

Visual abilities' relationship with some attention's sides of kinetic acting's accuracy of female fencers

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Introduction

Act to what Allah gave a human of various abilities and energies as a trial to achieve a big range of benefit from modern scientific theories in sport field considered one of the most important factors which the scientific research depends on, for developing societies to reach top levels in all fields generally and sport field especially. Education and sport one of fields which effect on human as important and main factor in building person and prepare him totally on scientific basis. Person's ability of making effort depending on many variables, where visual variables come as first.(4)

American Association of Ophthalmology (2004) sees that we can study visual effects via two main determined: eye internal effects (Hard Ware) and eye external effects (Soft

Ware), the internal effects of eye mean eye internal efficiency such sight strength, efficiency, and all things which related to eye internal components and other. That used in medical field. While eye external effects mean improving the efficiency of external eye via improving all things which related to qualitative performance in public life and in sport field in particular. These effects includes improved visual accuracy (fixed and kinetic), external awareness, visual focus and other, which used in sport field significantly and its results more than expected. (25)

Abd El Haleem Mansy & Afaf Mohamed Abd El Monem 2007, indicated to that Attention is functional process which presses person's feeling towards new behavioral

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situation or some parts of cognitive field if this situation was familiar to him. (16:365)

Also, attention is process of testing some of many possible incomes which indicates to limited ability of person' attention of environmental stimulus. The surrounding environment full of different audio and visual stimulus (20)

To achieve psychological preparing for athlete as one of high mental processes which depend on many other mental processes, these processes required in sport kinetic skills performance, such as perception and expectation in performing and thinking (1:289)

Attention considered one of important topics which related to kinetic performance where this important component plays effective role in doing achievement as borderline among these teams when they are equal in their physical, skill, planning tendency. (3)

Kinetic acting is highest phase of kinetic performance phases in sport activity, where

the players acts with complicated information of movement with knowing all mental processes, i .e. Happening early prediction for movement and acting after it, in this system there are several kinetic programs in brain (knowledge of changing programs) draw program, remove program, and discover another programs, so the player working here on identifying prediction with performance (21:50)

In fencing sport, the fencer exposed to various stimulus during fighting, which requires quick responses, because he deals within open surrounding environment, where he need to high ability of acting help him choice a suitable solution for each stimuli, thus ability of optimal kinetic acting (20:139)

Fencing sport depends on a lot of visual variables, which return to the small area of goal and playground. This requires that player should touch competitor with speed and accuracy to get correct touch according to vary and quick

plans which mainly depends on different and compound reactions among competitors, so, the fencer should know when make gyp (deception) movement or a stab against the competitor, and attention to give importance for each movement issued by the competitor by armed arm or front leg or any movement by fencing weapon, also, prediction and perception what will happen, and analyzing then making decisions and appropriate kinetic acting according to situation which he face. (5:5) (20:132)

The importance of research is identifying significance of the relationship between visual abilities and attention's aspects because they give clear indicators of their importance in fencing, which reflects on kinetic acting accuracy in this sport. So, the researcher studied the relationship between visual abilities and some attention's aspects as indicators of kinetic acting accuracy in fencing sport.

Obiective of this Research

The current research aims to identify visual abilities and its relation with some attention aspects as indicator of kinetic acting accuracy for female fencers.

The research questionnaire:

What is the level of the female fencers' visual abilities?

What is the level of some attention's aspects (Attention intensity – Attention stability – Attention distribution – Attention conversion – Attention focusing)?

What is the level of kinetic acting accuracy of female fencers?

Research hypothesis:

There is statistically signified correlated relationship between visual abilities and attention aspects as an indicator of kinetic acting accuracy of female fencers.

