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EFFECT OF MINDFULNESS TRAINING ON ATTENTION CONTROL AND LUNGE REACTION TIME FOR YOUNG EPEE FENCERS

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Abstract

Aim. The study aims to identify the effect of mindfulness training on attention control and lunge reaction time for young epee fencers.

Methods. Sample was (25) young epee fencers under fourteen ages. (5) fencers were excluded to conduct the exploratory study on them, so the basic research sample became (20) fencers, who were divided equally into two groups, one experimental (10) fencer and the other control (10) fencer.

Results. Statistical analyses showed that: that significantly different (p = < .05) between experimental and control groups in MIS, ATTC subscales and Lunge Reaction Time (LRT) to the experimental group.

Conclusions. Under the study conditions, mindfulness training programs may influence attention control and lunge reaction time in young epee fencers. Fencing coaches should take these findings into account to incorporate these concepts.

Keywords: mindfulness training, attention control, lunge reaction time, epee.

Introduction

Practicing any sport naturally involves the body, but when you watch a high-performance athlete face one of many moments of competition, it immediately becomes evident that more than putting his body, he puts his mind on the service of such activity.

Fencing requires the whole body to be in function of the corresponding task, and the mind plays a valuable role, since it not only makes it possible to focus attention on what is being done, but also plays a leading role in the processing of emotions. In this way, arduous training will have the expected effect at the time of presentation or competition, because fencers dominated by anxiety may not reflect all the previous preparation and on the contrary, their results would feed anxiety for future occasions, becoming like a snowball, a bigger and more difficult to control sensation. (Amr, 2013)

Modern fencing training has received increasing attention in recent years to enhance physical, skill, and tactical performance. Therefore, there is a need for greater attention to mental and psychological aspects. Athletic excellence depends on the extent to which players utilize their mental and psychological traits no less than their physical and skill capabilities.

Amr (2025) believes that fencing is one of the most important sports that has paved the way for reaching higher levels by relying on sound scientific foundations. Fencing is one of the oldest known games and involves the use of weapons in several ways and methods. It is also one of the sports whose skillful performance style requires a quick and sudden attack on an opponent.

Mindfulness has roots in ancient meditation traditions, especially Buddhism, where it was practiced cultivating awareness and compassion. In the last few decades, modern psychology and neuroscience have studied mindfulness and confirmed its benefits for mental health, performance, and well-being. Today, it is widely applied in healthcare, education, business, and sports (Nasser et. al., 2025).

Mindfulness is the practice of paying full attention to the present moment with openness and without judgment. It means noticing what is happening inside you (thoughts, feelings, body sensations) and around you (environment, people, actions) without being distracted by the past or the future (Amr et. al., 2015).

Instead of automatically reacting to situations, mindfulness trains us to pause, observe, and respond with clarity.

Interest in the concept of mindfulness has gained momentum over the past three decades. It is a fundamental element of some Eastern spiritual traditions, particularly Buddhism, and this concept has its roots in meditation practices that focus on the relationship between mind, body, thoughts, and emotions. Through meditation, an individual can interpret phenomena and situations in the world by finding and using new concepts or methods to understand them (Bishop et. al., 2004).

Mindfulness is also defined as the degree of mental attention an individual has regarding daily events without being distracted by recalling past events or contemplating future expectations. Which enables him to integrate with the present moment, distinguishing the differences and similarities in what is happening around him, recognizing and accepting new things, and being able to see and examine things from different perspectives (Galles et. al., 2019).

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It can also be defined as the ability individuals possess to find new directions, receive added information, be open to different viewpoints, control the work environment, and emphasize the scientific nature of the outcome. Mindfulness is the ability to view things in new and thoughtful ways and methods, resulting from a tendency to view the surrounding world accurately and objectively, which may lead to automatic reactions (Mahmoud et. al., 2022).

Mindfulness has been defined as an educational and pedagogical concept as: mental flexibility in being open to everything new and engaging in a distinct activity to create different and new knowledge (Bishop, 2002).

Others define it as a state in which an individual is attentive and aware of what is happening in the present moment and interested and aware of advanced scientific experiments (Brown & Ryan, 2003).

Kettler, (2010) defines it as the quality of the mind that enables one to become aware, conscious, and alert to something and to be attentive to what is happening around them.

Mindfulness is described as a method or way of thinking that emphasizes the importance of paying attention to the environment in which one operates and to one's internal feelings, without making positive or negative judgments. This enables one to view them more realistically and achieve an adaptive response (Guendelman & Rampes, 2017).

Mindfulness expands vision, increases opportunities, and is characterized by flexibility and the ability to deal with everything new in the environment. It also alerts one to the potential for revealing information imposed by a narrow vision that imposes routine and rigidity, closing the door to new and different perspectives in behavior, which is often driven by rigid thinking characterized by stability and automatic behavior. Mindfulness eliminates this type of behavior, which revolves in a vicious circle, obscuring the vitality of the changes taking place in the world and the practice of mental habits that tend toward monotony and repetition (Osama & Hamza, 2009).

