International Journal of Sports, Health and Physical Education

ISSN Print: 2664-7559
ISSN Online: 2664-7567
IJSHPE 2025; 7(2): 01-05
www.physicaleducationjournal.in
Received: 20-04-2025
Accepted: 24-05-2025

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Impact of competitive training utilizing visual glasses on the enhancement of visual skills and their influence on cognitive capacities among wheelchair archers of the Paralympic Committee squad in Maysan

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DOI: https://www.doi.org/10.33545/26647559.2025.v7.i2a.216

Abstract
The initial section addressed the significance of competitive exercises in enhancing visual skills, which are fundamental to success in visual abilities. The research problem is that the sample's connection to its environment is limited to visual and auditory senses. The complexity of the situation, as indicated by the positions of players, competitors, spaces, and voids, necessitates advanced visual perception skills that encompass the playing area. Consequently, it is essential to enhance the visual perception skills of the sample. The goal of the study is to create visual skills exercises with optical glasses and evaluate their impact. This study examines the mental aptitude and foundational skills of archery players, assessing the impact of visual skills on these attributes. The researcher posited that exercises utilizing optical glasses significantly influence visual skills, as well as mental abilities and fundamental skills in archery players. The study determined that competitive activities markedly affect the enhancement of visual skills, and that visual acuity distinctly influences the cognitive abilities and essential skills of archery participants. As a result of the fact that deaf football players rely on their visual talents to carry out their responsibilities in an efficient manner, it has been determined that coordinated training sessions are necessary for the development of these capabilities. The research problem is that the sample is exclusively linked to its immediate environment. Developing visual skills is important to compensate for the sensations lost in the sample. The objective of the research is to develop students' skills. Collaborative activities aimed at enhancing visual skills, cognitive abilities, and fundamental football skills for individuals with hearing and speech impairments. The researchers proposed that exercise compatibility significantly influences visual skills, specific cognitive abilities, and essential football skills in individuals who are deaf and mute. The researchers concluded that successive exercises significantly enhance vision, visual abilities, and mental skills, which are crucial for underperforming football players.

Keywords: Visual glasses, visual skills, mental abilities, wheelchair archers, Paralympic

1. Introduction
When a player has a thorough understanding of the field or game circumstances, they are better able to make optimal decisions on the fly by making strategic use of space and openings perceived visually. Being proficient with a bow and arrow requires not just good eyesight but also sharp mental faculties. This perspective presents a duality; it is, on one side, a scientific axiom that perceives cognitive capabilities as reactions to environmental stimuli via the senses. This interaction fosters the development of mental faculties adept at immediate engagement with the external world. Conversely, the skills associated with the bow and arrow exemplify closed skills that necessitate rapid cognitive processing. The seamless execution of athletic performance reaches its peak when mental directives stem from a lucid understanding of the surrounding environment. This is because the senses act according to the responses that are generated by the mind. The objective is to achieve optimal skill performance and utilization during official competitions, especially in long-distance events, where the responsibilities necessitate creating opportunities to mitigate obstacles posed by external conditions, such as weather or internal factors affecting archery competitions. This is especially true for competitions that take place over longer distances. This is not a simple assignment, but it is not an impossible one either. As a result, the significance of the research resides in itself. There is a requirement for the researcher to make use of optical glasses that have been painstakingly

crafted to cater to the researcher's visual vision, mental capabilities, and fundamental skills in order for them to be able to select competitive workouts. The following query was the means by which the academic elucidated the study problem:
Does the development of certain visual skills and their effect on mental abilities change when competitive training is conducted using optical glasses? For the Paralympic Committee team's wheelchair archers in Maysan

2. Research objectives
- Creating training routines for handicapped archers that make use of corrective lenses to improve their eyesight.
- To determine how competitive training with optical glasses affects disabled archers' visual ability.
- To assess the influence of visual skill development on the cognitive capabilities of disabled archers.

3. Research Hypotheses
- Competitive training with optical spectacles positively influences the visual capabilities of impaired archers.
- The visual capabilities of impaired archers positively influence their cerebral capacities.

4. Research Areas
- **Human field:** Players of the Maysan Paralympic Committee team.
- **Location:** The outdoor fields of Maysan International Stadium.
- **Time domain:** 2023-2024.

5. Research Methodology
The researcher used the experimental method with a two-equivalent group design, including a pre-test and a post-test, in accordance with the procedural nature of the study. The experimental method is considered one of the most precise methods in scientific research, due to its ability to control variables, allowing for intentional manipulation of some while controlling others. This method is also the only one capable of accurately determining the causal relationship between variables (Muhammad Hassan Alawi and Osama Kamel Rateb, 1999) [10].

