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Removing the Defensive Wall at Free Kicks and Its Relationship to Goalkeepers' Reactions

إزالة الحائط الدفاعي في الركلات الحرة وعلاقته بردود فعل حراس المرمى

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Abstract:

This study examined the relationship between removing the defensive wall at free kicks and goalkeepers' reactions. The descriptive survey method was used because it suited the study's objectives and hypotheses. The sample consisted of (20) goalkeepers selected by stratified random sampling from a population of (30) goalkeepers in Kirkuk Governorate, owing to the uneven distribution of goalkeepers within the population. Data were collected with a questionnaire whose validity and reliability were verified and were analysed using SPSS. The overall mean score was 2.99 (59.79%), corresponding to a moderate rating, and was significantly lower than the criterion value of 4 ($t = -6.023$, $p < 0.01$). No statistically significant differences were found by gender, marital status, or number of free kicks. The results indicate that goalkeepers perceive a moderate, skill-dependent benefit from removing the defensive wall, greatest for deflecting high balls and clearing low balls and smallest for catching skills. The study recommends that coaches consider removing the wall in selected free-kick situations and train goalkeepers to deal with free kicks both with and without a wall.

Keywords: Goalkeeper; Defensive Wall; Free Kick; Reaction Time; Football.

الملخص:

هدفت هذه الدراسة إلى الكشف عن العلاقة بين إزالة الحائط الدفاعي أثناء تنفيذ الركلات الحرة وردود فعل حراس المرمى .واستخدمت الدراسة المنهج الوصفي بالأسلوب المسحي، لملاءمته أهداف الدراسة وفرضياتها .وتكوّنت عينة الدراسة من (20)حارس مرمى، اختيروا بالطريقة العشوائية الطبقية من مجتمع الدراسة البالغ (30)حارس مرمى في محافظة كركوك، وذلك نظرًا لعدم التوزيع المتساوي لحراس المرمى ضمن مجتمع الدراسة .وجُمعت البيانات باستخدام استبانة جرى التحقق من صدقها وثباتها، وحُلّلت باستخدام البرنامج الإحصائي .(SPSS)وبلغ المتوسط الحسابي الكلي (2.99)بنسبة (59.79%)، وهو ما يقابل مستوى متوسطًا، وجاء أقل بصورة دالة إحصائيًا من القيمة المعيارية البالغة (4)، حيث بلغت قيمة $t = -6.023, p$)أقل من .(0.01ولم تظهر فروق ذات دلالة إحصائية تُعزى إلى متغيرات الجنس، والحالة الاجتماعية، وعدد الركلات الحرة .وتشير النتائج إلى أن حراس المرمى يدركون وجود فائدة متوسطة تعتمد على المهارة عند إزالة الحائط الدفاعي، وتكون هذه الفائدة أكبر في مهارتي إبعاد الكرات العالية وتشتيت الكرات المنخفضة، وأقل ما تكون في مهارات مسك الكرة .وتوصي الدراسة بأن يأخذ المدربون في الاعتبار إمكانية إزالة الحائط الدفاعي في مواقف مختارة من الركلات الحرة، مع تدريب حراس المرمى على التعامل مع الركلات الحرة بوجود الحائط الدفاعي وبدونه.

الكلمات المفتاحية : حارس المرمى؛ الحائط الدفاعي؛ الركلة الحرة؛ زمن الاستجابة؛ كرة القدم.

1. Introduction to the Research

1-1 Introduction and Significance of the Research

Free kicks are among the decisive situations in football, as a single successful shot can determine the outcome of a match. One of the key elements of these situations is the defensive wall formed by players of the defending team, which aims to block the ball's path towards the goal and increase the goalkeeper's chances of making a save (Qasim, 2005, p. 235).

In recent years, however, the value of the wall has been questioned. Experimental research has shown that the wall can block the goalkeeper's view of the ball's initial flight and delay the start of the goalkeeper's movement (Valkanidis et al., 2020), which has led coaches and analysts to ask whether a wall should always be used.

This raises questions about how removing the defensive wall affects goalkeepers' reactions. Does it improve or impair their performance in saving the ball? And do goalkeepers need different skills and strategies to deal with this type of free kick?

This research examines, from the goalkeepers' own perspective, the extent to which the absence of the wall affects their ability to read and save the ball, and the strategies they can adopt in this situation. Through this research, the researcher seeks a better understanding of this effect and aims to provide practical guidance that helps coaches and goalkeepers improve their performance and strategies in this tactical situation.

With growing interest in new tactics and strategies in football, studying this topic can contribute to the development of the game and to the performance of both teams and players.

