THE EFFECT OF COMPLEX EXERCISES USING SMART GLASSES IN DEVELOPING THE SPEED OF MOTOR RESPONSE AND THE SKILL OF HOLDING HIGH BALLS FOR ADVANCED SOCCER GOALKEEPERS

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Abstract

The study aimed to prepare complex training exercises using smart glasses to develop the speed of motor response and the skill of holding high balls for advanced soccer goalkeepers, and to identify its impact on the research variables. While the study hypothesized that there is a positive effect of compound exercises using smart glasses on the speed of motor response and the skill of catching high balls for advanced soccer goalkeepers, and in favor of post-tests, while theoretical studies included compound exercises using smart glasses and their impact on developing the speed of motor response and the skill of catching high balls for goalkeepers. The advanced football goal, and the researcher followed the experimental method in the manner of three groups, two experimental groups, and a control group, due to its suitability to the nature and objectives of the research.

Introduction

The progress made in the performance of the football game and modernity in the use of devices and tools and the work on employing technology to serve the game and all its requirements in terms of capabilities and physical, skillful, functional and even tactical capabilities, and that it led to a qualitative leap in improving and raising the level of performance of players in terms of its contribution to reducing Time and effort to reach the desired purpose such as developing the motor response speed with all its components, and this applies to all activities that need accurate measurement by quantitative numbers, which reflects the extent of development witnessed by the sports world in terms of training technology, and as it is known that sports training seeks to develop a better level of sports Be it on the physical level and even the psychological aspects. In most cases, goalkeepers depend on the goalkeeper's ability to see the surroundings of the field and know and anticipate the positions in which fellow players or competitors move, as well as the speed of movement and angles of the ball's transmission and bounce, both from the field and the players. Especially the goalkeepers, so that they perform well during the match, and deal with open skills and changing conditions at the highest level, so that they can take the appropriate decision to perform defensive and offensive skills, such as keeping or holding balls of various heights and handling of all kinds, and that their subjection to visual training programs will be of great benefit to them because it requires them Visual and motor perceptual tasks of the eye that work on processing what can be seen and responding to

it, which leads to an improvement in sports performance in general, and through this they have improvements in the levels of perception of the surroundings as well as an increase in the angle of vision, in addition to increasing visual endurance to avoid the effect of the large number of players facing the goalkeeper Including the audience and external stimuli, which often cause distraction, visual fatigue, and mental wandering during the competition, and according to the researcher's vision, this is a result of (eyes fatigue), and the goalkeepers' lack of visual endurance due to changing conditions and external influences. The researcher decided to use glasses that simulate virtual reality (smart glasses)Hence, the importance of the study emerged in the preparation of complex exercises using smart glasses in order to develop the speed of motor response and the skill of catching high balls for advanced soccer goalkeepers.

Research problem

One of the goalkeeper's tasks is to catch and punch high balls in front of the goal, and through the researcher's experience, and being a former goalkeeper, and a current coach for goalkeepers in Wasit Governorate, and through his follow-up to the youth football league in the province, he noticed the young goalkeepers' lack of speed Resolving critical situations, and dealing with high balls by holding, which reflects negatively on the performance of the entire team. Physical, skillful, or visual. Through the researcher's observation that he is a former goalkeeper and a current coach of goalkeepers in Wasit Governorate, and through his follow-up of the matches and training of advanced soccer goalkeepers in the governorate, he found that most goalkeepers have deficiencies and weaknesses in the range of vision related to performance during matches. The researcher attributes the reason for this to a weakness in the speed of movement, which negatively affects the removal of danger from his goal, and the lack of inclusion in the training programs of exercises in which the auxiliary tools are used that qualify goalkeepers to perform their role fully than most coaches, which develop their physical capabilities represented by the speed of movement Therefore, the researcher thought that the solution to the problem of the study lies in the synchronization of goalkeeper training with training technology, especially smart glasses, which contributes to increasing peripheral vision and widening the peripheral range, expanding his perception and speed of response to the movement of players, angles and directions of the ball, and knowing his capabilities in the extent of his direction to receive the ball and deliver it in the specified area. .

