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The Effectiveness of Artificial Intelligence and Strategic Planning in Building Mental Modeling to Improve Sports Performance in Karate

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Article information	Abstract

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The importance of the study is due to reaching a model using planning and artificial intelligence techniques to the top of performance. Increasing self-confidence and clarity of goals before sports performance and during sports performance, the ability to use strengths and blocking weaknesses from the opponent, controlling and controlling emotional aspects, technical and tactical reading For the opponent's strengths and weaknesses and adapting the playing style to the circumstances of each match, the study aims to: Identify "how the effectiveness of artificial intelligence and strategic planning on building mental modeling to improve sports performance", and the researcher used the descriptive applied survey method for its suitability to the nature of the study. The researcher chose the study sample in a random way represented by players (Karate - Taekwondo - Kungfu), and the number of the sample was (5) players from each game, and the total was (15) players, and the conclusions were that the descriptive analysis between combat sports in Table (2) is in sports Karate The average expressive movements from using the visible face on the analysis sensors, the look in the eyes of the opponent, the look according to the situation, the authoritarian look was (2.07)%, and in the sport of Taekwondo (0.69)% and the sport of Kungfu (0.61)%, except for the criteria of the look according to the situation The offensive is different from the other games of karate and taekwondo, and the standards of the authoritarian view have decreased from other games, and the recommendations are the work of mental modeling in other games in different sports.

INTRODUCTION:

Artificial intelligence techniques in educational hardware and software are able to deduce the required knowledge and skills at a specific time, and thus update the required automatically and present it to the student in a manner that suits his needs and abilities and seeks to advance the criteria and visions to complete the required work. [Al-Saqri, (2020).], Open strategic planning by leading development and digital technologies to accelerate and direct digital transformations to technologies and innovations that restore ecosystems and biodiversity in our lives and manage them towards sustainable development through a clean and healthy environment; digitally enabled and climate neutral. [9**], Physical** activity in all its forms is important and necessary for the promotion and maintenance of mental and psychological health. Mind and body should be considered as two inseparable components that represent two distinct natures of the same experience of living, communicating, and influencing each other. While it has been explored, analyzed, and treated separately, in recent years, the mind-body unit has seen increased interest in the field of sports psychology and the science of mental training in sports. [Donatella, (2021).], The value of mental training in assisting sports participants in developing and maintaining effective mental skills, which are important for peak performance in addition to enjoying the competitive experience of sports, mental toughness is a key factor in superior performance in a variety of areas including sports. Piggott et al. Investigate whether skillful performance has thrived across the increasingly challenging mini-games of high- and low-skill soccer players. Mental toughness, decision making, and implementation of motor skills were measured. The results suggest that higher levels of mental toughness may contribute to maintaining performance via the increased challenge of stress within small games. [Piggott, (2019)], [Donatella Di Corrado, A. Q. (2021).] asserts that mental imaging is a fully immersive, multisensory procedure that connects several senses to create and process a mental image without external stimuli. In Mathematical mode, the images are mapped to the state in which people imagine themselves While influencing abilities to deal with an upcoming assignment or improve performance. Systematic analyzes revealed that images increase performance in motor tasks by the way relational modeling works using strategic planning and artificial intelligence techniques(Al-Saeed, 2018) [Asim.M, Mazen Al-Shammari. (2021).]

METHOD:
Study interests:

- Artificial Intelligence Techniques: It is the scientific and technical trend that includes methods, theories, techniques and innovations that aim to create the ability to simulate intelligence and the surrounding reality and build a model that is programmed to be able to study and analyze situations [Ghazi M. (2020).]
- Mental modeling: It is an internal psychological mental process (in the mind of the athlete) that works to evoke and recall the required images in order to view them and work on refining them and bringing them to reality in a clear and accurate manner that is commensurate with the objective. [Al-Astal, M. (2021).
- Procedural definition: it is rebuilding a unit according to the steps of mental modeling to apply the skills of the mind in addressing real problems in sports, by transforming the life issue into an issue, and then generalizing and predicting, if possible, in improving sports performance. [Hornstein, S. &. (2016).]

