REACTION TIME AND SELF-ESTEEM AMONG PROFESSIONAL FENCING PLAYERS

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Abstract

Purpose: The present study was designed to determine the simple, choices reaction time and self esteem among professional fencing players. Methods: Twenty one participants from Jordan national fencing team completed simple, choices reaction time using Multi-Operational Apparatus for Reaction Time (MOART) system and the Rosenberg self-esteem Arabic scale. Results: The results indicated that the simple and choice reaction time weren't fast and the player's self-esteem was high. Moreover there were no significant differences observed in self-esteem simple, choice reaction time regarding gender. Furthermore, participants' self-esteem levels were positively correlated with their simple reaction time

Key words: *self-esteem, simple and choices reaction time, fencing.*

Introduction

The great speed of the action in combat sports makes very difficult to react quickly without mistakes. In many of the games we need a lot of precision and focus and self-confidence and also speed in the time of reaction. Fencing is a sport of skill full Sword duelling. Men"s fencing includes a foil (17 ounce, 43-inch-long Sword), and epee (27 ounces, three-sided S word), and saber (flat, thin blade similar to the foil). Women fence with a foil only (Roger, 2009). Fencers wear protective gear like a wire – mesh mask with a cloth bib. a jacket and trousers mad of closely woven material , and a glove for the weapon's hand . Touching the opponent scores a point. For women, four touches win the match (called "bout"). For men, five touches win the bout (Roger, 2009). Reaction time is a measure of how long it takes a performer to prepare and initiate an intended movement. Simply, how quickly the performer can initiate a required action. It is considered by some as the measure of your decision time because it does not include any movement but only the time it take for one to make a decision whether to move or not to move. Reaction time research has indicated that expert players make faster decisions than non-experts of a sport (Erickson, 2007). Moreover coaches and teachers who provide sport specific situational training or practices actually decreases (reaction time become quicker) the performer's time to make a decision when the situations arise in a contest and/or game. Reaction time experiments can be classified into three main categories simple, choice, and discrimination reaction time situations. A simple reaction time environment is where the performer is involved in one signal and only one response movement. A choice reaction time environment is where the performer is involved in a situation where there is more than one signal and each signal has a designated response movement that mean there are multiple stimuli and multiple responses and the reaction must correspond to the correct stimulus (Kosinski, 2012). A discriminate reaction time environment is where the performer is involved in a situation where there is more than one signal but only performs a response movement to a specific signal. Reaction time (RT) is usually on the order of 200 ms. The processes that occur during this brief time enable the brain to perceive the surrounding environment, identify an object of interest, decide an action in response to the object, and issue a motor command to execute the action. These processes span the domains of perception and movement, and involve perceptual decision making and motor planning. (Wong et al , 2015). Self-esteem maintenance was an important reason for self-positivity bias. High self-esteem is characterized by a general fondness and love for oneself, whereas low self-esteem is associated with mildly positive or ambivalent feelings toward oneself. Self-esteem has been linked to a general self-enhancement bias derived from self-ratings of traits representing the Five Factor Model (FFM). High self-esteem has been found to be related positively to perceiving the self as better than average on both communal and agnatic traits . The tendency for individuals to evaluate the self in more favorable terms than they evaluated people in general was particularly pronounced among those with high self-esteem (Lin et al., 2003). Self-esteem is considered one of the most important concepts in self study and the most important studies that have a big effect on human behavior. Self esteem is the human self satisfaction or the positive attitude toward him. This contains a high degree of rationality and self esteem which leads to the filling of human quality and knowledge. Rosenberg theory about self-esteem, concentrated on the study of self correction through the social issues of their society. Rosenberg conceder self esteem is a reflection the human altitude around himself and subject that he deals with it (Rosenberg, 1965; Gray et al,1997; Baumeister et al., 2003). Self-esteem has become a household word. Teachers, parents, therapists, and others have focused efforts on boosting self-esteem, on the assumption that high self-esteem will cause many positive outcomes and benefits - an assumption that is critically evaluated in this

review. Appraisal of the effects of self-esteem is complicated by several factors. Because many people with high self-esteem exaggerate their successes and good traits, we emphasize objective measures of outcomes. High self-esteem is also a heterogeneous category; encompassing people who frankly accept their good qualities along with narcissistic, defensive, and conceited individuals The current research determine the differences between reaction time two types simple, choices and to determine self- esteem among professional fencing players. The hypothesis for current study is that fencing players ,reaction times , self esteem will record a good marks ; therefore, Supporting the idea that fencing training is beneficial and can improve players 's simple, choices reaction time and self esteem. Researchers have suggested that fencing player may show a self-esteem, rating themselves as more positive than others.