Research Objectives

1. Preparing complex exercises using smart glasses for advanced soccer goalkeepers.
2. Identifying the effect of compound exercises using smart glasses on the speed of motor response and the skill of holding high balls for advanced soccer goalkeepers.
3. Identifying the effect preference among the three groups in the post-tests.

Research Hypotheses

1. There is a positive effect of compound exercises using smart glasses on the motor response speed of advanced soccer goalkeepers.
2. There is a positive effect of compound exercises using smart glasses on the skill of catching high balls for advanced soccer goalkeepers.

Areas Of Research

- Human Field: Goalkeepers of Wasit clubs, applicants.
- Time range: the period from 11/12/2022 to 1/4/2023.

- The spatial field: the two Olympic stadiums in Kut.

Definition of Terms

Vision up smart glasses training glasses stimulate the mind and improve vision through the intermittent shutter, through which the brain's processing speed and visual ability can easily be improved, such as motor visual acuity, dynamic visual acuity, visual vision, etc. Thus, you can get sports performance better.

Research methodology and field procedures

Research Methodology

The researcher used the experimental method in the manner of equal control groups, and the first and second experimental groups, due to its suitability for procedures to solve the research problem.

The research community and its sample

The research methodology is the intellectual scientific step that the researcher follows to solve a specific problem and that this methodology is compatible with the objectives and the problem for the purpose of addressing it, and maintaining adherence to the independent variable and the dependent variable as the method will be used I urge the experimental method using equal groups with two pre and post tests.

Table (1) Table showing the experimental design

Post-test	experimental handling	Pretest	the group
Responsiveness kinetic	Coach drills	Motor response speed	control
High ball catching skills		High ball catching skills	
Motor response speed	Compound exercises without using smart glasses	Motor response speed	The first experimental
High ball catching skills		High ball catching skills	
Motor response speed	Compound exercises using smart glasses	Motor response speed	The second experimental
High ball catching skills		High ball catching skills	

The research community and its sample

The research community means all individuals, persons, or things who are the subject of the research problem. As for the research sample, it is part of the original research community, chosen by the researcher in different ways and includes a number of individuals from the original community. The applicants for the Al-Kout Center clubs, whose number is (6) clubs, and each club has (3) goalkeepers, and thus their number is (18) goalkeepers, and the research sample was randomly selected by drawing lots inside each club, as 6 goalkeepers were chosen as the first experimental group Second, and (6) guards as a control group, and the sample was divided into three groups, two experimental groups, and a control group, as the number of

goalkeepers for each of the three groups was (6), and as shown in Table (2), as the research
sample formed a proportion (100%) of the research community.

Table (2)Shows the distribution of samples

the number	the sample	No
6	First experimental	1
6	The second experimental	2
6	control	3

Homogeneity of the research sample

The researcher conducted homogenization for all members of the research sample, in the
variables (height, weight, chronological age, and training age), in order to ensure that the results
of all members of the sample in the above variables are distributed normally, and as shown in
Table (3), (4) and (5) below.

Table (3)Normal distribution control group

indication	the difference	skewness	Mediator	deviation	the middle	measruing unit	variants	No
homogeneous	1,294	0.600	180,000	2,338	180,667	poison	height	1
homogeneous	3,073	0.000	77,000	2,366	77,000	kg	Bloc	2
homogeneous	4,878	0.000	21,500	1,049	21,500	the month	chronological age	3
homogeneous	2,085	-0.456	95,000	1,966	94,333	the month	training age	4
homogeneous	8,147	-0.884	1,531	0.122	1,496	time	Motor response speed	5
homogeneous	10,742	-0.723	18,000	1,862	17,333	degree	Catch high balls	6

Table (4) The normal distribution of the first experimental group

indication	the difference	skewness	Mediator	deviation	the middle	measruing unit	variants	No
homogeneous	1,886	0.479	181,500	3,430	181,833	poison	height	1
homogeneous	6,867	-0.133	77,500	5,345	77,833	kg	Bloc	2
homogeneous	5,750	0.889	21,500	1,265	22,000	Month	chronological age	3
homogene	6,452	-0.981	96,000	5,947	92,16	Month	training	4

indication	the difference	skewness	Mediator	deviation	the middle	measuring unit	variants	No
ous					7		age	
homogeneous	8,421	-0.874	1,530	0.128	1,515	time	Motor response speed	5
homogeneous	4,622	0.857	17,500	0.816	17,667	degree	Catch high balls	6