- Improving sports performance: the methods, methods and strategies used in developing sports performance by using means that serve the performance referred to.(Al-Saeed et al., 2016) [Asim.M , Mazen Al-Shammari. (2021).]

fields of study:

The human domain: players with a black belt rank from the following games (Karate - Taekwondo - Kungfu)

- Time domain: The study was implemented in the period between 1/6/2020 to 1/8/2020
- Spatial domain: The study was applied at the Faculty of Artificial Intelligence, Kafershiesh University, Egypt

Conduct the study:

- Study Approach: The researcher used the descriptive applied survey method, due to its relevance to the nature of the study.

The study sample: The researcher chose the study sample in a random way represented by the players (Karate - Taekwondo - Kungfu), and the number of the sample was (5) players from each game, and the total was (15) players

A table showing the homogeneity among the sample members

Table No. (1)

	Statistical Variables	Arithmetic Mean	Median	Standard Deviation	Skewness	Flatness
Karate	Age	18	18.2	1.12	-0.908	0.711
	training age	5	5.1	0.01	0.023	0.0854
taekwondo	Age	16	16.1	1.13	0.554	-0.463
	training age	5	5.1	0.01	-0.0214	0.0298-
Kongo fu	Age	17	17.0	1.11	0.541	0.0874
	training age	4	4.1	0.01	-0.0214	0.0215-

shape (1)

the homogeneity among the sample members

Karate　tackwondo　Kongo fu
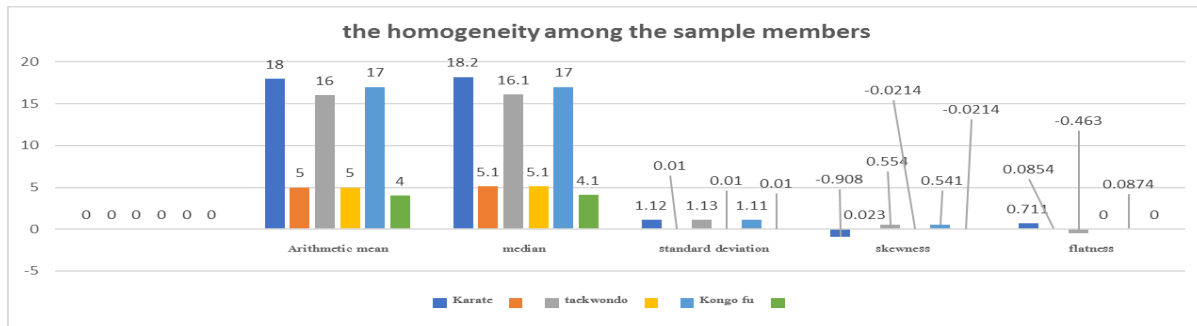
Tabular T value at a significant level of 0.05 and degree of freedom 4 = 4.5

It is clear from Table (1) and Figure (1) that the values of the oblateness coefficient are limited to (0.0215-:0.711) and that all of them lie between + 1, which indicates the similarity of the data about the axis of the curve. It ranged between (-0.0214, -0.908) and that these values were limited to +3 which indicates that all sample members fall under the moderation curve in the variables of age and training age, which indicates the homogeneity of the study sample in the selected variables.

Data collection tools

The researcher used the necessary means and tools to achieve the objectives of the study

1. The researcher used content and results analysis as a tool for data collection
2. Big data analysis techniques that deal with volume, variety, speed, variance, and honesty,
3. 3D modeling of living physical objects by developing a mathematical representation of their three-dimensional surface,
4. 3D printing of exoskeletons to rehabilitate motor control, enhanced sensory production with artificial intelligence

Study questions:

What are the techniques of artificial intelligence and strategic planning in the work of mental modeling?