1-2 Research Problem

Free-kick training is an important topic that merits study, given its role in determining the outcome of football matches. The research problem lies in the limited use of training drills in which the defensive wall is removed at free kicks—drills that give the goalkeeper a clearer and wider field of vision and better readiness to move and prevent the ball from entering the goal. The importance of each of these aspects varies with the distance of the ball from the goal and with the shooting angle. These factors determine the goalkeeper's appropriate response and help the goalkeeper control movement and correctly time the execution of skills that prevent or limit goals. Such training supports the integration of technical and tactical performance to help the team achieve the best possible results, since the goalkeeper's development depends on the training methods used. The research problem can therefore be stated in the following question: To what extent is removing the defensive wall at free kicks related to goalkeepers' reactions?

1-3 Research Objective

This research aims to identify the relationship between removing the defensive wall at free kicks and goalkeepers' reactions.

1-4 Research Hypotheses

1. The relationship between removing the defensive wall at free kicks and goalkeepers' reactions is high at the significance level $\alpha = 0.05$.

2. There are no statistically significant differences at $\alpha = 0.05$ in this relationship attributable to gender.

3. There are no statistically significant differences at $\alpha = 0.05$ in this relationship attributable to marital status.

4. There are no statistically significant differences at $\alpha = 0.05$ in this relationship attributable to the number of free kicks.

Gender, marital status, and number of free kicks were included as demographic and situational variables in order to check whether goalkeepers' perceptions differ across these groups, so that any difference found can be taken into account when the results are generalised to goalkeepers as a whole.

1-5 Research Scope

1-5-1 Human scope: goalkeepers in Kirkuk Governorate (N = 30).

1-5-2 Spatial scope: Kirkuk, Iraq.

1-5-3 Temporal scope: 2022–2023.

1-6 Definition of Terms

1-6-1 Set Pieces

Set pieces are the restarts of play awarded after the ball goes out of play or play is stopped: kick-offs, free kicks (direct and indirect), penalty kicks, throw-ins, goal kicks, and corner kicks (The International Football Association Board [IFAB], 2026). Because they occur frequently during a match and allow the team in possession to execute rehearsed plans against an organised defence, they are a regular part of tactical training.

1-6-2 Defensive Wall (operational definition)

A line of two or more defending players who stand side by side, at least 9.15 m (10 yards) from the ball, when the opposing team takes a free kick near the penalty area, in order to cover part of the goal and reduce the shooting angle. Under Law 13, when three or more defenders form a wall, all attacking players must remain at least 1 m from it until the ball is in play (IFAB, 2026).

2. Theoretical Framework

2-1 Free Kicks

Free kicks are of two types: direct and indirect. The closer they are to the penalty area, the greater the threat they pose and the higher the probability of scoring. If an offence punishable by a direct free kick is committed inside the penalty area, a penalty kick is awarded, from which the probability of scoring is high. Coaches should not neglect practising these kicks with more than one tactical plan, as a goal may result from any of them; the outcomes of many matches have been decided by set pieces. When a free kick is awarded to the attacking team, the defending team's first action—particularly when the ball is close to the penalty area—is to form a wall of players to protect part of the goal. The attacking team can take a free kick in one of two ways (Muwaffaq, 2007, p. 142):

1. Direct shot at goal.

2. Indirect (passed) kick.

“Most direct free kicks near the penalty area are struck directly at goal, often with a curved trajectory around or over the wall, which requires a specialist taker. The ball may also be struck straight at the goalkeeper, with an attacker following up any rebound. For indirect free kicks, the ball must be played to another player before a shot is taken, because a goal cannot be awarded if the ball enters the goal directly from an indirect free kick. When passing the ball, attackers should consider the following points” (Mufti, 2022, p. 88):

- creating a shooting angle;
- deceiving the defenders;
- distracting the defenders and the goalkeeper;
- creating a gap in the wall.

In general, "any attacking plan for free kicks must be carefully devised, and the team must be well trained in executing it. Alternative plans must also be available in case the initial plan fails or cannot be executed; dozens of attacking free-kick plans can be implemented" (Muhammad & Amr Allah, 2000, p. 177). In all cases, the player or players taking the free kick should take the points listed above into account.

2-2 The Effect of the Defensive Wall on Goalkeepers' Reaction Time

The Laws of the Game require opponents to remain at least 9.15 m (10 yards) from the ball until a free kick is taken (IFAB, 2026). With several defenders standing side by side, scoring directly becomes more difficult for the attacking team.