Table (5) Normal distribution of the second experimental group

indication	the difference	skewness	Mediator	deviation	the middle	measruing unit	variants	No
homogeneous	1,996	-0.826	182,500	3,633	182,000	poison	height	1
homogeneous	3,483	0.422	75,500	2,658	76,333	kg	Bloc	2
homogeneous	7,537	0.383	21,500	1,633	21,667	the month	chronological age	3
homogeneous	2,495	-0.568	93,000	2,317	92,833	the month	training age	4
homogeneous	10,838	-0.066	1,501	0.164	1,510	time	Motor response speed	5
homogeneous	11,653	-0.585	18,500	2,098	18,000	degree	Catch high balls	6

Equivalence of the research sample

The researcher conducted equivalence between the experimental and control research groups, with regard to the variables chosen in the research.

Table (6) Shows parity between the three groups

indication	The calculated F value	indication	Levin	mean of squares	degrees of freedom	sum of squares	source of contrast	variants	No
0.737	0.312	0.576	0.573	3,167	2,000	6,333	between groups	height	1
				10,144	15,000	152,167	within groups		
					17,000	158,500	the total		
0.785	0.247	0.106	2,614	3,389	2,000	6,778	between groups	Bloc	2

				13,744	15,000	206,167	within groups		
					17,000	212,944	the total		
0.807	0.217	0.401	0.972	0.389	2,000	0.778	between groups	the age temporal	3
				1,789	15,000	26,833	within groups		
					17,000	27,611	the total		
0.618	0.497	0.181	1,486	7,389	2,000	14,778	between groups	the age training	4
				14,867	15,000	223,000	within groups		
					17,000	237,778	the total		
0.794	0.234	0.076	3,067	0.667	2,000	1,333	between groups	Catching balls high	5
				2,844	15,000	42,667	within groups		
					17,000	44,000	the total		
0.968	0.032	0.339	1,164	0.001	2,000	0.001	between groups	Speed response kinetic	6
				0.019	15,000	0.290	within groups		
					17,000	0.291	the total		

Methods, tools and devices used in the research

Research tools "are the means through which the researcher can collect data and solve the problem to achieve the objectives of the research, whatever those tools are of data, samples and devices"

Means of collecting information

1. Arabic and foreign sources.
2. The International Information Network (the Internet)
3. Opinions of experts and specialists.
4. Tests and measurements.

Devices used in the research

1. A device for measuring the speed of motor response.
2. Sony camera for documentation.
3. One (1) HP laptop.
4. Two (2) electronic stopwatches.
5. Weight measuring device.
6. Electronic glasses (smart)

Tools used in the research

1. A legal football field.
2. Legal soccer balls (30)
3. Swiss balls number (4)
4. A multi-colored lighting network.
5. Multiple height indicators (30)
6. Cones (20)
7. Whistle number (2)
8. Colorful training clothes.
9. measuring tape.
10. A medical scale for measuring weight.
11. Various stationery.
12. ground rings.
13. linoleum, measuring (3x2)
14. Barriers with a height of (25) cm, number (10) and a height of (50) cm, number (5)
15. doll.
16. Paper number pad.
17. Mastaba number (2)
18. Plastic pegs fixed to the ground.

Field Research Procedures

Determine the search variables

The researcher looked at many scientific sources and similar previous studies and benefited from the scientific experience of Mr. Supervisor, as the research variables were selected, which included:

1. The independent variable represented by compound exercises using smart glasses.
2. As for the dependent variables, they included the speed of the motor response, the skill of the goalkeeper (holding the high ball)

Determine the tests used in the research

After the research variables were identified, the research tests were determined according to the research variables, which ensured the measurement of those variables.