A report issued by Harvard Medical School (2016) indicates that although the concept of mindfulness is associated with Buddhism, it has become a global concept applied in many places. Mindfulness is now scientifically studied as one of the keys to happiness.

Mindfulness is a form of contemplative practice. Meditation techniques help focus an individual through sustained awareness. The individual must be flexible and open-minded without delving into situational analysis. It refers to the careful examination of expectations and continuous reflection, drawing on one's experiences, appreciating important things in the context, and identifying new aspects of situations that can lead to insight and functional performance in social interactions. When an individual is mindful, they experience a heightened state of cognitive reflection (Ashraf et. al., 2005).

Amr (2013) indicated that Fencing requires split-second reactions, emotional regulation, and fine motor precision, so mindfulness can make a substantial difference both in training and competition.

So, the study aims to identify the effect of mindfulness training on attention control and lunge reaction time for young epee fencers.

Methods

Sample was (35) young male epee fencers under fourteen ages. (15) fencers were excluded to conduct the exploratory study on them, so the basic research sample became (20) fencers, who were divided equally into two groups, one experimental (10) fencer and the other control (10) fencer.

Table 1. The age, heigh, and weight of the experimental and control groups (Mean ± SD)

Group	N	Age [years]	Heigh (M)	Weight (KG)
Experimental group	10	13.12 ± 0.8	156.75 ± 3.89	56.12 ± 2.54
Control group	10	13.11± 0.7	159.12 ± 2.14	58.05 ± 3.14

Table (1) shows the homogeneity of the sample members in the variables of age, height, and weight, with values of the skewness coefficient ranging between ±3.

Instruments

Mindfulness Inventory for Sport (MIS)

The MIS is a 15-item tool that utilizes a 6-point Likert scale for responses (1 = not at all to 6 = a lot). It is intended to evaluate the respondent's ability to practice mindfulness in sports as a three-dimensional, self-regulatory skill comprising: (a) awareness, (b) acceptance (Non-judgmental), and (c) refocusing. According to Thienot et. al. (2014) this instrument has shown satisfactory psychometric properties.

The Attention Control Scale (ATTC)

The (ATTC) is a self-assessment tool intended to evaluate two primary aspects: attention focusing and attention shifting. The ATTC comprises twenty items, each rated on a four-point Likert scale ranging from 1 (Almost Never) to 4 (Always). (11) items are reverse scored (1, 2, 3, 7, 8, 11, 12, 15, 16, 20).

MBSR (Mindfulness-Based Stress Reduction)

An eight-week, evidence-based program designed to reduce stress, chronic pain, and mental distress by teaching mindfulness meditation and body awareness practices.

Statistical analysis

Our study employed version 20 of the (SPSS) software. The analyses encompassed the computation of means and standard deviations, as well as the implementation of the student's t-test for both paired and independent samples to assess differences in particular parameters between the two groups.

Results

- Test-Retest Reliability

Table 2. Mean ± SD, and "R" sign between Test-Retest Reliability in MIS and ATTC subscales.

Variables	Test	Retest	R
	M±SD	M±SD	
Mindfulness Inventory for Sport (MIS) subscale			
Awareness	22.66±1.18	22.34±1.56	0.74
Non-judgmental	21.85±1.54	20.68±1.87	0.83
Refocusing	20.74±1.89	20.73±1.21	0.87
Total MIS	65.25±1.54	63.25±1.55	0.88
Attention Control Scale (ATTC)subscale			
Attention focusing	31.25±1.87	30.75±1.12	0.81
Attention shifting	35.11±1.90	35.47±1.98	0.75
Total ATTC	66.36±1.89	66.22±1.55	0.77
Lunge Reaction Time (LRT)	0.991±0.03	0.993±0.04	0.90

Significant differences, p< 0. 05

The test-retest reliability MIS, ATTC subscales and Lunge Reaction Time (LRT) ranges between. 0.74 to 0.90.

- Discriminate validity.

Table 3. Mean ± SD, and "T" sign between upper and lower quartile in MIS, ATTC subscales and Lunge Reaction Time (LRT)

Variables	Upper quartile	lower quartile	T sign
	M±SD	M±SD	
Mindfulness Inventory for Sport (MIS) subscale			
Awareness	24.78±2.13	20.66±2.18	Sign
Non-judgmental	25.85±2.43	21.85±2.54	Sign
Refocusing	23.74±2.56	20.74±2.89	Sign
Total MIS	74.37±2.37	63.25±2.54	Sign
Attention Control Scale (ATTC)subscale			
Attention focusing	33.11±2.05	29.14±2.16	Sign
Attention shifting	36.47±2.11	31.25±2.22	Sign
Total ATTC	69.58±2.08	60.39±2.19	Sign
Lunge Reaction Time (LRT)	0.921±0.02	1.05±0.03	Sign

Significant differences, p< 0. 05

Table 3 shows significantly different (p = < .05) between upper and lower quartile in all MIS, ATTC subscales and Lunge Reaction Time (LRT).