Research terms:

Visual ability: a specialized program aims to improve the relation between eyes and brain via developing abilities and skills of visual sight using exercises graded in difficulty to work on improving correspondence and flexibility

of eye muscles with ability of controlling in these muscles' movements (9)

Attention:

Is a psychological and mental process which selects a number of stimuli which converging on the glands, focus on them and reject the other stimuli.(8-95)

The kinetic acting:-

Is the ability to conduct the selected kinetic response which suitable for facing this stimuli as a result of frequency and experience. (2:50)

Earlier studies:-

1- study of Mona Mohamed (2013) (18) conducted a study entitled "Attention, visual perception and their relationships to sport performance in fencing" , the study aimed to find Attention and visual perception's levels between female and male players, the relationship between visual perception and attention determines performance dimensions for fencers. The researcher used descriptive method on sample consist of 16 players during season 2010/2011, the sample

were divided to 8 female and 8 male who participated 11th Cairo championship. One of the most important results is existence difference between females and males in stability and visual uniqueness.

2 –study of Maha Ezzat Elshahat Gado(2013)(15) entitled " The effect of interaction between visual perception level and cognitive situation variables in speed and accuracy of identifying the visual patterns (forms) of university students sample, the aim of study was explaining the variation in speed and accuracy of identifying visual forms of university students sample, the sample were selected from faculty of education' students, Tanta University. The researcher used descriptive method, one of the most important results which the researcher reached, is conclusion a tool for measuring visual perception of adults and adolescents.

3 –study of Clark et.al (2012)(6) entitled "High performance vision training improves Batting statistics for

university of Cincinnati Baseball players". The research aims to design vision program and knowing its effect on batting level for Baseball players, the researchers used descriptive method for 6 weeks, one of the most important results that batting average for university of Cincinnati team increased from 0.251% in 2010 to 0.285% in 2011, one of the most important conclusions is that the vision training mixed traditional and technological methods to train athletes eyes and improve their batting skill. Applying vision training as a part of warming up is possible.

4 – Study of Wimshurst et. Al (2012)(22) entitled " visual skill and playing positions of Olympic field hockey players", the research aims to know visual abilities and its relationship with playing positions of Olympic field hockey players. The researchers used experimental method on 21 Olympic field hockey players for pre and post test on (11) visual tasks after (10) weeks, also, the visual

exercises program consists of visual exercises depend on computer, and there aren't any differences in pre test among players in different positions, there is a suggest that the performance in these visual skills was depends on playing position, but after training, an improving in level of all players was noticed, and that confirm possibility of improving visual skills even in public elite not only athletes elite.

5 – Study of Hagemann (2010) (11) entitled "visual perception in fencing. Do the eye movements of fencers represent their information pickup?. The study handled if athletes' eye movement during their observation for fencing attacks reflects their real information which they got via comparing these results with other gained results because of time-locative closing and teaching techniques on sample consist of (15) high-level fencer experts, (15) professional fencers, (32) athletes students where they predicted the targeted area for

(405) fencing attack on computer screen, one of the most important results that high-level fencers especially, focused on upper trunk, also, the participant changed eye movement to nearby body zones, it is not necessary that look behavior represents sending information, but, these studies which applied locative closing model should record eye movements to avoid underestimates information which were represented via covering areas.

6 – **Study of Dogan B (2009)**
(7) entitled "Multiple- choice reaction and visual perception in female and male elite athletes", the study aims to determine multiple-choice reaction and visual perception in female and male students elite. The researcher selected sample consist of (49) athletes (26 men / 23 women) in age average from 18-21 years old in games " Soccer, Basketball, Handball, Volleyball , Gymnastics, fencing and swimming where two tests

were applied to enhance investment of Multiple- choice reaction and visual perception for athletes, Vienna determining choice and visual seeking test. One of the most important results that males have amount of incorrect responses for stimulators less than female athletes, also, individual sports have high amount of responses more than team sports.

Research procedures:-

First: research method:-

The researcher used descriptive method (the correlated relations) which suit the research's nature.

Second: research sample and community:-

The research community included female players in fencing university team, (12) female players, the sample have been selected intentionally of female players in fencing sport, then the research conducted homology process for research sample in the following variables, as shown in table (1)

Table (1)

**The arithmetic average, standard deviation and torsion coefficient
of research sample in descriptive variables (N=12)**

| N | Variables | Measuring unit | Average | Deviation | Torsion | K – S value | Significance |
|---|--------------|----------------|---------|-----------|---------|-------------|--------------|
| 1 | Time age | Year | 20.261 | 0.190 | 0.243 | 0.440 | 0.990 |
| 2 | Length | Cm | 164.55 | 0.931 | - 0.287 | 0.891 | 0.405 |
| 3 | Weight | Kg | 66.76 | 1.076 | - 0.077 | 0.620 | 0.837 |
| 4 | Training age | year | 2.708 | 0.167 | - 0.017 | 0.717 | 0.683 |