6. Research sample
The research sample was selected intentionally, based on its ability to fulfil the study's objectives as determined by the researcher. The research community comprises nine members from the Maysan Paralympic Committee team, categorized into two groups control and experimental via simple random sampling, producing four players in each group. The exploratory experiment was conducted on (1), yielding a total of (8) players (Dhoqan Obaidat *et.al*, 1988) [5].

7. Information collection methods and devices used
- Scientific sources.
- Personal interviews with experts and specialists.
- Self-observation by the researcher.
- Data entry forms.
- Shooting range
- Bow and arrow.
- Optical glasses.
- Colorful lilacs.
- Measuring tapes.
- Optical glasses.
- Whistle.

8. Tests and Measurements
In order to establish the research variables that were investigated, the researcher relied on his prior expertise in the field, together with the thoughts and advice of professionals and experts that he got from tests and personal talks.
These are the results of the tests (Mahmoud Abdel Hassan):
To begin, aptitude tests for the eyes
- A test of the peripheral vision?
- Visual tracking exam.
- An examination of the visual abilities.

Tests of mental capacity come in second
- A comprehensive mental imagery test.
- Attention concentration exam.
- Test of your perception of time

9. Exploratory experiment
Professionals in scientific research consistently highlight the importance conducting a pilot study for the tests utilized in research. Prior to carrying out the primary research, the researcher will first undertake a pilot study, which is a preliminary study that is conducted out on a small participant pool. This is done in order to gather the necessary data and information that will be helpful for carrying out the primary experiment. Taking this into consideration, the researcher carried out a pilot study on the Fridays and Saturdays that corresponded to players who were not included in the sample, and then repeated the study after a period of two weeks. As a result of this, the following goals were successfully accomplished:
- Determining the degree of difficulty that the researcher is experiencing in their work.
- Determining whether or not the instruments and apparatus required for the research are safe to use.
- Determine the level of expertise possessed by the supporting team.
- Making the necessary adjustments to the timings and repetitions in order to carry out the tests.
- The guideline emphasized the rigors nature of the exercises conducted by the experimental organization.

10. Pre-tests
On the 20th and 21st of September, 2024, which were Wednesday and Thursday, the researcher conducted preliminary tests for the variables that were being investigated on the sample group. In the first day, the visual perception skills of both groups were examined, and the following day, with the assistance of the support team, the cognitive abilities of both groups were evaluated.

11. Homogeneity and Equivalence
The investigator explains that the difference between the first group's experiment and the second group's experiment is that the first and second groups under study are mostly equivalent in the absence of the experimental variables that affect the first and second groups. The equivalence of the first and second groups was evaluated using the T-Test for independent samples, and the results showed that the groups are comparable and the sample is homogeneous.

Table 1: Standard deviation, test value, error level, and significance of the difference between the initial control group and the subsequent experimental group across various variables

Tests	Unit of measurement	Control		experimental		Calculated t value	Significance level	Significance type
		Mean	St.	Mean	St.			
Peripheral vision	Degree	6.57	1.32	6.88	1.35	0.12	0.91	Insig.
Focus of attention	Degree	6,148	1.726	6.32	1.50	0.13	0.90	Insig.

It was shown in Table (1), that the results indicated that the differences between the two groups in all variables were not significant at the 0.05 level, which indicates the equivalence of the two groups in those variables prior to the intervention. The researcher attributes this to the good random distribution of the research sample.

12. Main Experiment: Beginning on Monday, 12/6/2024, the primary experiment continued for a total of ten weeks, concluding with the last training session on Sunday, 18/8/2024. The experimental group exercised with optical glasses twice a week on Mondays and Thursdays, focusing on the same aim. Competitive exercises using optical glasses were applied at a rate of (4) exercises per training dose, with the intensity of the exercises being high, which aligns with the nature and goal of the exercises. Each exercise was done three times with a 2-minute break between each repetition and a 3-minute break between exercises. As for the control group, the regular exercises prepared by the coach were applied on Mondays and Thursdays.

13. Post-tests

On Tuesday and Wednesday, 20-21/8/2024, after the main experiment was finished and the experimental group had been given the coordination exercises, the post-tests were administered in a similar fashion to the pre-tests in order to determine the players' level with the research variables.

14. Statistical methods

- Arithmetic Mean.
- Standard Deviation (St.d).
- Coefficient of Torsion.
- T-law for correlated samples.
- T-law for independent samples.