[1] asserts that decision support systems are interactive systems between the user and the computer, and rely mainly on computer sciences from informatics, modeling and simulation, artificial intelligence, and cognitive systems; To assist policy makers and decision makers in making a rational decision at the right time.

There are also decision support systems used in long-term strategic planning that integrate with the methodologies of future studies and artificial intelligence, which are characterized by their great reliance on modeling, simulation and cognitive systems. Knowledge here is divided into two basic types, the first: the cumulative experience of an expert in a specialty, and the second: anticipation or the ability to extrapolate the future. These are called futurists or foresee the future. There is a model in the modern era, the Englishman Bernard Lewis, the researcher The events and political changes that occurred in the Middle East. **[Ahmed, 2018]**

Mental training focuses on the acquisition of a technical set of physical preparation, the development of mental qualities of determination, courage, vigilance, and control of emotions. Some professors claim to impart a philosophy - the so-called "martial arts philosophy" (Al-Saeed & Pain, 2017)- which is similar to, in most cases. But who cares about combat tactics and strategies? At most, the best competitor coaches. However, their search stops at the limits set by competition rules.

Strategic planning for mental modeling work?

1. **Doing modeling to reach the peak of athletic performance.**
2. **Modeling of emotional states related to sports performance.**
3. **Modeling to evoke the personal characteristics of the trainee on sports performance.**
4. **Modeling the cognitive, psychological and physiological traits associated with athletic performance**

Generative mental modeling is used to generate new examples of data through strategic planning, and on the other hand, discriminative modeling is used to distinguish or classify different types of data. For example, the generative model can produce images of expressions issued from situations during mathematical performance similar to real situations, while the discriminatory model is used to differentiate between one form and another. These two models are combined in competitive generative networks; Where the generative model produces new examples, while the discriminative model classifies those examples to real **[**Metsuke, 2022**]**
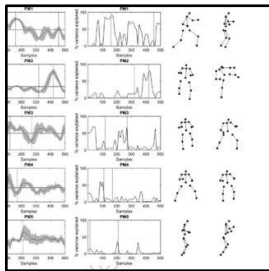
Techniques used in modeling work:

Looking into the eyes of the opponent: [Metsuke, 2022] I think it is important to look in the eyes of the opponent. By looking into the opponent's eye, you will be able to read his intentions and you will be able to transfer your determination, strength and courage to the opponent. You can read a lot of information in the eyes of the other. Fighter anticipation is most effective when one can react to the opponent's

intent and not just to the movement of his or her body. This feeling of the other is easy to obtain by observing the opponent's gaze, because his eyes are the mirror of his mind. You have to emotionally connect to the gaze and discover the opponent's intentions. The gaze is the mirror of the player's heart and mind **[**Metsuke, 2022**]**

Seeing by Situation : Our outlook is closely related to our mind and emotions. When you are calm, all movements seem slower. On the contrary, when you are overwhelmed by events, everything seems to go very quickly. The outlook should remain stable regardless of the emotion and intensity of the fight. A frightened and angry person looks in several directions and often blinks. On the contrary, a person with a sense of control takes a more holistic view of the situation, reduces sudden movements of the gaze and blinks more often testifies the stability of your gaze to your inner stability. Calm your mind, and with the same eyes you will see more clearly
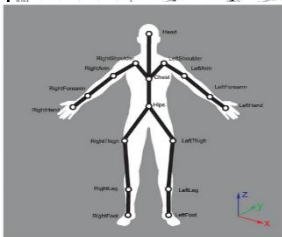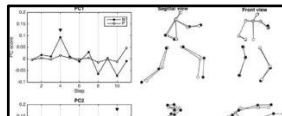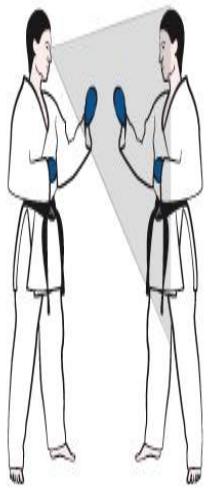
Domineering gaze: Use your eyesight to control your opponent. You should show him your superiority with a calm look, strong and full of will. This superiority should not be arrogant. It also should not be artificial because your opponent will sense it. It must be supported by your inner strength. Your desire to win and your determination can appear in your eyes. You have to learn to look at the techniques you are going through without closing your eyes. Beginners tend to close their eyes when an opponent starts a style. Thinking that they are protecting themselves, they become very weak. Keep your eyes wide open and face the blows with your eyes. This is the best way to avoid it