At table (1) its clear that the arithmetic average, standard deviation and K-S test value of main variables found that the data follow the equinoctial distribution, and that is clear in torsion coefficient where the values ranged between (- 0.017 to – 0.287), the results of (K-S) test show that there isn't statistical significance among research sample which show homology of research sample, from non-equinoctial distributions, the homology of sample in these variables make the researcher more confident.

Third: research tools:-

1 – Biometric (Optometric) variables tests (visual abilities):-

- Static visual acuity test
- Dynamic visual acuity test
- Depth perception test
- Peripheral vision test
- Visual tracking (12)

- Visual perception test (3: 194), Attachment (1)

2 – Correction test (Pordon & Anfimon): to measure attention's aspects (Intensity – Stability – Distribution – Shifting – concentration). Attachment (2)

3 – Test of kinetic acting accuracy measurement (2), prepared by / Alla Abd Allah Elrawy. Attachment (3)

Fourth: Data collection tools:

The researcher used the following tools:

1 – Devices & tools

- Rest meter to measure length by cm
- Medical scale to measure weight by kg
- Electric control device
- Fencing Masks
- Metal vest
- Sticker signs
- Stop watching

Tests:

The researcher accessed to many tests for optometric variables via referential survey for researches which talk about visual abilities. (3)(5)(12)

Fifth: scoping study:

The scoping study was conducted in the period from To on sample consist of (8) female students out of research main sample and research community.

The aim of scoping study was:

- 1- Making sure of team work and their perception of how tests and the used measurements are performed?
- 2- Avoid mistakes which may happen during main experiment.

3- Check the efficiency of devices and tools which used in research

4 - Knowing tests' time

5 - Conducting scientific coefficients of tests which used in research.

Sixth: scientific coefficient of used tests in research

1 - The credibility:

The researcher used arbitrators' credibility:

First: visual abilities:

The visual abilities and its tests were showed on group of experts in fencing sport specialization field, athletic training and psychology. Attachment (4)

The opinions were as following:

Table (2)

Arbitrators' opinions about abilities' suitability range and the tests which measure abilities, for the sample. (N=10)

| Statement | Totally suitable (5) degree | Quite suitable (3) degree | Not suitable (1) degree |
|---------------------------------|--------------------------------|------------------------------|----------------------------|
| The arbitrators' opinion number | 10 | | |
| Total | 50 | | |
| Percentage | 100% | | |

Table (2) show that percentage of arbitrators' opinions of test suitability for the purpose which it putted for, it is 100%.

Second: Attention aspects:

Table (3)

**Arbitrators' opinions about scale' suitability range for the sample
(N=10)**

| Statement | Totally suitable (5) degree | Quite suitable (3) degree | Not suitable (1) degree |
|---------------------------------|--|--------------------------------------|------------------------------------|
| The arbitrators' opinion number | 10 | | |
| Total | 50 | | |
| Percentage | 100% | | |

Table (3) show that percentage of Arbitrators' opinions about test' suitability for the purpose which it putted for , with 100%.

Thirdly: kinetic acting accuracy:

Table (4)

**Arbitrators' opinions about test' suitability range for the sample
(N=10)**

| Statement | Totally suitable (5) degree | Quite suitable (3) degree | Not suitable (1) degree |
|---------------------------------|--|--------------------------------------|------------------------------------|
| The arbitrators' opinion number | 7 | 3 | |
| Total | 44 | | |
| Percentage | 88% | | |

Table (4) shows that percentage of Arbitrators' opinions about test' suitability for the purpose which it putted for, with 88%.

2- Stability:

The researcher used (Test-re-Test) method to check test

stability, in the period from To , then the tests were applied for second time on the same sample with one week as a difference between first and second application. Table (5)(6)(7) show that.

