

Effect of Visual Exercises on Some Visual Abilities, Attention and Level of Performance of Some Attack and Parry Skills in Fencing Sport

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Abstract: The objective of this research was to make a layout of a suggested training program for visual exercises and to identify its effect on visual abilities viz. fixed and mobile precision, perception of depth, perception of external awareness, visual tracking, the level of physical and skill performance, attention, the level of skill performance of some simple and composed direct and indirect attacks, parry and riposte. The researcher used the experimental method using pre and post- measurements on one experimental group of 12 female junior fleuret fencers at the Egyptian Fencing Club in season 2009/2010. Results showed that the suggested training program for visual exercises led to positive effects on all variables of visual abilities, the physical-skill level, attention and the level of skill performance of some attack, parry and riposte skills in the sport of fencing.

Key words: Fencing • Visual abilities

INTRODUCTION

Visual training in the sports field is a relatively small zone in the sports performance system. However, it is greatly important. Recently, it has been taken into interest widely, increasingly and actively [1]. Trainers and sports scientists have constantly been looking for modern training methods on purpose to improve physical performance and visual training is one of such modern techniques that is a creative series of eye exercises for improving the main visual functions that are important for athletes in all competitive sports [2]. Visual effects can be studied through two main specific keys those are internal effects of eye that means the efficiency and strength of vision and the related components of the inner eye used in the medical field and the external effects that is improving all things related to the sports field that include improving fixed and mobile visual precision, external awareness and visual concentration used greatly in the sports field that brings about more results than expected [3].

Fencing is one of the sports that need visual sense to determine the distance on performing different motor skills for marche, retraite, thrust, attack, parry and riposte to reach the exact fencing distance for the beginner

depending on visual sense of fencing distances between him and his competitor [4]. Attention is one of the main requirements for good performance in any physical sorts [5]. The researcher indicated that the sport of fencing needed a high level of attention that becomes an important trait that characterizes each skill of attack and parry.

Through her scientific and practical experience in the sport of fencing, the researcher noticed that there was a low level in performing skills of attack, parry and riposte of some simple direct attacks, direct and indirect thrust, disengagement, composed attack, one-two vest attack, double circular attack, sixte-quarte direct simple parry, circular parry and riposte in female junior fleuret fencers at the Egyptian Fencing Club. This is may be because of using traditional exercises being followed in the training process that effects negatively on the level of visual abilities, attention and the level of skill performance of some simple and composed attacks, parry and riposte, consequently, it reflects directly on performing attack, parry and riposte skills. Therefore, the researcher had to make a layout of a suggested training program for visual abilities, attention and the level of performance of some attack and parry skills in the sport of fencing.

Research Objective: Making a layout of a suggested training program for visual exercises and to identify its effect on the following:

- Some visual abilities such as fixed and mobile visual precision, depth perception and external awareness and visual tracking.
- Physical-skill level and attention.
- The level of skill performance of some simple, direct, indirect and composed attacks, parry and riposte.

Research Hypotheses:

- There are statistical significant differences between the pre and post-measurements of the research group in some visual variables in favor of the post-measurement.
- There are statistical significant differences between the pre and post-measurements of the research group in some physical, skill and the level of attention tests in favor of the post-measurement.

- There are statistical significant differences between the pre and post-measurements of the research group in the level of skill performance of some skills of simple and composed attack, parry and riposte in favor of the post-measurement.

MATERIALS AND METHODS

The researcher used the experimental method by using the pre and post-measurements on one group. The research people was selected intentionally from female fencing juniors at the Egyptian Fencing Club in 2009-2010season. They were 32 juniors under 15 years of age. The research sample was selected randomly and included 12 junior fleuret fencers who were subjected to the suggested training program of visual exercises. The rationalizing sample included 20 junior fleuret fencers from the research people but outside the main research sample. The research sample was equalized in anthropometric variables, visual abilities, physical-skill tests, the level of attention and the level of performance of some attack, parry and riposte skills.

Table 1: Arithmetic mean, standard deviation and skewness coefficient of the research sample in variables under investigation (N=12)