Methods

Ethics Statement
The research was approved by the University of Jordan, school of physical education. The participants were given a complete explanation of the study, Participants completed the tests at the Jordan Fencing Federation though the researchers administering the tests was nearby to provide clarification if requested.

Participants
The research sample consisted of (21) fencers of Jordan national fencing team were participated in this study, (male, female) in the ages of 25 years (+\- 6.5). These fencers are participating in the national championships even in international championships.

Procedures
To measure simple and choices reaction time the multi - operational apparatus for reaction time was used

Figure 1. Multi-Operational Apparatus for Reaction Time (MOART) system.

The following are the main Setup and Positioning for reaction time (MOART);

- Select the simple reaction time
- React on red color
- Do not react to green color
- Odds of presenting reaction to stimulus 1 in 02 (50%)
- Reaction buttons (press to respond
- Cue delay (02.5s)
- Trial timeout (05.0s)

After the trial, the "RT" line will show the results of the trial in seconds and the research sample used the index finger in performing the RT test. An important distinction concerns the sequence of event when RT is measured as a function of response complexity. The simple RT method, the required response is identified: then. After a delay, an imperative signal indicates that the response should be produced. Simple RT is measured from the imperative signal until the start of the response. The choice RT method does not include any informative precise: instead a natural warning signal may precede the imperative signal. Only the imperative signal informs the subject about which response to make. Choice Reaction Time: Choose from multiple stimuli and multiple responses. Rosenberg self esteem scale Arabic version was used to assess self – esteem (Zaidi et al 2015).

It was translated in to 28 languages and administrated to 11,998 participants across 53 nations, the (RSES) factor structure was largely invariant across nations, (RSES) scores correlated with neuroticism, extraversion, and romantic attachment styles within all nations (Schmitt & Allik 2005). Rosenberg Self-esteem Scale(Rosenberg, 1965) is one of the scale used world widely to measure self-esteem, self-image and sometime for self-worth. It has only 10 items having four-point Likert scale responses. Responses options vary from strongly disagree to strongly agree. There are 5 items scored reverse (item 2, 5, 6, 8, 9). Scoring is in positive direction. There is no cut off score but higher scores indicate higher self esteem. Rosenberg (1965), reported Coefficient alpha = 0.89 (n=5024 high. School students), that is an indicator of good internal consistency and test-retest reliability. Arabic translated version of self-esteem scale reported internal consistency of α=0.71 (Kazarian, 2009; Zaidi et al., 2015).

Results

Table 1. Sample description.

Variable	category	N	percentage
Dominant hand	Right	19	90.5
	Left	2	9.5
	Total	21	100
Gender	Male	15	71.4
	Female	6	28.6
	total	21	100

Table (1) shows that almost all the sample was right hand dominant (90.5 %) and that only (2 players) were left hand dominants (9.5 %). Regarding the gender it was revealed that about two thirds the sample (71.4 %) were males and the slightly greater the fourth of the sample were females (28.6 %).

Table 2. Means and standard deviations of reaction times and self-esteem.

Variable	M	Sd
Simple(ms)	323.35	46.04
Choices (ms)	515.81	114.51

Table (2) reflects the mean values of both simple reaction and choice reaction times for the fencing players. The mean value for simple reaction time was (323.35±46.04) ms and whereas choice reaction time was (515.81) ms which indicated slow reaction time in both simple and choices reaction among elite players. The durations of simple reaction time typically range 100and 300 ms for fully alerted subjects. The mean reaction time is 189.5ms for visual stimulus.

Table (4) indicates the mean values and standard deviations for the items of self-esteem. The self-esteem was recognized by item no.1 which states " I feel that I am a person of worth, at least on an equal plane with others " Ranked the highest mean (3.67) while item no. 5 which states " I feel I do not have much to be proud of " has ranked the last order by a mean of (1.57). The overall degree of the fencing player's self-esteem was assessed by a mean of (27.29).

Table 4. Means and standard deviations for the self esteem for the fencing players in Jordan.