Table (5)

Correlation coefficient between first and second application for Optometric tests. (N=8)

| N | Tests | Measurement unit | FM | | SM | | "R" calculated value | Self credibility | Significance |
|---|-----------------------|--|--------|-------|-------|-------|----------------------|------------------|--------------|
| | | | M1 | S1 | M2 | S2 | | | |
| 1 | Static visual acuity | Grade | 33.125 | 0.834 | 33.25 | 0.707 | 0.70 | 0.836 | Significant |
| 2 | Dynamic visual acuity | Grade | 29.25 | 1.035 | 29.37 | 1.302 | 0.80 | 0.894 | Significant |
| 3 | Depth perception | Correct touch number during 10 attempts | 2.875 | 0.640 | 2.75 | 0.707 | 0.85 | 0.921 | Significant |
| 4 | Peripheral vision | Correct touch number during 10 attempts | 3.125 | 0.640 | 3.250 | 0.886 | 0.92 | 0.959 | Significant |
| 5 | Visual tracking | Identifying number of balls during performance | 3.125 | 0.641 | 3.50 | 0.925 | 0.88 | 0.938 | Significant |
| 6 | Visual perception | Grade | 6.875 | 0.834 | 7.125 | 0.834 | 0.85 | 0.921 | Significant |

(R) tabular value at level (0.05) = 0.058

Table (5) shows that there is statically significant correlation between test-retest in all optometric tests where (R) calculated value ranged

between (0.70 – 0.92) which it bigger than R tabular value.

Table (6)
Correlation coefficients between first and second application for
attention aspects tests. (N=8)

| N | Tests | Measurement unit | FM | | SM | | "R" calculated value | Self credibility | Significance |
|---|-------------------------|--|--------|-------|--------|-------|----------------------|------------------|--------------|
| | | | M1 | S1 | M2 | S2 | | | |
| 1 | Intensity Attention | Time | 254.88 | 4.96 | 255.12 | 5.02 | 0.88 | 0.938 | Significant |
| 2 | Stability Attention | Time | 0.575 | 0.070 | 0.600 | 0.053 | 0.86 | 0.927 | Significant |
| 3 | Distribution Attention | Time | 16.62 | 0.744 | 16.625 | 0.744 | 0.90 | 0.948 | Significant |
| 4 | Shifting Attention | Time | 10.87 | 0.834 | 11.125 | 0.991 | 0.80 | 0.894 | Significant |
| 5 | Concentration Attention | The biggest number of attempts during 1 minute | 6.125 | 0.834 | 6.250 | 0.707 | 0.85 | 0.092 | Significant |

R tabular value at level (0.05) = 0.058

Table (6) shows that there is statically significant correlation between test-retest in all attention aspects tests where (

R) calculated value ranged between (0.80 – 0.90) where it bigger than R tabular value.

Table (7)
Correlation coefficients between first and second application for
kinetic acting accuracy test. (N=8)

| N | Tests | FM | | SM | | "R" calculated value | Self credibility | Significance |
|---|-------------------------|-------|--------|--------|-------|----------------------|------------------|--------------|
| | | M1 | S1 | M2 | S2 | | | |
| 1 | kinetic acting accuracy | 5.875 | 0.6408 | 5.7500 | 0.707 | 0.84 | 0.916 | Significant |

R tabular value at level (0.05) = 0.058

Table (7) shows that there is statically significant correlation between test-retest in kinetic acting accuracy test where (R)

calculated value was (0.84) where it bigger than R tabular value.

Table (8)

The arithmetic average and standard deviation of female players' responses for visual abilities tests. (N=12)

| Dimensions Statically processing | Static visual acuity | Dynamic visual acuity | Depth perception | Peripheral vision | Visual tracking | Visual perception |
|---|-------------------------------------|--------------------------------------|-----------------------------|------------------------------|----------------------------|------------------------------|
| Arithmetic average | 35.916 | 31.00 | 3.833 | 3.750 | 4.583 | 7.500 |
| Standard deviation | 0.7929 | 0.953 | 0.8348 | 0.6215 | 0.5149 | 0.7977 |

As shown in table (8), responses' averages for visual abilities of female fencers come in high level, because they got high averages.

This answered the first question "What is the level of the female fencers' visual abilities?"