However, this practice has been questioned. In a virtual reality study at Queen's University Belfast, 15 novice and 10 expert goalkeepers attempted to stop simulated free kicks with and without a wall. The wall blocked the goalkeeper's view of the initial ball trajectory for about 200 ms, and goalkeepers began moving about 70–90 ms later when a wall was present, which reduced their performance in reaching the ball (Valkanidis et al., 2020).

These findings are consistent with research on goalkeeping expertise, which shows that expert goalkeepers rely on early visual information—from the kicker's movements and the first part of the ball's flight—to anticipate where the ball will go (Savelsbergh et al., 2002). Anything that blocks this information, such as a wall of players, is therefore likely to delay the goalkeeper's response. The long-standing belief has been that a wall placed as close as possible reduces the probability of a goal; it is now argued that, when the wall blocks the goalkeeper's view, it may do more harm than good (Valkanidis et al., 2020).

As in many sports, successful goalkeeping depends on reaching the right place at the right time. Even if goalkeepers can see the ball through the wall before it is kicked, they are unlikely to see the initial part of its trajectory immediately after the kick—information the brain needs to predict where the ball is going and when it will arrive (Valkanidis et al., 2020).

Whether teams will abandon the wall remains to be seen. New tactics for defending set pieces continue to emerge, such as a defender lying behind the wall to prevent the taker from playing the ball under the defenders' feet.

2-3 Reaction Time

Coaches in all sports benefit greatly from training the speed with which an athlete responds to events that occur during play or competition (Adil, 2009, p. 122). A short reaction time is also very important in football (Hamad, 2009, p. 37), as it may enable an attacker to score or allow the goalkeeper or a defender to intervene and prevent an opponent from scoring (Muhammad, 2008, p. 551). Piscopo and Baley (1981, as cited in Muhammad, 2008) noted that some athletes are described as quick movers, a description that consistently refers to an individual's reaction time. Reaction time is the interval between the onset of a stimulus, such as the starter's gun, and the initiation of the response (Schmidt et al., 2019). It is partly hereditary and varies from one athlete to another, and well-trained athletes react faster than those with little training.

Mervat (2010, p. 68) defined reaction time as the speed with which an individual responds to a specific stimulus with a specific voluntary reaction, that is, the time elapsed between the onset of the stimulus and the onset of the response. Football requires players to deal with constantly changing stimuli, such as the ball and opponents, for 90–120 minutes depending on the competition regulations. As one of the

players, the goalkeeper must react repeatedly to the ball and respond quickly to the manoeuvres of opponents and to the movements of teammates in the penalty area, where players of both teams are often concentrated (Muhammad, 2022, p. 169). This requires the goalkeeper to ignore other stimuli and attend to a single stimulus—the ball—whose direction constantly changes because of players, weather conditions, the playing surface, the force of the shot, or deviations in its flight. Such changes have been amplified by recent technological developments in ball design, such as the number and shape of the panels, which alter the ball's flight (Adil & Salam, 2009, p. 156; Hong & Asai, 2014).

3. Research Procedures

3-1 Research Method

The researcher used the descriptive method (survey approach) because it suits the nature of the research problem. This method describes a phenomenon as it exists in reality by collecting data from a defined group of respondents—here, through a questionnaire—and analysing the relationships among the variables without manipulating them (Thomas et al., 2015).

3-2 Research Population and Sample

The research population consisted of (30) goalkeepers in Kirkuk Governorate. A sample of (20) goalkeepers (66.67% of the population) was selected by stratified random sampling because goalkeepers were unevenly distributed within the population. Table 1 shows the distribution of the sample by gender and marital status.

Table 1

Distribution of the Research Sample (n = 20)

Variable	Category	n	%
Gender	Male	14	70.00
	Female	6	30.00
Marital status	Single	16	80.00
	Married	4	20.00
Total		**20**	**100.00**

3-3 Data Collection Instrument

Data were collected using a questionnaire of 12 items, each rated on a five-point Likert scale (1 = lowest, 5 = highest). The questionnaire was developed with the help of a panel of experts who agreed on the scientific steps for its construction, observing the scientific criteria of validity, reliability, and objectivity.

3-4 Steps in Developing the Research Instrument

The researcher designed a questionnaire with proposed domains identified through a review of related studies and the theoretical literature, and presented it to experts specializing in measurement and evaluation.

3-5 Psychometric Properties of the Questionnaire

3-5-1 Validity

Content validity was established through expert judgement. The preliminary questionnaire was presented to the experts, revised in light of their comments, and presented to them a second time to confirm the suitability of the questionnaire, its domains, and the relevance of each item to its domain.

3-5-2 Reliability

Reliability was determined by the test–retest method. The questionnaire was administered to a pilot sample on 6 June 2023 and re-administered on 1 July 2023. The correlation coefficient between the two administrations was 0.80, indicating acceptable reliability (Layla, 2007, p. 147).