	Variables	Units	M	SD	SC
Anthropometric measurements	Age	Year	14.12	0.624	- 0.523
	Height	Cm	148.75	5.690	0.139
	Weight	Kg	44.00	3.590	- 0.282
Visual abilities	Fixed visual precision test	Score	37.00	3.900	- 0.373
	Mobile visual precision test	Score	33.83	4.800	- 0.456
	Depth perception test	Score	2.91	1.440	0.607
	External awareness test	Score	3.75	1.420	0.981
	Visual tracking test	Score	4.33	1.070	1.310
Physical-Skill tests	Eye hand coordination test	Score	12.33	2.870	1.090
	Eye arm-attack coordination test	Sec	4.33	1.070	0.255
	Arm extension speed and precision test	Sec	1.25	1.500	- 0.480
	Direct thrust speed and precision test	Score	77.08	7.210	0.199
	Disengagement speed and precision test	Score	71.66	8.070	- 0.029
	One-two attack speed and precision test	Score	67.50	7.530	- 0.096
	Double circular attack speed and precision test	Score	70.83	9.000	- 0.185
	Sixth parry and riposte speed and precision test	Score	92.08	5.410	- 1.030
	Quarte parry and riposte speed and precision test	Score	82.08	5.820	0.241
Attention test	Circular parry and riposte speed and precision test	Score	88.75	4.820	- 0.136
	First attention level test	Score	20.75	5.310	- 1.420
	Second attention level test	Score	24.41	5.350	- 0.534
	Third attention level test	Score	27.58	4.750	- 1.210
Performance skill level	Total sum	Score	72.75	7.670	0.132
	Performance skill level of direct thrust	Score	1.95	0.620	0.528
	Performance skill level of disengagement attack	Score	1.50	0.522	0.574
	Performance skill level of one-two vest attack	Score	1.14	0.291	0.174
	Performance skill level of double circular attack	Score	1.41	0.503	1.100
	Performance skill level of sixth parry and riposte	Score	1.91	0.633	0.048
	Performance skill level of quarte parry and riposte	Score	1.29	0.334	0.735
Performance skill level of circular parry and riposte	Score	1.66	0.443	0.139	

Data in Table 1 indicated that skewness coefficient (SC) was between ± 3 confirming that the main research sample was in homogeneity in respect of variables under investigation.

Tools of Collecting Data

Tools and Equipment: Restameter to measure height, medical balance to measure weight, stop watch to measure time, tennis balls, hoops containing balls of different colors, colored robes, colored signs, colored stick, foil, mask, fencing scoring board, chalk, chairs, adhesive labels, board of numbered circles to measure coordination, foil electrical judging apparatus.

Research Tests: The researcher reviewed scientific references and previous studies and through the internet and piloting the opinion of experts in the field of fencing to define important visual abilities and their physical-skill tests which were as follows:

Tests of Visual Abilities: Fixed and mobile visual precision, depth perception test, external awareness test and visual tracking [6].

Physical-Skill Tests: Eye-hand coordination test [7], eye-attacking arm coordination test, attacking arm extension speed and precision test, direct thrust speed and precision [8], disengagement attack speed and precision test, one-two double attack speed and precision test [9], double circular attack speed and precision test, sixth parry and riposte speed and precision test, quarte parry and riposte speed and precision test [8], circular parry and riposte speed and precision test.

Attention Level Test: The test used was prepared by Poster, M. (1982) and cited from Abdel Samie [10] to measure the three attention levels. The first level consisted of 33 pairs of alphabets which were identical in pronunciation but in different form. It was graded in 33 scores. The second level contained 33 pairs of alphabets of identical form but of different pronunciation and was graded in 33 scores. The third level consisted of 33 pairs of alphabets of identical pronunciation but of different form and was graded in 33 scores. The total test contained 99 scores [10] Scientific coefficients of the research tests were computed as the reality was computed on a sample of 20 juniors from the research people but outside the main research sample by using the reality of differentiation; a distinguished group (high quartile) and

non-distinguished group (low quartile) of 5 juniors each. The computed (U) value ranged from 0.000 to 3.000 at a significance level of ≥ 0.05 ranged from 0.009 to 0.033. Stability was computed by applying and re-applying the test on a sample of 12 juniors from the research people but outside the main research sample. The stability coefficient ranged from 0.727 to 0.965, meaning that they were stable.

The Main Study: The suggested training program by using visual exercises was applied from 18/10/2009 to 16/12/2009 for 8 weeks with adding public holidays at the rate of 2 training units per week.

Statistical Treatments: The arithmetic mean, standard deviation, skewness coefficient, correlation coefficient, reality of differentiation, T-test of significance of differences and percentage of improvement were used.

RESULTS AND DISCUSSION

Data in Table 2 illustrated that there were statistical significant differences between the pre and post-measurements in the research group in visual variables, physical-skill tests, level of attention and the level of skill performance.

Data in Table 2 indicate that there are statistical significant differences between the pre and post-measurements in all variables of visual abilities in favor of the post-measurement and the computed T value at the level of 0.05 ranged from 4.934 to 15.353 and the proportion of improvement ranged from 11.08 to 123.36.

The researcher related this improvement in visual abilities to the effectiveness, multiplication and variety of visual exercises and consequently they positively affected the level of visual abilities. Meanwhile, graduation in performing such exercises made fencers feel their progress and the difference in the nature of their performance.