Motor response speed test

Test name: Saqr Test

Skill tests

High ball catching test

Exploratory experience

The researcher conducted the exploratory experiment on Monday corresponding to 7/11/2022 at 4:30 in the afternoon on a sample outside a sample of (4) goalkeepers, two guards from each club (Damok, Al-Jihad), accompanied by the assistant work team, and all tests related to speed

of response were conducted movement, and the skill of catching high balls, in addition to that, the researcher benefited from this experiment in arranging and sequencing the tests, and determining the appropriate time for them.

Pre-Research Tests

Pre-tests were conducted on the research sample by the researcher and the assistant work team, as the pre-tests for the research variables were conducted on (Wednesday) corresponding to (9/11/2022) at (4) in the evening, and according to the scientific sequence of conducting the tests, as they were Allocate one day to conduct the motor response speed test, and one day for the test and the skill of catching high balls. Thus, the number of test days reached two days, from (Wednesday) corresponding to 11/9/2022 until (Thursday) corresponding to (11/10/2022). 3-6-5 Exercises used and how to apply them: In order to achieve the objectives of the research and reach the effective performance of the goalkeepers, the researcher, based on some scientific sources and references, prepared complex exercises for the goalkeepers and the two experimental groups. The second experimental group will apply exercises using smart glasses as in Figure (1), and these exercises are exercises A compound to develop the speed of motor response and also include these exercises, and the skill of catching the high ball, and this is done using smart glasses through its opaque and opaque effect that it will cause in order to make it difficult for goalkeepers to perform, and these exercises will be graded according to the frequency of the glasses in terms of hertz, according to the rate inside them, As the researcher began to gradually apply his exercises from easy to more difficult little by little until adaptation occurred among the goalkeepers for each exercise in the training unit.As for the first experimental group, it will apply the same exercises used by the second experimental group, but without using smart glasses for the purpose of knowing the level of differences in the tests between the two experimental groups. Below are special notes about the implementation of the exercises prepared by the researcher:

1. The training of the two groups is divided according to the research variables (offensive and defensive skill exercises, especially with the speed of motor response, for soccer goalkeepers)
2. The intensity ranges between (90-100%)
3. Weekly Ripple 3:1.
4. The method of high-intensity and repetitive interval training will be used.
5. The period for the training units is (eight) weeks, with an average of (three) training units per week.
6. The total number of training units is (24) training units.
7. The time for the main section in the training unit is (35-50) minutes.

Figure (1) shows the smart glasses

Post-tests

The researcher conducted the post-tests on the three research groups (the control and the two experimental groups) on (Friday) corresponding to (6/1/2023). The same auxiliary work, the same devices and tools that were available in the pre-tests.

Statistical means

The researcher used the statistical bag (spss) to process the results.

Presentation, analysis and discussion of the results

Presenting, analyzing and discussing the results of the motor response speed variable values in the subject of research:

Presenting and analyzing the results of the motor response speed variable for the three groups.

Table (7)Shows the value of (F) calculated in the motor response speed values for the three groups

indication	The calculated F value	mean of squares	degrees of freedom	sum of squares	source of contrast	variants	No
0.001	11,228	0.134	2	0.267	between groups	Speed motor response	1
		0.012	15	0.179	within groups		
			17	0.446	the total		

Table (7) shows that there are statistically significant differences between the results of the motor response speed values between the three control groups and the first and second experimental groups in the post-test by calculating the value of (F) of (11.228) at a degree of freedom (2-15) and a level of significance (0.001) To find out the direction of the difference in favor of any group, the researcher used the value of the least significant difference (L.S.D) among the three groups.

Table (8)(L.S.D) is shown for comparisons in the motor response speed values for the three groups of the post-test

indication	standard error	media difference	computational circles		groups		variants	No
0.017	0.063	0.169	1,268	1,437	T1	Z1	Motor response speed	1
0.000	0.063	0.298	1,140	1,437	T2	Z1		
0.049	0.063	0.128	1,140	1,268	T2	T1		

Through Table (8), the motor response speed shows: There is a significant difference between (the control group - the first experimental group) at the level of significance (0.017) and between (the control group - the second experimental group) at the level of significance (0,000), and between (the experimental group The first - the second experimental group) at the level of significance (0.049)

Presenting, analyzing and discussing the results of the values of the skill variables of soccer goalkeepers:

Displaying the results of the values of the variables, the skill of catching high balls for

goalkeepers in football, for the three groups, and analyzing them.