15. Results

Comprehensive reporting of pre- and post-test results for the study variables in the control group, accompanied by analysis and commentary:

Table 2: Presents the arithmetic means, standard deviations, calculated t values, error levels, and significance of the differences between the pre- and post-tests of the control group regarding the research variables

Tests	Unit of Measurement	Pre-tests Mean	Pre-tests St.d	Post-tests Mean	Post-tests St.d	Calculated t-value	Significance Level	Significance Type
Vision Oceanic	degree	6.58	1.31	7.05	1.56	5.19	0.01	Sig.
Visual Tracking	degree	3.08	0.79	3.90	0.88	4.89	0.01	Sig.
Perception Al-Basri	degree	7.08	1.50	8.10	2.75	6.88	0.00	Sig.
Mental Imagery	degree	61.47	6.25	67.22	7.08	7.00	0.00	Sig.
Focus of Attention	degree	6.15	1.71	6.87	1.47	3.65	0.03	Sig.
Feeling in Time	second	0.53	0.131	0.48	0.11	4.89	0.01	Sig.

Statistically significant at a significance level of 0.05 or lower, with three degrees of freedom. Table (2), demonstrates a notable enhancement in the performance of the research sample members, evidenced by the differences in mean values between the pre-test and post-test across all research variables, with the differences favoring the post-test measurements. The T-Test values for the paired samples indicated significant statistical significance, as all significance level values were below 0.05. The differences between the pre-test and post-test measurements were significant, with a preference for the post-test measurement. The results demonstrate that the first and second hypotheses of the study have been confirmed. The effectiveness of the pre-prepared exercises that were produced by the coach in accordance with the principles of scientific sports training can be attributed to the significant differences that were found in the post-tests of the experimental group across all variables. For the purpose of enhancing the cognitive abilities involved with visual perception, the exercises were designed to increase visual perception skills.

Presentation, analysis, and discussion of experimental group pre- and post-tests of study variables

Table 3: Displays the arithmetic means, standard deviations, calculated t values, error levels, and the significance of the differences identified between the pre- and post-tests of the experimental group regarding the research variables

Tests	Unit of Measurement	Pre-tests Mean	Pre-tests St.d	Post-tests Mean	Post-tests St.d	Calculated t-value	Significance Level	Significance Type
Vision Oceanic	degree	6.88	1.45	7.90	1.44	6.22	0.01	Sig.
Visual Tracking	degree	3.30	0.64	4.42	0.75	5.50	0.01	Sig.
Visual Perception	degree	7.21	1.48	9.00	2.22	7.45	0.00	Sig.
Mental Imagery	degree	61.89	6.76	72.54	8.10	7.77	0.00	Sig.
Focus of Attention	degree	6.22	1.50	7.34	1.45	3.85	0.03	Sig.
Feeling in Time	second	0.51	0.10	0.39	0.09	5.20	0.00	Sig.

Morale is below the significance level of 0.05 with a degree of freedom of (3). By comparing the pre- and post-test arithmetic means for each research variable, we can see that there was a statistically significant improvement with the post-tests Table (3). In addition, the corresponding samples' T-Test law values were less than 0.05 for all variables, indicating statistically significant differences favoring the post-tests and proving the first and second hypotheses. The experimental group's competitive optical glass exercises developed visual vision skills that improved archery players' mental abilities, which explained the significant differences in post-tests for the experimental group and all research variables. Coordination is the ability to integrate independent motor systems and sensory approaches into precise motor patterns. Coordination and integration boost efficiency and performance (Sari Ahmed and Norma Abdel Razzaq, 2001). Discussion, analysis, and presentation of post-test data for study variables in both the control and experimental groups.

Table 4: Shows the mean and standard deviation of the (test) value for the post-test of the first and second groups for the variables

Tests	Unit of Measurement	Control Mean	Control St.d	Experimental Mean	Experimental St.d	Calculated t-value	Significance Level	Significance Type
Peripheral Vision	degree	7.05	1.56	7.90	1.44	5.19	0.02	Sig.
Visual Tracking	degree	3.90	0.88	4.42	0.75	9.74	0.00	Sig.
Visual Perception	degree	8.10	2.75	9.00	2.22	6.91	0.01	Sig.
Mental Imagery	degree	67.22	7.08	72.54	8.10	6.57	0.01	Sig.
Focus of Attention	degree	6.87	1.47	7.34	1.45	6.93	0.01	Sig.
Sense of Time	second	0.48	0.11	0.39	0.09	7.58	0.00	Sig.