3-6 Administration of the Questionnaire

The researcher administered the final version of the questionnaire (Appendix 4) to the research sample of (20) goalkeepers during 2023. The completed questionnaires were then collected, and the data were coded for statistical processing.

3-7 Statistical Analyses

The data were analysed with the Statistical Package for the Social Sciences (SPSS) using the following procedures:

1. arithmetic mean;
2. standard deviation;
3. percentage;
4. Pearson correlation coefficient (test–retest reliability);
5. one-sample t-test;
6. independent-samples t-test;
7. one-way analysis of variance (ANOVA).

4. Presentation and Discussion of the Results

This study examined the relationship between removing the defensive wall at free kicks and goalkeepers' reactions. To achieve this objective, a questionnaire was developed and its validity and reliability were verified. The completed questionnaires were coded, entered into a computer, and analysed using SPSS. The results are presented below in the order of the research question and hypotheses.

4-1 Results Related to the Main Research Question

The research question was: To what extent is removing the defensive wall at free kicks related to goalkeepers' reactions?

To answer this question, the means, standard deviations, and percentages of the questionnaire items were calculated, and each item was rated according to its mean. The rating levels were obtained by dividing the range of the five-point scale ($5 - 1 = 4$) into three equal intervals of 1.33: 1.00–2.33 low, 2.34–3.67 moderate, and 3.68–5.00 high. The results are shown in Table 2.

Table 2

Means, Standard Deviations, and Percentages for the Questionnaire Items

No.	Item	M	SD	%	Rating
1	Deflecting a high ball over the crossbar	3.90	1.07	78.00	High
2	Clearing a low ball without diving	3.65	1.27	73.00	Moderate
3	Saving a ground-level ball close to the corner of the goal	3.60	1.39	72.00	Moderate
4	Saving a ball directed towards the upper corner of the goal	2.75	1.21	55.00	Moderate
5	Clearing a ground-level ball arriving from the front or either side to outside the penalty area	3.25	1.29	65.00	Moderate
6	Clearing a high ball arriving from the front from outside the penalty area	3.55	1.61	71.00	Moderate
7	Clearing a ground-level ball arriving from the front from outside the penalty area	2.90	1.55	58.00	Moderate
8	Clearing (punching away) or catching the ball from an opposing player	2.15	1.31	43.00	Low
9	Punching the ball with one or both hands from the front or either side	3.20	1.15	64.00	Moderate
10	Catching a high ball above the head from the front or either side	2.00	1.03	40.00	Low
11	Catching a medium-height ball from the front or either side	2.50	1.24	50.00	Moderate
12	Catching a ball rolling along the ground from the front or either side	2.05	1.00	41.00	Low
	Overall score	**2.99**	**0.75**	**59.79**	**Moderate**

Table 2 shows that one item (1) was rated high, eight items (2, 3, 4, 5, 6, 7, 9, and 11) were rated moderate, and three items (8, 10, and 12) were rated low. The overall mean was 2.99 (59.79%), which corresponds to a moderate rating.

The highest-rated items were deflecting a high ball over the crossbar (M = 3.90), clearing a low ball without diving (M = 3.65), and saving a ground-level ball close to the corner of the goal (M = 3.60), whereas catching skills received the lowest ratings: catching a high ball above the head (M = 2.00), catching a rolling ball (M = 2.05), and dealing with a ball from an opposing player (M = 2.15). The

researcher attributes this pattern to the nature of the skills. Deflecting and clearing actions depend heavily on reading the ball's trajectory early and moving in time, so goalkeepers perceive a greater benefit when the wall no longer blocks their view. Catching skills depend more on handling technique and on the ball arriving within reach, so the presence or absence of the wall matters less to them. This interpretation is consistent with Valkanidis et al. (2020), who found that blocking the goalkeeper's view of the ball's initial trajectory delays the start of the goalkeeper's movement.

4-2 Results Related to the Research Hypotheses

4-2-1 First hypothesis

The relationship between removing the defensive wall at free kicks and goalkeepers' reactions will be high at the significance level α = 0.05.

To test this hypothesis, a one-sample t-test was used to compare the sample mean with a criterion value of 4, which corresponds to a high rating on the five-point Likert scale (Table 3).

Table 3

Results of the One-Sample t-Test (Test Value = 4)

Variable	n	M	SD	Test value	t	p
Overall score	20	2.99	0.75	4.00	−6.023	< 0.001**

** Significant at α = 0.01.

Table 3 shows a statistically significant difference ($p < 0.01$) between the sample mean (2.99) and the criterion value (4.00). Because the sample mean is lower than the criterion value, the first hypothesis is not supported: the relationship is moderate rather than high.