Peripheral vision: Develop your peripheral vision. The player must develop his peripheral vision. You should have a wide vision without moving your pupils. You should be able to assess distances from the combat area and feel where the Shiite border is without having to look at it.
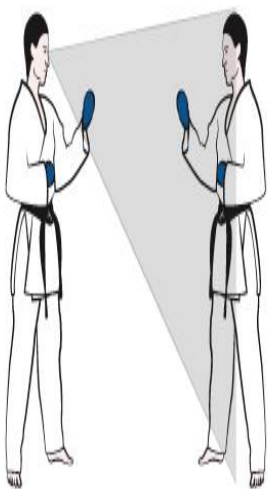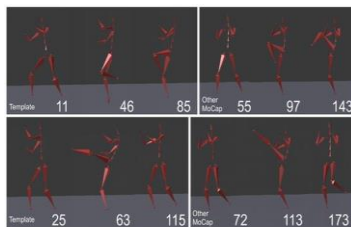
Visibility according to the opponent's distance. The further away you are from your opponent, the easier it is to see your entire body. At the other end, in the melee, you can only see a small part of the opponent's body. So you need to keep in mind that in close positions, the legs are less visible. (far, medium, close) and distance according to technology

Table No. (2)

Human Action Analysis Sensors: Modeling, matching, and visualization applied to motion capture for highly skilled martial arts performers to improve athletic performance.

| the game	skills	Variables	Arithmetic mean	
Karate	front kick	The look in the opponent's eyes	1.23	
		look by situation	0.45	
		authoritarian view	0.41	
taekwondo	front kick	The look in the opponent's eyes	0.98	
		look by situation	0.45	
		authoritarian view	0.41	
Kungfu	front kick	The look in the opponent's eyes	1.56	
		look by situation	3.41	
		authoritarian view	1.25	

In Table No. (2) it is clear that the pictures were taken through the programs of artificial intelligence techniques and were processed through the data. The researcher used the front kick in the three games of Karate, Taekwondo, and Kungfu as a technical movement performed in the three selected games and it was in a sport Karate The average expressive movements from using the visible face on the analysis sensors, the look in the eyes of the opponent, the look according to the situation, the authoritarian look was (2.07)%, and in the sport of Taekwondo (0.69)% and the sport of Kungfu (0.61)%, except for the criteria of the look according to the situation The offensive is different from other games of karate and taekwondo, and the autocratic standards of the other games decreased, and the averages came through techniques by 1.82%

The following are the existing criteria for mental modeling in improving athletic performance

Table No. (3)

Standards	Karate			Taekwondo			Kungfu			Statistical processors			
	A	M	SD	A	M	SD	A	M	SD	X2	df	p	ES
Modeling to reach the peak of athletic performance.	5.5	5.52	12.3	5.4	5.52	12.3	4.5	5.52	12.3	134.2	5	0.04	0.17
Modeling of emotional states associated with athletic performance.	4.5	4.22	10.2	4.5	4.22	10.2	4.5	4.22	10.2	113.3	5	0.08	0.16
Modeling of arousal personal traits of the trainee on athletic performance.	5.9	5.82	15.3	5.7	5.82	15.3	5.4	5.62	12.3	115.2	5	0.07	0.11
Modeling of cognitive, psychological, and physiological traits associated with athletic performance	5.6	5.62	12.3	5.5	5.62	12.3	4.5	5.72	10.2	113.3	5	0.06	0.12