Self –esteem	M (ms)	Sd	order
I feel that I am a person of worth , at least on an equal plane with others	3.67	0.48	1
I feel that I have a number of good qualities	1.90	0.94	7
All in all ,I'm inclined to feel that i am a failure	3.05	0.80	6
I am able to do things as well as most other people	3.33	0.58	4
I feel I do not have much to be proud of	1.57	0.75	10
I take a positive attitude toward myself	1.90	0.83	7
On the whole , I am satisfied with my self	3.38	0.80	3
I wish I could have more respect for myself	3.19	0.87	5
I certainly feel useless at times	1.67	0.86	9
at times I think I'm no good at all	3.62	0.59	2
Total	27.29	2.43	

Concerning the differences between males and females of the Jordan fencing players over the self-esteem and the reaction times, the results indicated that the time for simple reaction time shorter than choices and there was no gender difference was observed in self-esteem (p= 0.72), simple reaction time (p=0.91) and multiple choice reaction time (p = 0.70).

Table (5) Gender differences regarding self-esteem and reaction times.

Variables	Gender	n	mean	sd	t	sig
Self esteem	male	15	27.00	2.07	0.35	0.727
	female	6	28.00	3.29		
Simple reaction (ms)	male	15	322.62	46.60	0.11	0.912
	female	6	325.17	48.92		
Multiple reaction (ms)	male	15	509.64	112.11	0.38	0.707
	female	6	531.22	129.84		

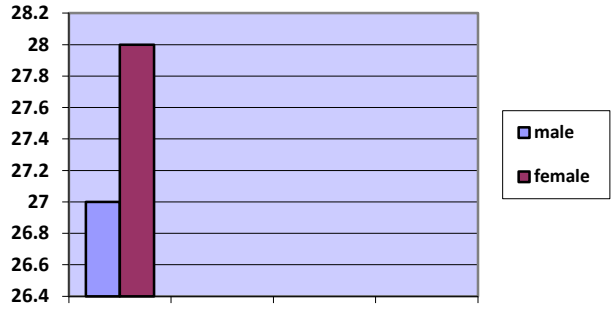

Chart 1. Self- esteem for the Jordanian fencing players according to gender.

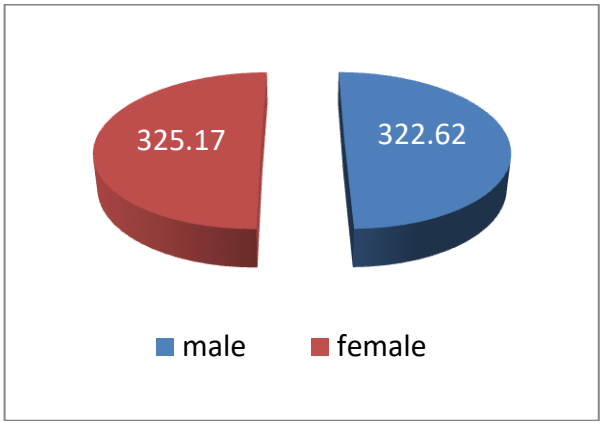

Chart 2. Simple reaction time for the Jordanian fencing players according to gender.

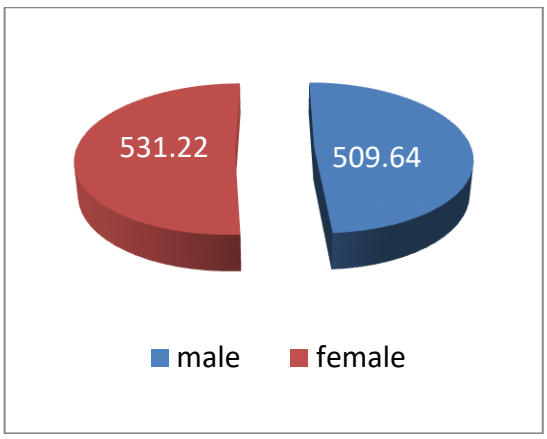

Chart 3. Choice reaction time for the Jordanian fencing players according to gender

Table (6) the relationship between the self-esteem and reaction times.

Variables	Self esteem	
	r	sig
Self esteem	1	-
Simple reaction (ms)	0.487	0.025
Choices reaction (ms)	0.121	0.601

Table (6) indicated the relationship between the fencing Jordanian players and both the simple reaction time and the multiple choice reaction time. The magnitude of the relationship between self-esteem and simple reaction time was (0.487) this relationship was statistically significant (p= 0.025) < 0.05), whereas, there is no relationship between multiple choice reaction time and self-esteem (0.121) such that relationship was not statistically significant (p = 0.601) > 0.05.