Table (9)Shows the value of (F) calculated in the values of the skill of holding high balls, goalkeepers for the three groups

indication	The calculate dF value	mean of squares	degrees of freedom	sum of squares	source of contrast	variants	No
0,000	19,500	28,167	2,000	56,333	between groups	Catch high balls	1
		1,444	15,000	21,667	within groups		
			17,000	78,000	the total		

Table (9) shows that there are statistically significant differences between the results of the values of some soccer goalkeeper skills (holding high balls) between the three control groups and the first and second experimental groups in the post-test. Significant difference (L.S.D) between the three groups

Table (10)(L.S.D) shows for the comparisons in the values of the skill of holding high balls goalkeepers for the three groups of the post-test

indication	standard error	media difference	computational circles		groups		variants	No
0.007	0.694	-2,167	24,667	22,500	T1	Z1	Catch high balls	1
0.000	0.694	-4,333	26,833	22,500	T2	Z1		
0.007	0.694	-2,167	26,833	24,667	T2	T1		

There is a significant difference between (the control group - the first experimental group) at the level of significance (0.007) and between (the control group - the second experimental group) at the level of significance (0,000), and between (the first experimental group - the second experimental group) at the level of significance (0.007.)Table (7) and (8) shows the superiority of the members of the second experimental group in the speed of motor response over the control and experimental group first, as the researcher attributes that this development was the result of the exercises prepared by the researcher with smart means and devices, where the second experimental group used glasses Specialized smart devices for visual training, the purpose of which is to put goalkeepers under conditions of intermittent vision, and this is similar to what happens during competition when there is a numerical density of fellow players and competitors in the penalty area, which increases the difficulty of vision for the goalkeeper, as well as an attempt to enhance visual and cognitive skills and use the remaining senses more Efficiency, such as motor awareness, as well as increases focus on the ball better and predicts where the ball will be, and this leads to a faster motor response. Sports performance and gaining a competitive advantage, and training using visual tools and means called (visual training) is one of the last of these techniques presented in the sports field. It is a series of repeated eye exercises with the aim of improving basic visual functions, which are important for athletes in all competitive sports.

Table (9) and (10) show that the members of the second experimental group excelled in the skill of holding high balls over the control and experimental group. The researcher attributes the preference of the skill (holding high balls) to the second experimental group. Far from the

visual vision, but it is more special due to its special technical nature, holding the ball and reactions in the shortest possible time, and thus the goalkeeper must take the correct position quickly, allowing him to control the ball, in addition to that the speed and intensity of movements have increased during the formation of attacks From the opposing team, which necessitates the necessity of visual pursuit and tracking of these movements by using eye movements to scan the goal area and track the ball while it is flying in the air or changing its direction with visual acceleration to counter such movements. All this requires specific mental responses, and therefore the participation is more than exciting. It will affect performance and response.

The effect of the accompanying compound exercises enhanced by the smart glasses was aimed at developing the skillful performance of the goalkeepers, increasing the goalkeeper's vigilance, and increasing his focus on a specific point that he attaches great importance to. The team from a goal may lead the team to lose the match, and that is by preparing and preparing to perform a motor response to all the surrounding stimuli and variables that occur during the match to perform the skill of catching high balls through continuous vigilance and reinforced by the brain, as the researcher believes that the type of compound exercises That accompanied the smart glasses and the addition of (visual stimuli) and gradation with it down to adaptation to the maximum intensity increased the ability of goalkeepers to build mental programs and responses that appeared in an effective way in improving the performance of the skill of holding high balls through an increase in the number of motor units contributing to its performance and for this there was an improvement In the performance of the skill, and this was confirmed by (Omose Juard 1999) "The gradation in the exercises of the curricula units creates a state of continuous increase in the processes of physiological, physical and skill adaptation, and then raises the level of performance "

Conclusions and recommendations

Conclusions

Compound exercises using smart glasses contributed to developing the speed of motor response for goalkeepers. Compound exercises using smart glasses contributed to developing the skill of holding high balls for advanced soccer goalkeepers.