Table (9)

The arithmetic average and standard deviation of female players' responses for attention aspects test. (N=12)

| Dimensions Statically processing | Intensity Attention | Stability Attention | Distribution Attention | Shifting Attention | Concentration Attention |
|---|--------------------------------|--------------------------------|-----------------------------------|-------------------------------|------------------------------------|
| Arithmetic average | 272.00 | 0.7500 | 15.41 | 8.91 | 5.90 |
| Standard deviation | 2.088 | 0.0522 | 1.676 | 0.729 | 0.729 |

As shown in table (9), responses' averages for attention aspects differed from

aspect to another where sample attention intensity raised, stability get near to correct (1),

and concentration increased, while the degree of attention distribution and conversion decreased.

This answered the second question "What is the level of some attention's aspects

(Attention intensity – Attention stability – Attention distribution – Attention conversion – Attention focusing) of female fencer players?

Table (10)

The arithmetic average and standard deviation of female players' degrees for kinetic acting accuracy. (N=12)

| Dimensions Statically processing | The arithmetic average | The standard deviation |
|---|-------------------------------|-------------------------------|
| Kinetic acting accuracy | 8.166 | 0.937 |

As shown in table (10), averages of female players' degrees in kinetic acting accuracy test came high, and this answered the third question "What is the level of kinetic acting accuracy of female fencers?"

As shown in table (11) there is statistically signified correlated relationship between (Attention intensity, Attention stability and Attention concentration) and between (Dynamic visual accuracy, External awareness and visual tracking) where athletic superiority in fencing sport requires high degree of attention concentration, relaxing, skills visualization and mental retrieval which lead to put better mental visualization for good performance and help regular practices.(19)

This agree with study of Mona Mohamed (18), Attention and visual perception are important for fencing, also, the affect on players performance level, as shown in the same table there is positive statically significant correlation relationship between visual abilities and kinetic acting accuracy. Also, agree with Broderick & Littlefield (1998) that many studies confirms that professional players have visual abilities better than non

athletes and the tests which applied on athletes sample show that these professional players have awareness and Sensory reception deeper and they have better ability to find harmony between eye and hand, which help them in learning how predict and response quickly to complex visual cases. (14:403)

This also agree with study (6)(7)(11)(20). As shown in table (11), there is statistically signified correlated relationship between some attention aspects (Attention intensity, Attention stability, Attention distribution and kinetic acting accuracy).

While correlation between attention conversion and kinetic acting accuracy, was weak, the researcher attribute that for attention conversion level of sword female fencers is low, and this returns to difference in performance requirements in each type of three weapon types, of degree of each attention aspect. This agree with study (10:148) that

the values which achieved by player in attention aspects are a result for effect of practicing each type of three weapons types in attention aspects for players in this type of fencing sport.

We conclude that fencing sport distinguished by it is one of the activities which involve kinetic skills performed in different open environmental situations where Practitioners need to select attention then changing the performance requirements by changing performance's conditions. The Practitioner will convert attention as a response for some external factors- performance environment- and some internal factors – player concerned. The player shall transfer in performance situations from a wide attention to a narrow one and from an internal attention to an external one. This is known as attention range and direction. (10:136) The player can achieve attention timing skill while performing which enables him to achieve fencing performance response in the light of several

internal and external stimulus which lead to kinetic acting accuracy. This agrees with the study of (9)(17). This goes out with the research hypothesis where there is statistically signified correlated relationship between visual abilities and some attention aspects as a sign of female fencers' kinetic behavior.

Conclusions:

1– There is statistically signified correlated relationship between visual abilities and kinetic acting accuracy for female fencer players.

2– There is statistically signified correlated relationship between attention aspects and kinetic acting accuracy for female fencer players.

3– There is statistically signified correlated relationship between visual abilities and attention aspects.

4– There is statistically signified correlated relationship among attention aspects and kinetic acting accuracy.

Recommendations:

- 1 – Studying the effect of development of performance technical sides of fencing sport on developing visual abilities and attention aspects for fencing female players.
- 2 – Interesting in measuring visual skills periodically to stand on visual level of fencers.
- 3 – Establishing laboratory for visual measurements inside physical education faculties' laboratories.
- 4 – Conducting such as this study on sample of players.

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