This agreed with prior study [11] that it is important to use visual exercises through eye training programs leading to develop visual abilities in single and team sport players. Hence, the first hypothesis stating that there are statistically significant differences between the pre and post-measurements in the research group in visual abilities in favor of the post-measurement is verified.

Data in Table 2 show that there are statistical significant difference between the pre and post-measurements in all physical-skill test variables in favor of the post-measurement and the computed T value at the

Table 2: Significances of differences between the pre and post-measurements in the research group in variables under investigation (N = 12)

Variables	Units	Pre-measurement		Post-measurement		T- value	Improv-ement %	
		M	SD	M	SD			
Visual abilities	Fixed visual precision test	Score	37.000	3.900	42.000	3.610	+15.353*	13.51
	Mobile visual precision test	Score	33.830	4.800	37.580	3.360	4.934*	11.08
	Depth perception test	Score	2.910	1.440	6.500	1.440	10.010*	123.36
	External awareness test	Score	3.750	1.420	7.410	1.240	8.482*	97.60
	Visual tracking test	Score	4.330	1.070	8.000	1.120	10.319*	84.75
Physical-skill tests	Eye-hand coordination test	Score	12.330	2.870	19.330	0.778	7.668*	56.77
	Eye-attacking arm coordination	Sec.	4.330	1.070	2.330	0.492	9.381*	46.18
	Arm extension speed and precision test	Score	1.250	0.150	0.516	0.203	10.119*	58.72
	Direct thrust speed and precision test	Score	77.080	7.210	150.410	22.600	10.817*	95.13
	Disengagement speed and precision test	Score	71.660	8.070	140.410	19.700	10.693*	95.93
	1-2 double attack speed and precision test	Score	67.500	7.530	126.660	14.510	12.866*	87.64
	Double circular attack speed and precision test	Score	70.830	9.000	140.410	17.380	11.954*	98.23
	Sixth parry and riposte speed and precision test	Score	92.080	5.410	131.250	12.450	12.285*	42.53
	Quarte parry and riposte speed and precision test	Score	82.080	5.820	120.830	10.400	12.318*	47.21
	Circular parry and riposte speed and precision test	Score	88.750	4.820	124.580	12.690	9.225*	40.37
Attention test	First attention level test	Score	20.750	5.310	29.750	2.300	5.236*	43.37
	Second attention level test	Score	24.410	5.350	30.580	1.720	4.107*	25.27
	Third attention level test	Score	27.580	4.750	32.660	0.651	3.616*	18.41
	Total sum	Score	72.750	7.670	93.000	4.020	8.194*	27.83
Skill performance level	Skill performance level of direct thrust	Score	1.950	0.620	3.450	0.450	7.348*	76.92
	Skill performance level of disengagement	Score	1.500	0.522	2.870	0.569	6.698*	91.33
	Skill performance level of double numerical attack	Score	1.140	0.291	2.750	0.398	10.134*	141.22
	Skill performance level of double circular attack	Score	1.410	0.503	3.250	0.452	8.082*	130.49
	Skill performance level of sixth parry and riposte	Score	1.910	0.633	3.680	0.303	8.101*	92.67
	Skill performance level of quarte parry and riposte	Score	1.290	0.334	3.000	0.301	11.881*	132.55
	Skill performance level of circular parry and riposte	Score	1.660	0.443	3.500	0.238	11.192*	110.84

Tabulated T at 0.05 level = 2.201

level of 0.05 ranged from 7.668 to 12.866 and the proportion of improvement ranged from 40.37 to 98.23 and for the level of attention ranged from 3.616 to 8.194 and the proportion of improvement ranged from 18.41 to 43.37.

The researcher related this progress in the post-measurement over the pre-measurement to visual exercises that helped improve the speed of performance and precision and saved effort as the direct and indirect simple and composed attack, parry and riposte need precision to hit the target in the correct position. This agreed with prior studies [12, 13] which stated that speed, coordination and precision were the most important physical characteristics for female fencers.

Also, visual exercises led to improve the level of attention between the pre and post-measurements in favor of the post-measurement as concentration of attention to react is the most important component to succeed in the sport of fencing and training on the control of attention and reaction are the most important skills to succeed in performance [14]. The most important aspects of

psychological preparation for the sport of fencing is attention that support all mental functions and it became a prevailing trait characterizing all fencing skills such as attack, parry and riposte and all situations of flash speed and fencing should have a great deal of attention provided that the movement or action should not exceed the legal range and space [4].

This agreed with previous study [11] which confirmed that there were statistical significant differences between the pre and post-measurements in favor of the post-measurement verifying the second hypothesis stating "there are statistically significant differences between the pre and post-measurements in some physical-skill tests and the level of attention in favor of the post-measurement.