Table 4. Mean ± SD, and "T" sign between experimental and control groups in MIS, ATTC subscales and Lunge Reaction Time (LRT)

Variables	Control group	Experimental group	T sign
	M±SD	M±SD	
Mindfulness Inventory for Sport (MIS) subscale			
Awareness	21.32±1.53	25.57±1.14	Sign
Non-judgmental	22.97±1.36	26.77±1.25	Sign
Refocusing	23.89±1.62	27.19±1.28	Sign
Total MIS	68.18±1.45	79.53±1.22	Sign

Attention Control Scale (ATTC)subscale			
Attention focusing	31.70±1.11	34.12±1.57	Sign
Attention shifting	35.14±1.72	39.46±2.01	Sign
Total ATTC	66.84±1.42	73.58±1.79	Sign
Lunge Reaction Time (LRT)	0.982±0.02	0.954±0.04	Sign

Significant differences, p< 0. 05

An independent sample T-test revealed that significantly different (p = < .05) between experimental and control groups in MIS, ATTC subscales and Lunge Reaction Time (LRT) favor the experimental group.

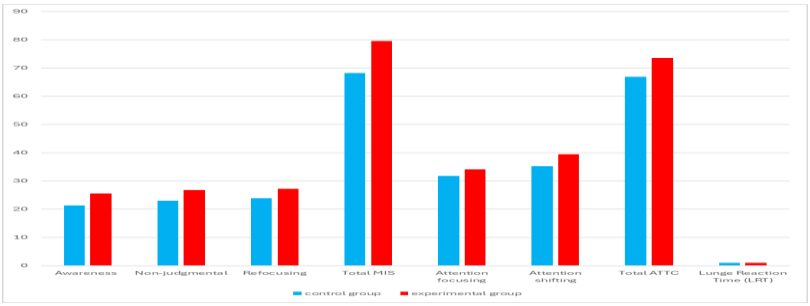

Figure 1. The difference (p = < .05) between Post – measurements in MIS, ATTC subscales and Lunge Reaction Time (LRT) to experimental and control groups

Discussions

The purpose of the present study was to identify the effect of mindfulness training on attention control and lunge reaction time for young epee fencers. The results revealed that significantly different (p = < .05) between experimental and control groups in all variables favor to the experimental group

The close relationship between mind and body can be enhanced through mindfulness, a skill that focuses on awareness of the present without judgment. This skill aims to achieve benefits such as mental visualization, emotional awareness, emotional regulation, and nervous system balance. This relationship is emphasized in the sport of fencing, where physical and psychological abilities play a vital role in offensive and defensive performance. Indeed, fencing requires a greater mental aspect than the physical aspect to support thinking and motor anticipation (Mahmoud et. al., 2022).

Even highly skilled players can have their performance negatively affected by stress and fear of defeat, leading to negative thoughts that impact their performance (Amr, 2006).

Young fencers between the ages of (12 and 13) due to their lack of experience, find it difficult to solve their problems and produce sound, logical solutions. Some of them also lack self-confidence and the ability to express what is inside them. It is difficult for them to train properly on their own, and their motivation and ability to endure effort and difficulties are reduced, making it difficult for them to perform correctly in a smooth manner (Ashraf et. al., 2005).

Interest in the concept of mindfulness began during the past three decades, through engaging in meditation practices that focus on the relationship between the mind, body, thoughts, and feelings. Through meditation, the individual can interpret phenomena and situations in the world by finding and using new concepts or methods to understand them.

Mindfulness is also defined as a form of reflection and contemplation that increases a person's ability to control their thoughts and uncontrolled behavior. Mindfulness is one of the best ways to control states of anxiety and stress, as it relieves a person of the feeling of loss of control and increases concentration (Masten & Reed, 2002).

Ashraf et. al. (2005) points out that young athletes may be prone to negative thoughts that influence their behavior and diminish their abilities. Therefore, athletes must be helped to overcome these thoughts through self-talk. For self-talk to be effective, negative thoughts must be reviewed, reframed, and replaced with positive ones. They must also be viewed from a positive perspective. This requires further mental training to prepare the athlete to manage unexpected situations and eliminate negative thoughts.

Osama & Hamza (2009) also believes that a player with a high skill level in their game and the ability to maintain an outstanding level of performance, however, something happens to them when facing an opponent: their level drops, along with increased feelings of tension resulting from the fear of defeat. This results in a few negative thoughts that occur to them and impact their performance.

The study results are consistent with (Osama & Hamza, 2009; Ashraf et. al., 2005) that mindfulness training could affect attention control and performance level for their samples.

Conclusions

Under the study conditions, mindfulness training programs may influence attention control and lunge reaction time in young epee fencers. Fencing coaches should take these findings into account to incorporate these concepts.

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