

The Level of Mindfulness, Hand-eye Coordination and Strength among Elite Fencers

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Received: January 29, 2018

Accepted: February 14, 2018

Online Published: March 20, 2018

doi:10.5539/ass.v14n4p65

URL: <https://doi.org/10.5539/ass.v14n4p65>

Abstract

The present study aimed to investigate the strength level of mindfulness and hand-eye coordination among elite fencers, also to determine whether the gender differences in mindfulness were existed, The subjects of this study consisted of sixteen elite fencers, Five Facet Mindfulness Questionnaire (FFMQ) Arabic version used to assess mindfulness (FFMQ), also handgrip dynamometer to assess strength and Hand-eye coordination manual dexterity to measure hand-eye coordination.

The research used the steadiness toaster, hold type model 32011 to assess eye - hand coordination.

The participants Study sample consists of sixteen national fencers (Jordanian National Team), aged between (14-23) years. The results indicated that the level of mindfulness was moderated and there is no statistically significant relationship between strength, Mindfulness and hand-eye coordination. Furthermore, gender differences were observed regarding strength.

Keywords: Mindfulness (FFMQ), hand-eye coordination, Elite fencers

1. Introduction

Mindfulness in the past decade has enjoyed a huge surge in its popularity, whether in the popular press or in psychotherapy literature (Didonna, 2009; Shapiro & Carlson, 2009). Mindfulness of sports performance at the last period has become one of the most popular researches. By increasing the critical component of peak sports performance, awareness, (Jackson & Csikszentmihalyi, 1999; Ravizza, 2002), some of the researches have suggested that mindfulness exercises may assist to generate the flow or the state of the complete focusing on the task or event at hand. (Aherne, Moran, & Lonsdale, 2011; Kee & Wang, 2008) mentioned that the hypothesized that mindfulness – based on for sport are effective sport for the reason that they help athletes to direct their attention to the current athletic task, while when minimizing external distractions (Gardner & Moore, 2012). (Brown & Ryan, 2003) mentioned that they found that the increase of mindfulness psychological will be by the increase of awareness of one's current experience (The similarities of mindfulness to the other psychotherapy – related constructs as an example of that mindfulness is similar to metallization (Bateman & Fonagy, 2004, 2006; Fonagy & Bateman, 2008), the development of the process of understanding one's own and others behavior in terms of the individuals' feelings, thoughts, and the desires to both constructs emphasize the temporary, the subjective and the fluid nature of the mental states and both of them are thought to influence the effect of regulation and the cognitive flexibility (Wallin, 2007).

Five mindfulness facets can be mentioned as follow: the first point is that the observing that refers to noticing, sensitive to the experience, which occurred at the current time such as thoughts and emotions. The second element is describing, which refers to labeling the internal experiences with words (Lebow, 2008). The third point is the acting with the awareness, that involves focusing on person activities at a certain moment as it opposes the mechanical behaving. The fourth element is the non-judging of the inner experience that refers to the taking of a non – evaluative stance toward the private experience. The fifth point is the non – reactivity of the inner experience that refers to noticing thoughts and feelings without showing reaction toward them (Baer et al., 2006) the coordination to the hand-eye is used in many sports activities; especially in sports like fencing. It's a great sport which can improve the hand – eye coordination Kogler (2005) he explained that Fencing sport is one of the complex sports also he explained that a good fencing performance can be achieved by advance perceptual and cognitive abilities like the attention of the coordination, making of the decision and visuospatial memory.

Fencing needs the coordination between the hands, the feet and the eyes. The side congruency of the hand and eye preference is considered as an essential for efficient hand – eye coordination which contains sighting and aiming. The researchers have found that the incidence of the left – eyedness was 47% for the group that threw it with by using their right hand and wrote by their left hand but the rate was 55% for the group that threw it with their left hands and wrote with their right hand (Porac, 2016).

Another research contends that the hand and eye preferences on the opposite sides according to the body which leads to a better coordinated performance especially for some sport such as boxing and fencing. These researches argue that the sighting eye is controlled mainly by the visual centers in the hemisphere for the same side of the head where the uncrossed optic fibers travel to the brain on the same side of the head which thought to be a dominant processors of the visual information hand movement which controlled by the hemisphere that controlling the coordination actions. As an example for that is that if someone is left – headed and right – eyed the right hemisphere alone will direct hand – eye coordination. As a transfer of the information between the hemispheres is not involved for the left – handed right – eyed action there (Porac, 2016).

