italians and four foreigners. The goalkeepers have been chosen, analysed and evaluated on six matches played from each of them, detecting the data related to ball management and the position of goalkeepers in the court in 540 minutes of match. In modern football the goalkeeper has a fundamental tactical role which requires, in addition to the protection of his own goal area, also the coverage of a much wider field area.

Key words: match analysis, motor skills, performance, evaluation.

Introduction

The modern goalkeeper presents himself as a player always delegated to defend the goal, but in modern football he has to cover increasingly large portions of the field; checking and trying to read any developments in the game, then resorting to interventions, even outside the area, which were hardly conceivable until a few decades ago. The resulting request is that of a new tactical skill and a pronounced executive speed in the interventions that must originate the restarts (Liu et al, 2015). In fact, the coaches entrust the goalkeeper with the task of restarting the action as quickly as possible, to an increasingly decisive extent. Other required qualities are dexterity and breech technical dominance: this allows you to have ample maneuvering possibilities aimed at possession ball by inserting the goalkeeper into the ball laps as well.

In modern soccer, performance control and regulation is regarded as a relevant methodological procedure (Raiola, 2014; Raiola,2013; Raiola,2015a; Raiola, 2015b; Raiola,2017; Raiola, & Di Tore, 2017) to maximize match performance results (Sarmiento et al, 2014; D'Isanto et al, 2019) but there are so many rules and so many physical, technical, tactical skills (Dellal et al, 2011) to master and to monitor (D'Elia et al, 2011; Esposito et al, 2019). Soccer is a situational sport with a high agonistic engagement (Mohr et al, 2003), such to require the development of all the conditional and coordinative skills. In this study information was collected concerning six professional goalkeepers: two Italians and four foreigners; the Italian goalkeepers analysed are: Gianluigi Donnarumma and Gianluigi Buffon: the first is the current extreme defender of the Italian national team, the second is the former goalkeeper of the Italian national team with which he graduated world champion in the summer of 2006. Foreign goalkeepers analysed, however, are the Spanish Pepe Reina, the Brazilian Tafariel and the two Germans Neuer and Ter Stegen.

Through match analysis and thanks to the interactive online football video library (www.footballia.net), which has an archive of over 15.000 games, it was possible to carry out a careful observation and evaluation (Raiola & D'Isanto, 2016) of the matches and specific technical actions of goalkeepers. Six games were analysed for each of the eight goalkeepers, collecting the data of each player in 540 minutes of play, the number of minutes considered valid for gathering information relating to the management of the ball and its positioning on the pitch (Altavilla et al., 2017). Speaking of the role and technical-tactical quality between different generations of goalkeepers, reference is often made to a comparison based on personal beliefs

and not on an estimate based on scientific data analysis. The objective of this pilot study is to compare the technical-tactical performance of some elite goalkeepers, in two time periods and in different championships, through an analysis of the data collected and statistically processed to verify if there have been significant changes such to impact on the tactical function of today's goalkeepers.

Material & methods

Participants

The subjects (n=8 goalkeepers) were divided into two groups of four goalkeepers (Group A: Donnarumma, Reina, Neuer and Ter Stegen; Group B: Zoff, Rossi, Buffon and Tafariel). The goalkeepers have been chosen, analyzed and evaluated on six matches played from each, detecting data related to ball management and positioning of goalkeepers in the court in 540 minutes of match. The goalkeepers had participated at the Italian and European Soccer Championships.

Procedures

For each match, through match analysis and the interactive online football video library, it was possible to carry out a careful collection of data on the reception of the ball and on the various types of pass carried out. The receptions and interceptions concern all those actions in which the ball arrives in the possession of the goalkeeper, and have been distinguished in back pass received or advances made. It was fundamental to divide these receptions of the ball based on how the goalkeeper stopped or blocked the ball, that is, with his hands or feet. The detected pass concern all those times when the goalkeeper initiates an action passing the ball, and are distinguished in pass made with the hands or feet; moreover, the pass with the feet have been further subdivided in pass with the feet moving or standing still (Altavilla et al., 2018).

Once the action was launched by the extreme defender, it was verified how this action developed, that is, with a handling, with a reconstruction or with a lost ball (Ceruso et al. 2019). For handling are considered all those actions in which the ball is controlled by own team and leads to a finalization that can be a shot, a cross or a goal. For reconstruction are considered all those actions in which the ball once managed by own team does not lead to a finalization. For lost balls are considered all those actions in which the goalkeeper is unable to make a pass to his partner, which leads to a loss of possession of the ball. Two tables were used to better analyse the goalkeeper's receptions and passes, throws and referrals.

Fig. 1 - concerns the reception of the ball, that is, the phase in which the goalkeeper prepares to receive the ball; to better analyse how the player behaves in this phase of the game, the field was divided into nine areas, also separating them between the centre, right and left, three in the first 16.5 meters (penalty area), three up to the circle of midfield circle and three others until the end of the field.

Fig. 2 - concerns passages, throws or postponements made by the goalkeeper; also in this case the field has been divided into zones in order to observe how and where the player or team prefers to set up and develop their game.