*Morale is below the significance level of 0.05 with 6 degrees of freedom.

After closely examining the table above, it becomes clear that there is a significant, evident, and positive improvement in the difference between the mean values of the post-test for all variables in favor of the experimental group. Since the (t) value is calculated for the independent sample, it was found that the level and significance of all variables are below (0.05). This illustrates the significant difference in favor of the experimental group on which the exercises were performed (Ibrahim Magdy, 1998) [1].

16. Discussion

We found that as motor performance became more precise, there was an improvement in the degree of general and particular coordination among the eye, leg, and arm. In order to help archers, hone their spatial awareness, timing, and projectile precision, the tournament workouts included optical glasses. This is due to the fact that effective coordination is connected to the characteristics of the movement and the body perception of its position in space in relation to the process of arranging and harmoniously organizing movements until t. On the post-tests, every research component revealed a substantial difference between the two groups, with the experimental group that competed in exercise while wearing glasses winning (Al-Jubouri and Ammar Shihab, 2008) [4].

The exercises employed by this group emphasized the integration and engagement of multiple motor sentences and activities across various performances to ensure effective implementation. (Ali Saloum, 2004), asserts that coordination relies regarding the integrity and precision of muscle and nerve functions and their integration in a single action. Consequently, the research objective concerning the enhancement of visual skills was accomplished. The conditional competitive exercises implemented by this group, characterized by their composition and diversity, offer multiple stimuli of varying intensities within a single complex skill exercise. This approach requires the football player to respond with high accuracy to these stimuli, indicating a process of neuromuscular organization within the body.

According to (Talha Hussam Al-Din *et al*.1998), who verified that coordination is a reaction to stimuli, there is a connection between certain stimuli and the performance of skill activities. This implies an organized arrangement within the motor system, initiated by the transmission of nerve signals. Distinctly a classification based on various control systems, progressing through cognitive systems and culminating in motor responses (Sari Ahmed and Norma Abdel Razzaq, 2001) highlighted the capacity of the nervous system to give numerous commands simultaneously or in rapid succession. It also emphasizes the individual's ability to coordinate the various body parts engaged in executing a specific motor task, seamlessly integrating these components into a unified movement. The objective of the research can be accomplished concerning cognitive capabilities.

The researcher ascribes the improvement of critical skills to the impact of optical glasses on motor abilities and concentration during competitive activities. Moreover, the mentality of archers is essential, as achieving proficiency in any endeavor requires concentration and attention to physical skills. Every sport has unique skills that demand focus to reach peak performance, as "the level of skill abilities evolves alongside the advancement of physical abilities" (Abu Al-Ala Ahmed, Ibrahim Shaalan, 1997) [2].

Also, “physical abilities are one of the important factors upon which the success of performance is based to reach the sports levels, and the development and promotion of these special abilities is closely linked to the process of developing motor skills” (Adi Abdul Hussein Karim, 2005) [8].

And these differences show us the rise at level of specific motor abilities. The investigator was keenly focused on the skill of visual perception and mental ability, which resulted in a clear and noticeable development of basic skills. Where there was an agreement in terms of perspectives between the researcher and the expert (Al-Takriti and Al-Hajjar 1986) [12] that accuracy becomes more effective positively with the development of other fitness elements.

The notable advantages observed in the post-tests for the experimental group are also ascribed to the specificity of the competitive exercises utilizing optical spectacles. These

exercises are similar to the precise motor and technical paths that an archer take while performing the skills. This is due to the fact that many technical movements are unsuccessful due to weak technique. While these exercises are motor precision workouts in and of themselves, it is important to take into mind the speed at which these exercises are completed in a manner that is compatible with the rate that is required while doing a skill during competition. The research study has successfully culminated in the refinement of essential skills accuracy (Patty, Eric, 1982) [3].

17. Conclusion

- The use of optical glasses in competition improves archers' visual abilities.
- Archery players' mental and skill abilities are enhanced by the competition approach that utilizes optical glasses, which has a favorable effect on visual capabilities.
- The competitive approach utilizing optical glasses optimizes the allocation of time and effort in the cultivation of each individual's capabilities and proficiencies.

18. Recommendations

- Highlighting the use of competitive training with optical spectacles for football players, since it enhances performance metrics.
- Utilizing optical spectacles in competitive activities to foster new requirements, including a tactical dimension, in different contexts.
- The implementation of competition activities utilizing larger optical glasses enhances all performance metrics.
- Using conditional competition exercises, conduct research and investigations that are comparable to the previously mentioned.

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