Data in Table 2 show that there are statistically significant differences between the pre and post-measurements in the level of skill performance of some attack, parry and riposte skills in favor of the post-measurement and the computed T value at the level of 0.05 ranged from 6.698 to 11.881 and the proportion of improvement ranged from 76.92 to 141.22.

The researcher related this improvement in the post-measurement over the pre-measurement in the level of skill performance of some direct, indirect, simple and composed attacks, parry and riposte to the program that contained exercises aiming at improving and fixing the level of skill performance by using various exercises and following the scientific method and going from easy to difficult matters in this concern. That is the sport of fencing is of a quick rhythm in performance between attack, parry and riposte actions. Therefore, it is important to have more visual abilities in female junior fleuret fencers to get speedy effective and precise attack and parry movements when performing them.

This agreed with a former study [6] which stated that visual exercise program had positive effectiveness in improving the level of skill performance of attack and parry skills and visual abilities. This verifies the validity of the third hypothesis stating “there are statistically significant differences between the pre and post-measurements in the level of skill performance of some simple and composed attacks, parry and riposte in favor of the post-measurement.

CONCLUSION

In the light of the research results the following outlines are concluded:

- The suggested training program for visual exercises has positive effect on all variables of visual abilities, physical-skill tests, the level of attention and the level of performance of some simple direct and indirect and composed attacks, simple direct and indirect and circular parry and riposte.
- The suggested visual exercises for improving the level of visual abilities, the level of attention and the level of skill performance of simple direct and indirect and composed attacks, the simple direct and circular parry and riposte have positive effect as shown in the statistically significant differences between the pre and the post-measurements in favor of the post-measurement.
- The proportion of improvement of visual abilities ranged from 11.08 to 123.36, from 40.37 to 98.23 for physical-skill tests, from 18.41 to 43.37 for the level of attention and from 76.92 to 141.22 for the level of skill performance.

Recommendation: In limits of conclusions, the researcher recommended the following:

- Visual exercises should be activated and used regularly together with the other physical, skill and planning measurements.
- Coaches should consider visual ability tests while selecting fencers.
- The suggested visual exercises program should be used as it has a positive effect on improving the level of attention and the level of skill performance in fencing.

REFERENCES

1. Zeiman, A., Z. Hascelik, O. Basgaze, K. Turker, S. Narman and R. Ozker, 1998. The effects of physical training on physical fitness tests and visual reaction time of volleyball player. *J. Sports Medicine and Physical Fitness*, 29: 234-239.
2. Walker, I., 2001. Why visual training programs for sport do not work. *Sport Sci. Mar.*, 19: 203-220.
3. [http://www. Avoca. Org. homecourt.htm](http://www.Avoca.Org.homecourt.htm).
4. Jibril, F.M., M.A. Hassan, W.M. Darwish and S.A. Saqr, 2000. Fencing Between Theory and Application. *Thought Forum, Alexandria*, pp: 26-28.
5. Shamoun, M.A., 1999. *Sports Psychology Science and Psychological Measurement*. Publication Book Center, Cairo, pp: 363.
6. Khattab, A.I. and M.M. Rashad, 2005. Specific Visual Skills Training Programme Improves Fencing performance Level Visual Variables and Static balance. 10th Annual Congress of the European College of Sport Science, Belgrade, pp: 26-30.
7. Hassanein, M.S., 2001. *Measurement and Evaluation in Physical and Sport Education*. Arab Thought House, 4th Ed., Cairo, pp: 215.
8. Fawzi, N.A., 1996. The Effect of a suggested program for some physical components on the skill performance. Ph.D. Thesis, Faculty of Physical Education for Boys, Helwan University, Egypt, pp: 129-131.
9. Ahmed, S.M.H., 2003. The Effect of a training program by using exercises of competition on the level of performance in the sport of fencing. Ph.D. Thesis, Faculty of Physical Education, Assiut University, Egypt, pp: 138-142.
10. Abdel Samie, B.A., 1998. The Effect of a suggested program for developing kinesthesia on some attention aspects and the numerical level of 100 m hurdle race. Master thesis, Faculty of Physical Education for Girls, Helwan University, Cairo, Egypt, pp: 111-114.

11. Hemat, D.M.M., 2002. The Effect of eye training program in fencing on some physiological variables related to tension and the level of performance. Ph.D. Thesis, Faculty of Physical Education for Girls, Helwan University, Cairo, Egypt, pp: 61.
12. Abdel Aziz, I.N., 2008. Technical Fundamentals of Fencing. Publication Book Center, 5th Ed, Cairo, pp: 39-43.
13. Al-Sukary, A.H., 1993. Fencing Guide. Knowledge Science House, Cairo, pp: 20-21.
14. Rateb, O.K., 2000. Training Psychological Skills- Applications in the Sports Field. Arab Thought House, Cairo, pp: 269.