Fig. 1 – Ball reception areas



Fig. 2 – Areas Passages, launches and postponements

Statistical analysis

All data are presented as mean and percentages. The analysis refers to the following variables: back passes, advances, hand passes, foot passes, moving passes, standing possess and pressing received (ball management and positioning on the court). Test-t was used to verify the differences on the technical-tactical variables detected between two groups of goalkeepers. The significance level has been set at $p \leq 0.05$. Statistical analyses is carried out with the software IBM SPSS Statistics 23.

Results**Table 1 - Data collected on technical-tactical variables**

Goalkeepers	Back passes	Advances	Hand passes	Foot passes	Moving passes	Standing passes	Pressing received
DONNARUMMA	54	30	30	110	58	52	26
REINA	64	52	30	126	90	36	28
NEUER	110	42	38	160	126	34	20
TER STEGEN	162	34	30	200	180	20	48
MEAN	97.5	39,5	32	149	113.5	35.5	30.5
ZOFF	52	68	60	142	68	74	2
ROSSI	54	32	50	90	46	44	14
BUFFON	46	14	16	88	52	36	14
TAFAREL	22	34	24	66	32	34	12
MEAN	43.5	37	37,5	96,5	49.5	47	11

Table 2 - Difference between two groups of goalkeepers

Technical and tactical skills	Group A (Donnarumma, Reina, Neuer and Ter Stegen)	Group B (Zoff, Rossi, Buffon and Taref)	Sign.
Back passes	195	87	0.036*
Advances	79	74	0.718
Hand passes	64	75	0.387
Foot passes	298	193	0.007*
Moving passes	227	99	0.008*
Standing passes	71	94	0.206
Pressing received	61	20	0.001*

*Significant difference with $p \leq 0.05$ **Discussion**

The results of the statistical processing confirmed that there have been significant changes in the tactical function of modern goalkeepers compared to those of the past. In modern football, although back passes are a potential danger, it is clear that goalkeepers are much more involved with their teammates than in the past, with an average of 12.72 back passes per game in contemporary football, compared to 8.83 in past (Otte et al. 2020). Their contribution by the goalkeeper in the construction or reconstruction phase of the game is essential, although the pressure from the opponents has increased more than in the past, the teammates trust the breach technique of their extreme defender (Izzo et al. 2019; White et al., 2020). As evidence of what has been said before, there are 227 moving balls played by today's goalkeepers, of which only 17.47% developed with a wrong pass, which however did not cause any goal. This shows that the play at the extreme defender has a very low risk percentage. In analysing the evolution of the action after the goalkeeper passes, it is interesting to analyse the data collected on how these actions end:

- 132 passes in zone 1 led to 11 crosses (8.33%), 10 shots (7.57%) and 2 goals (1.51%),
- 269 passes in zone 2 led to 21 crosses (7.80%), 14 shots (5.20%) and 2 goals (0.74%).
- 58 passes in zone 3 led to 1 cross (1.72%), 3 shots (5.17%) and no goals.

From the collected data it emerges that the action, starting from zone 1, involves a greater number of players in the construction manoeuvre, thus creating a situation of numerical superiority useful to have a greater

number of chances of producing a goal opportunity. The modern goalkeepers analysed carried out a reception outside the area as many as 55 times with an average of 3.05 times per game. Given this information, it is possible to affirm how in the past for the choice of a goalkeeper only aspects related to the ability to defend between the posts were evaluated, while today the extreme defender is asked to be as complete as possible in his way of playing, also evaluating it for the possibility of being a valid option in the team building phase (Silvestri et al. 2019). Although performance is fundamental from the defensive point of view, parts that are lower in percentage but more important, a high propensity for aerial play (exits and catches) and coverage of the spaces behind the defensive line is also required (Jara et al., 2019). The characteristic of the advances made by the modern Italian goalkeeper (Donnarumma) is certainly less cared than the other modern foreign goalkeepers analyzed (Reina, Neuer and Ter Stegen), as can be seen from the 30 made by Donnarumma, (5 advances per game) and from 128 made by foreign goalkeepers (6.1 advances per game). The Italian goalkeeping school is also adapting to this increasingly sought after request, as we can see from the advances of Donnarumma, a much younger goalkeeper, compared to the 14 made by Buffon in the past.

Conclusions

Fifty years are a considerable time span through which it is possible to grasp considerable changes, for this reason we believe it is interesting to compare the analysis made on the four modern goalkeepers with that concerning the four goalkeepers of the past. The small sample is certainly a limitation, however the pilot study encourages us to continue on this line of research by expanding the number of samples and investigating more championships (Italian, European and non-European). It can be said that the modern goalkeeper is increasingly starting to have a relevant body structure, the average height of the contemporary players taken into analysis is 191.5 cm; in fact, in the World Cup in Brazil in 2014 the average height of the goalkeepers was 187.68 ± 5.19 cm, while in the 1994 World Cup in the United States it was 184.09 ± 5.84 cm. In conclusion, in modern football the goalkeeper has a fundamental tactical role which requires, in addition to the protection of his own goal area, also the coverage of a much wider field area, thus allowing the defenders to play more close to the midfielders, avoiding of excessively lengthening their team, and consequently decreasing the construction spaces for the opposing teams. From all this follows the importance of any teaching that allows the goalkeeper to be included both in the performance of his primary task, the only one assigned to him in the past, i.e. that of defending the goal, and in the two new tactical tasks which are those of defend space and play with the team.

Conflict of interest

No conflict of interest with any person, company, or institution.

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