The researcher attributes this result to the fact that removing the wall involves a trade-off for the goalkeeper. On the one hand, it gives an unobstructed view of the ball from the moment it is kicked; on the other hand, it leaves a larger part of the goal exposed to direct shots and removes the protection the wall provides against some difficult shots. Goalkeepers therefore appear to view the removal of the wall as helpful in some situations rather than as a general advantage, which also agrees with the item-level pattern in Table 2.

4-2-2 Second hypothesis

There are no statistically significant differences at α = 0.05 in mean scores on the relationship between removing the defensive wall at free kicks and goalkeepers' reactions attributable to gender.

To test this hypothesis, an independent-samples t-test was used (Table 4).

Table 4

Independent-Samples t-Test by Gender

Variable	Male (n = 14)		Female (n = 6)		t	p
	M	SD	M	SD		
Total score	3.09	0.82	2.75	0.55	0.912	0.374

Table 4 shows no statistically significant differences between male and female goalkeepers ($p = 0.374 > 0.05$); the second hypothesis is therefore accepted.

4-2-3 Third hypothesis

There are no statistically significant differences at $\alpha = 0.05$ in mean scores on the relationship between removing the defensive wall at free kicks and goalkeepers' reactions attributable to marital status.

To test this hypothesis, an independent-samples t-test was used (Table 5).

Table 5

Independent-Samples t-Test by Marital Status

Variable	Single (n = 16)		Married (n = 4)		t	p
	M	SD	M	SD		
Total score	2.96	0.68	3.10	1.12	0.330	0.764

Table 5 shows no statistically significant differences by marital status ($p = 0.764 > 0.05$); the third hypothesis is therefore accepted.

The researcher attributes the absence of differences by marital status to the fact that goalkeepers' reactions are influenced mainly by the pressure of the situation: most goalkeepers are distracted while organising the defensive wall, which places considerable demands on them and reduces their effectiveness.

4-2-4 Fourth hypothesis

There are no statistically significant differences at $\alpha = 0.05$ in mean scores on the relationship between removing the defensive wall at free kicks and goalkeepers' reactions attributable to the number of free kicks.

To test this hypothesis, one-way analysis of variance (ANOVA) was used (Tables 6 and 7).

Table 6

Means and Standard Deviations by Number of Free Kicks

Number of free kicks	M	SD
1	3.15	1.27
2	2.97	0.68
Total	**2.99**	**0.75**

Table 7

One-Way ANOVA by Number of Free Kicks

Source of variation	SS	df	MS	F	p
Between groups	0.15	2	0.07	0.12	0.89
Within groups	10.55	17	0.62		
Total	10.69	19			

Table 7 shows no statistically significant differences attributable to the number of free kicks ($p = 0.89 > 0.05$); the fourth hypothesis is therefore accepted.

Taken together, the absence of differences by gender, marital status, and number of free kicks suggests that goalkeepers' perception of the effect of removing the wall is shared across these groups and depends more on the visual demands of the situation than on personal characteristics.

5. Conclusions and Recommendations

5-1 Conclusions

In light of the research findings, the researcher reached the following conclusions:

1. Goalkeepers rated the relationship between removing the defensive wall and their reactions as moderate overall (M = 2.99, 59.79%), not high.

2. The perceived benefit of removing the wall was greatest for deflecting high balls and clearing low balls, which depend on reading the ball's trajectory early, and smallest for catching skills. This agrees with experimental evidence that the wall blocks the goalkeeper's initial view of the ball (Valkanidis et al., 2020).

3. There were no statistically significant differences in this relationship by gender, marital status, or number of free kicks.

4. Removing the wall may also affect free-kick takers: a powerful kicker may strike the ball through the space the wall would otherwise occupy, while accuracy may suffer without the wall as a reference point. These effects have not yet been examined experimentally (Valkanidis et al., 2020).

5-2 Recommendations

1. Coaches should consider removing the defensive wall in selected free-kick situations, particularly central kicks, so that the goalkeeper has an unobstructed view of the ball.

2. Goalkeepers should be trained to deal with free kicks both with and without a wall, with particular emphasis on catching skills, which received the lowest ratings.

3. Coaches and goalkeepers should reconsider whether a wall is always the best option, since blocking the goalkeeper's view of the ball's initial trajectory impairs goalkeeping performance (Valkanidis et al., 2020).

4. Future studies should use experimental designs and sports biomechanics methods, including motion-analysis software, to measure goalkeepers' reaction times directly with and without a wall.

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