Fencing is divided into three major branches depending upon the weapons employed. The fencing is divided into three different types of weapons used which are foils, sabers and epees. Just a few of the cognitive studies focused mainly on various aspects of fencing such as mindfulness, hand – eye coordination (Azemar et al., 2007), and left handed versus right-handed athletes (Harris, 2007). So about 90% of human beings used their right hands (right - handed) which means that the left – brain dominates for motoring skills because of the wide majority of people are right – handed (Coon & Mitterer, 2011, 2008).

Now the relationship in the comparison between the mindfulness and the cognition can be considered as an important topped of the research that is only begins recently to unravel. Therefore, the aim of this study is to determine the level of mindfulness, hand eye coordination and the strength of fencing player. Also to determine whether the gender differences in mindfulness have existed within samples of fencing players. In addition to that, the current study aimed to address differences of using one of the two hands at fencing regarding hand eye coordination and strength. We hypothesize that the fencing players have a good mindfulness and strength good hand eye coordination and there are a gender and handedness differences regarding to hand eye coordination, strength and mindfulness, in this study I will attempt to find the relationship between both of the strength of mindfulness and the hand – eye coordination among the elite fencers.

There is much movement coordination which determined by (2011) Magill as follow:

Multi ends coordination

The whole body coordination.

The coordination between the eye and the hand.

The coordination between the eye and the foot.

The coordination defines between the mutli ends as the ability to coordinate between the movement of the ends when they work together at the same time (between the eye and, hand, the eye and foot which is one of the most important factors for the athletes. This also helps at the muscle nervous coordination. The muscle nervous coordination helps for making the movement skills, which need a skill by using the eye, the hand, or the eye and foot together.

2. Material and Methods

2.1 Participants

Participants Study sample consists of sixteen national fencers (Jordanian National Team), aged between (14- 23) years 8 males (M = 16.87, SD = 3.52) and eight females (M = 15.12 yr, SD= 2.03).

2.2 Research Instruments and Procedure

The Arabic version of The Five Facet Mindfulness Questionnaire (FFMQ) is used to assess mindfulness. It consists of 39 items of higher scores that indicate the greater levels of mindfulness (Baer et al., 2006, al awamleh 2015). The five facets were observed described, acted with awareness, also: non- judging of the inner experience and non – reactivity to inner experience. We used a coefficient of an internal consistency so we can determine the reliability of the Arabic version of the (FFMQ) in accordance with the Cronbach) alpha result the coefficient of the internal reliability of the Arabic Version of the (FFMQ) indicated that the stability of the test was acceptable. The significant level that was reached due to the reliability values were (** 0.69).

Hand grip dynameters were used for the measuring of the maximum isometric strength for the hand and arm

muscles. Because handgrip strength is an important factor or element for the fencing players. Procedure: the dynamometers must be held in the hand that should be tested. The arm should be at the right angles and at the same time the elbow must be by the side of the body. The dynamometer can be adjusted if that is required – as the base should rest on the first metacarpal while the handle should be rested in the middle of the four fingers. When the athlete is ready he should squeeze the dynamometer with maximum isometric effort then this step will maintain for about five seconds. During this step no other body movement is permitted.

Steadiness Tester Hole Type used to assess Hand-eye coordination (Figure 2).

The athletes mission here is to hold a metal – tipped stylus in a nine progressively smaller holes that differ in size as follow ((1.156; 1.125;0.5; 0.312; 0.187; 0,109; 0;093; 0;078; 0.0625) inches taking in consideration not to touch the holes from the inside. On the other hand a Silent Impulse Counter Model 58024C was used to detect any errors.

Hand-eye coordination manual dexterity 10 s Measure by Steadiness Tester, Hole Type Model 32011

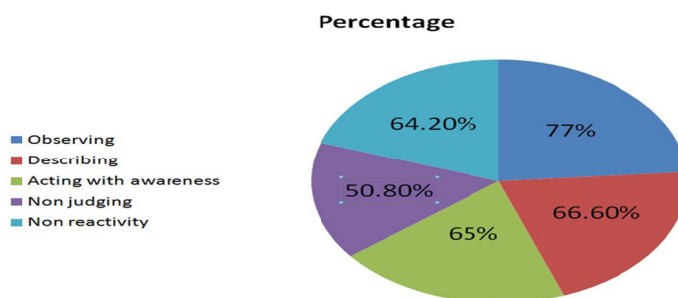


Figure 1. Mindfulness percentage



Figure 2. Steadiness Tester, Hole Type, Model 3201

All the tasks were administered individually in the Jordan fencing federation, all the data were systematically coded and subject to "SPSS" package.