Recommendations

Goalkeeper coaches should include smart glasses in their training curriculum, as it has a role in improving the speed of motor response.

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Supplements
Exercises used to develop the speed of motor response and the skill of catching high balls exercise (first) The goal of the exercise: to develop selective attention and speed of response Goalkeeper movement and skills.MExercise tools: (12) colored balls opposite the (6-yard) area, (4) lights that are operated by remote control placed on the line of the (18-yard) area, (4) targets of different colors, a box 50 cm high. Explanation of the exercise: The goalkeeper stands in front of the lamps inside the (6-yard) area, and the coach turns on one of the lamps placed on the A line (18 yards) and the goalkeeper chooses a ball in the color of the lamp, and kicks it to the second or third towards the area that is marked by the color of the lamp and the ball Together, then he returns to the goal to catch a high-rise ball in the presence of an opponent, then tackles a medium-height ball over a 50-cm-high box.

Exercise (second) The aim of the exercise: to develop visual abilities, motor response speed and goalkeeper skills.Exercise tools: (4) soccer balls, cones of different colors, lighting device and remote control.Explanation of the exercise: The goalkeeper moves in sync with the operation of the lamp, he moves to the funnel that bears the color similar to the operating lamp, and each funnel has a predetermined skill by the coach, the goalkeeper, after performing the first skill, rotates behind the funnel, and pays attention to the lighting device to work on the second transition and perform The next skill and the way before it.


exercise (third)The aim of the exercise: to develop visual abilities, motor response speed and

goalkeeper skills.Training tools: (4) lamps, two of which are placed on each of the goalposts, (4) soccer balls for the coach, (3) six cones in front of the goal line and on each side of the goalkeeper who stands in the middle of the field. Goal, Swiss ball number (2) on each side of the goal.Explanation of the exercise: The goalkeeper stands in the middle of the goal and when one of the lamps placed on the goalposts is turned on, he makes a quick lateral hesitation over the cones placed on the side containing the operating lamp, then performs the skill of catching a rolling globe on the other side opposite to the operating lamp, then performing the dispersal skill or Push back on the rebounds from the Swiss ball.

exercise (fourth)The aim of the exercise: to develop visual abilities, motor response speed and goalkeeper skills.Exercise tools: (4) lamps, (16) colored balls, (2) balls for each of the coaches, one standing on both sides of the right goal and the other on the left side, (8) balls of different colors within the area (6 yards), four Marked areas (2 x 2 m), in the second third of the field.Explanation of the exercise: The goalkeeper stands in the middle of the goal within the (6-yard) area. When one of the lamps is turned on, the goalkeeper moves towards the coach who carries the ball of a color similar to the color of the switched on lamp, to block or catch a different ball, and return it to the coach himself, after that He quickly moves to take a ball similar to the color of the lamp and kick it towards the area that bears the same color as the ball.
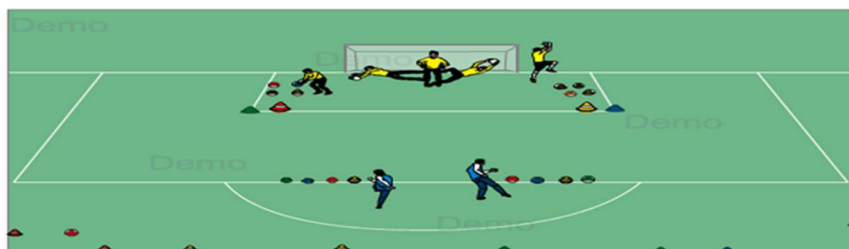
Exercise (a model that represents a training unit)
Objective: To develop the speed of motor response and the skill of holding high balls for soccer goalkeepers.
Time: 35-50 minutes Relative Intensity: 90%

Notes	rest time between exercises	Total	Rest between groups	Rest between repetitions	Total	repetition	performance time	Training
Rest	60 Sec	d 11	d 3-2	sec 45	2	3	11 s	T (1)

between repetitions 4:1		d 8	d 3-2	sec 0 6	2	3	15 sec	T (2)
		12.5 d 0	d 3-2	sec 50	3	3	12 sec	T (3)
		d 8	d 3-2	sec 0 6	2	3	15 sec	T (4)