shape (2)
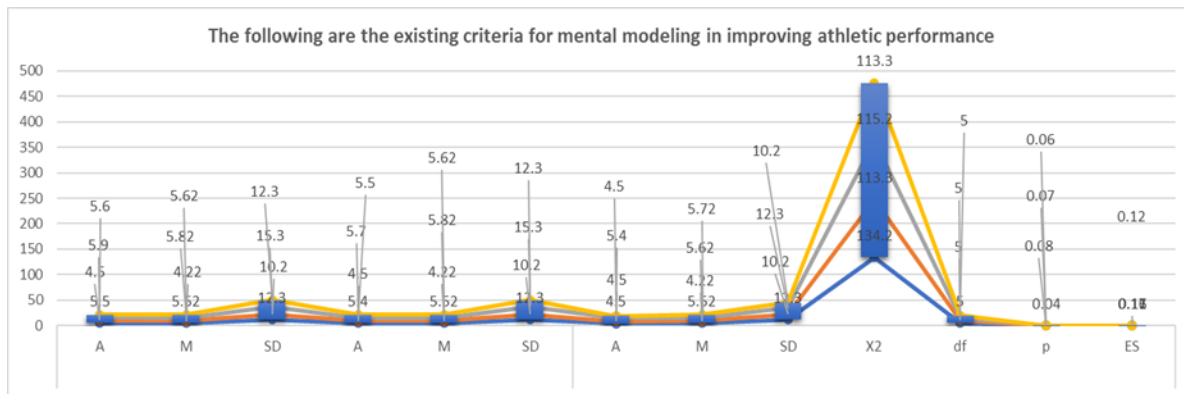
In Table No. (3) and Figure (2) the following exudes: that the arithmetic averages in the games under study came in the first criteria (modeling to reach the peak of athletic performance) was (5.3), and the second criteria modeling for emotional states related to athletic performance was (4.5) And the third criteria are modeling of arousal, the personality traits of the trainee on athletic performance. It was (5.6), and the fourth criteria modeling for the cognitive, psychological and physiological traits associated with athletic performance was (5.2), the average ears for the four criteria were (5.15) compared to the averages of the sensors in Table No. (2) and after the work of the models on artificial intelligence techniques and data analysis It was (1.82) therefore, based on strategic planning and through the criteria for modeling work, it had an impact on efficiency and improving the mathematical performance of that

skill and to be measured in that study, and this is consistent with [11],[6],[9], and the percentage of morale in the games under study through the criteria came in the first criteria (modeling to reach the peak of athletic performance) was (134.2), and the second criteria were modeling of emotional states related to athletic performance was (113.3), and the third criteria Modeling of arousal personal traits of the trainee on athletic performance. It was (115.2), and the fourth criteria of modeling for the cognitive, psychological and physiological traits associated with athletic performance was (113.2) and this is through (Ca,2 x 2,) which is the percentage of agreement and disagreement on those criteria for making and planning for modeling work This is consistent with the scientific method of planning policy []. Jacobsen, 2021],[Al-Saqri, 2020]

Conclusions:

The descriptive analysis between martial sports appears in Table (2) in Karate, the average expressive movements from using the visible face on the analysis sensors, the look in the eyes of the opponent, the look according to the situation, the autocratic look was (2.07) % and in the sport of Taekwondo (0.69) % and Kungfu (0.61)%, except for the criteria of the view according to the offensive stance, it differed from other games of Karate and Taekwondo, and the criteria of the authoritarian view was less than other games.

Recommendations:

Doing mental modeling in other games in different sports.

ACKNOWLEDGEMENTS

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