Discussion and conclusion

Reaction time abilities play role in a achieving high performance in fencing (Mouelhi et al., 2006) in this study we investigated simple and choices reaction time among fencing players the finding revealed that the elite fencing had simple reaction time range from 220 to 225 ms and choice reaction 509 -531 ms. Furthermore study cited by Mansi and Al awamleh (2014) found that simple reaction time ranged between 283-431 ms and choice reaction time 581,7 - 667,3ms for undergraduate sport students. Simple reaction time (RT) is usually on the order of 200 ms. Study conducted by Johne et al, (2013) found that fencers of a higher class had a shorter complex reaction time, furthermore no gender regarding reaction time abilities and self –esteem. Studies conducted by Meden et al. (2011) and Konsinski (2012), observed gender differences in reaction time men have faster reaction than female. Same results obtain from Mansi and Al awamleh (2014) regarding reaction time men were faster than women. According to self –esteem our findings supported previous studies that found the highest self-esteem in elite fencing players and physically active emerging adults had significantly higher self-esteem than physically inactive emerging adults Cekin (2015). Study cited by Kye and Park (2014) found that greater levels of self-esteem is associated with implementing exercise.

The current study found statistically significant relationship between fencing players and simple reaction time only Future research should be attempted to explain such relationship with larger sample size also recommended in order to evaluate the self – esteem and reaction time of fencing players.

References

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self–esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*, 1–44.

Cekin, R. (2015). Psychological Benefits of Regular Physical Activity: Evidence from Emerging Adults. *Universal Journal of Educational Research, 3*(10), 710717.

Erickson G. (2007). *Sports vision: vision care for the enhancement of sports performance.* Butterworth-Heinemann; St. Louis. Mo

Gray-Little, B., Williams, V.S.L., & Hancock, T.D. (1997). An item response theory analysis of the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin, 23*, 443-451.

Haibach , P., et al. (2017). *Motor learning and development.* Human Kinetics.

Johne, M., Poliszczuk, T., Poliszczuk D., & Dbrowska-Perzyna, A. (2013). Asymmetry of complex reaction time in female épée fencers of different sports classes. *Polish Journal of Sport and Tourism 20*(1), 25-34.

Kazarian, S.S. (2009). Arabic contingencies of Self-worth: Arabic translation and validation of the contingencies of Self-worth scale in Lebanese youth. *The Arab Journal of Psychiatry, 20*(2) 123-134.

Kosinski, R.J. (2013). *A Literature Review on Reaction Time*. Clemson University.

Konsinski, R.J. (2012). *A Literature Review On Reaction Time.* Clemson University.

Kye, S.Y., & Park, K. (2014). Health related determinants of happiness in Korean adults. *International Journal of Public Health, 59*(5), 731–738.

Lin, Y.C., Lin, C.H., & Raghubir, P. (2003). Avoiding Anxiety, Being in Denial, or Simply Stroking Self-Esteem: Why Self-Positivity? *Journal of Consumer Psychology, 13*, 464–477.

Mansi, T., & Al Wamleh, A. (2014). A comparative study of perceptual – motor abilities of gender and handedness, *Dirast Journal of educational sciences, 41*(2).

Meden, A., Marietta, W.M.S. & Hamilton, B. (2011). *Observance Of The Visual Reaction Time Of Non-Athletes Compared To Athletes. Undergraduate research,* Waynesburg University.

Mouelhi, S., Bouzaouach, I., et al. (2006). Simple and choice reaction times under varying levels of physical load in high skilled fencers. *The Journal of Sports Medicine and Physical Fitness, 46*(2), 344-351.

Pedersen, R.E. (2009). *Game Design Foundations.* Jones & Bartlett Learning.

Rosenberg, M. (1965). *Society and adolescent child.* Princeton University Press.

Schmitt, D.P., & Allik, J. (2005). Simultaneous administration of the Rosenberg self-esteem scale in 53 nations: Exploring the universal and culture-specific features of global self-esteem. *J Personal Soc Psychol, 89*, 623-642.

Wong, A.L., Haith, A.M., & Krakauer, J.W. (2015). Motor planning. *Neuroscientist, 21*(4), 385-398.
Zaidi, U., Awad, S.S., Abdelsalam, E.M., Qasem, H.D., & Kayal, G.F. (2015b). Psychometric evaluation of Arabic version of Self-Esteem, Psychological Wellbeing and Impact of weight on Quality of life questionnaire (IWQOL-Lite) in female student sample of PNU. *European Medical, Health and Pharmaceutical Journal, 8*(2) 29-33.

*** http://biae.clemson.edu/bpc/bp/lab/110/reaction.htm#Kinds

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