The study was granted approval from the University of Jordan, Jordan Fencing Federation and parents of the sample, all participants gave informed consent and were fully debriefed after study

3. Results and Discussion

The results indicate the values of means and standard deviation for the Mindfulness (MS) scale. The higher score recorded on observing subscale. Whereas the lower score is Non reactivity toward fencing players experience. Overall, the level of Mindfulness scales appeared to be moderate the results are included in the table (1) below. The only explanation for that is the level of mindfulness was moderate there are no strategies to applied mindfulness (Mazahreh & Awamleh, 2016)

Table 1. Mindfulness level of elite fencers N = 16.

	FFMQ	M	SD	Percentage	Level Percentage	Level
Mindfulness	Observing	3.85	0.36	%77	1	High
	Describing	3.33	0.74	%66.6	2	Moderate
	Acting with awareness	3.25	0.88	%65	3	Moderate
	Non judging	3.54	0.44	%50.8	5	Moderate
	Non reactivity	3.21	0.73	%64.2	4	Moderate
	Total measurement	3.23	0.42	%64.6		Moderate

Aherne et al. (2011) found that the importance of mindfulness in concentration also Competitive athletes record higher on the mindfulness subscale observing. The results can help sports psychologists when delivering mental skills programs. Also understanding athletes differences in mindfulness can help to make better decisions (Kee & Wang, 2008)

Table 2. Gender and handedness differences regarding to hand eye coordination, strength variables of elite fencers

Variables	Group	SD	M	(T)	Level of significance
Hand –grip right	Male n = 8	5.47	32.38	1.57	0.14
	Female n = 8	3.73	28.7		
Hand –grip left	Male n = 8	3.66	30.87	3.62	*0.0
	Female n = 8	2.05	25.48		
hand-eye coordination Right	Male n = 8	4.8	7.16	0.24-	0.81
	Female n = 8	6.7	7.88		
hand-eye coordination left	Male n = 8	7 4.8	9.12	0.66	0.51
	Female n = 8	5.95	7.32		

The current study was also interested whether males and females report similar or different levels of strength regarding handedness According to the T-test coefficients analysis. The result showed that there were no significant differences in strength regarding right hand, was as significant differences was found regarding left hand between gender categories. On the other hand there are no significant differences in hand-eye coordination between gender categories. To examine the question that investigated the relationship between mindfulness, hand-eye coordination and strength table 3 shows the Pearson's correlation coefficients of mindfulness and hand-eye coordination and strength of elite fencers. Our findings here do not prove any significant association between mindfulness, hand-eye coordination and strength of elite fencers, (Johnston & Nahmad-Williams, 2009) found that: One of the reasons for the superiority of females upon males at the precise movement coordination is that the grow of the bones especially for the wrist which is connected to fine muscles. They found that there are differences between males and females at the growth of bones at the early ages.

Table 3. Relationship between mindfulness and hand-eye coordination and strength of elite fencers

Variable	Non reactivity	Non judging	Acting with awareness	Describing	Observing	Total
Hand –grip right	0.43	0.24-	0.22	0.45	0.06	0.36
Hand –grip left	0.39	0.06	0.07	0.49	0.22	0.33
hand-eye coordination Right	0.37-	0.08	0.004	0.15	0.19	0.37-
hand-eye coordination left	0.37-	0.08-	0.004	0.15-	0.013	0.37-

4. Conclusion

In this study, the focus was mindfulness of elite fencers and the handedness differences for the eye hand coordination, strength. The researchers suggested that the differences in mindfulness of athletes must be further investigated. In addition to that, the influence of variables that were taken in consideration such as the gender, eye – hand coordination and the strength experience must be examined to offer better insight for the relationship between these factors. Further studies to determine the generalization ability of our finding.

Acknowledgments

We would like to thank fencing federation in Jordan for a grant to support this research and the university of Jordan faculty of physical education.

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