

Visual Space Intelligence according to Strategy of Mental Maps and its impact in the development of tracking and the visual memory to the skill of setting in volleyball

Fatima Abid Malih [1], Afaf Al-Katib[2], Najla Abbas [3]

[1] Ministry of Higher Education and Scientific Research
University of Baghdad
College of Physical Education for Girls

ABSTRACT

Research has proved the existence of a strong link between mental processes (such as memory, imagination and thinking) with intelligence, so the modern trends measure the intelligence through the link between mental and physical processes together. During the first stage information is transmitted via the senses to the brain while the brain does its work of registering information. In the second stage some of information are kept in the short-term memory and not in the long-term memory, unless the brain processes the information through dialogue and discussion, and draw charts and graphs in other concepts and facts.

Keywords: *Visual Space, Intelligence, Strategy of Mental Maps, tracking, visual memory, volleyball*

INTRODUCTION

Research has proved the existence of a strong link between mental processes (such as memory, imagination and thinking) with intelligence, so the modern trends measure the intelligence through the link between mental and physical processes together. During the first stage information is transmitted via the senses to the brain while the brain does its work of registering information. In the second stage some of information are kept in the short-term memory and not in the long-term memory, unless the brain processes the information through dialogue and discussion, and draw charts and graphs in other concepts and facts.

In this case we get the information to install and easy to recall and use it in a specific educational situation. So drawing ideas and lines in a clear and exciting style directs the brain to do complex processes to store and choose what it wants as it receives things within the contexts of the surrounding environment and puts interpretations, analysis, and encode.

Here, mental maps are working to organize ideas, information and present it in a way that helps to flow ideas and solutions, and open the way for thinking. The mental map helps to store information systematically; so, we can note that there is a link between the visual space intelligence that represented by those persons who have the ability to presence the shapes and objects, and the ability for linear presentation, visible and the use of color and shapes with the mental map which is characterized in graphs and pictures that help the learner to remember words, sections, and movements. In addition to the existence of an important element does not lose sight of, namely the existence of individual differences in one class then we have used here educational means in different frameworks which presented in a way that gets the attention of the learner.

Volleyball is one of the games that rely on incentives because of its characteristics of speed and the effectiveness of the focus and attention, offset by rapid response through affecting the nerve centers that responsible for the work. And perhaps the sense of sight is the first channel which receives the picture and detailed information about the environment around the learner making it provides the brain with information about the movement of the ball, its direction, and speed and then to move to select a appropriate response by creating a state of balance between the brain and the sense of sight to achieve the goal. Moreover, it is known that visual functions can be improved and developed through continuous training and practice.

Therefore, the importance of this research is through the identification of visual space

Intelligence according to the mental maps and its impact in the development of visual responsiveness and visual memory and the skill of the setting in volleyball.

Research Problem

Through the experience of researchers in the field of academic sport work it has become imperative for us to investigate and search for the causes that raise the learner for the educational situation and make him more capable of facing the environment around him and its problems and difficulties that imposed on him thinking and research about the situation and the steps he needs to make the right decisions through educational means, photos, drawings and maps that will help him to achieve the objective, in addition to the delivery of the learner into a state of imagination and contemplation and the creation of solutions within the group, especially that volleyball is a game of collective cooperative games which is characterized by the work of one team. Reaching to good performance does not depend on the teacher, but also on the information that given in the classroom and what they contain of the necessities of using renewable methods that create a state of appropriate environment. In addition to the interaction between student and teacher and through the stimulation and development of visual response speed and teach them how to get the information and how to re-organize this information in a form of result of learning.

Objectives of this research:

Determine the visual space intelligence for the sample individuals. Identify the impact of visual space intelligence according to the mental maps in development of tracking and visual memory and the skill of setting in volleyball.

Hypothesis of this research:

The visual space intelligence according to the mental maps has differences of statistic significant in the development of the tracking and visual memory and the skill of setting for volleyball post-test.

Fields of research:

1. Field of human / sample of students of fourth stage - college of physical education for girls.
2. Temporal field / 16-10 - 2011 up to 21-11 - 2011
3. Spatial field / university of baghdad / college of physical education for girls / the inner hall.

Determine The Terms:

1. visual space Intelligence : - is the ability to observe accurately the outside world and turn it into sensory perceptions(1)
2. mind maps:- are a great way to draw whatever we want in one sheet of paper in an organized way, where we try as much as possible to replace the words with drawings that refer to them so that we can put whatever we want in a single sheet in a focused and concise way, and it is easy to remember as it is a tool that helps to think and learn. (2)
3. visual functions :- is a set of functions that provide visual information about the environment around us, which has a direct impact in improving the visual resolution types of fixed and mobile.
4. is a sensory system: - compounds that are stimulated by different types of incentives as well as the system is able to provide detailed reports about the type of stimuli that received from the environment. (3)

METHODOLOGY, AND FIELD PROCEDURES:

Research Methodology:

The use of the experimental method which is "the only approach that can be the real test for the hypotheses for the special differences of cause and effect" ⁽⁴⁾

Sample Search:

Sample is selected of students in the fourth stage section (B), (30) student are chosen randomly, and (4) students were excluded to perform the exploratory experiment on them, and thus bringing the number of the sample (26) student were also excluded students who did not be present for more than two educational units for whatever reason. and we consider the students are congeners because of their being of the same age group and were subjected to the same school, that is what increases the stability of the information given. The sample is divided randomly into two groups where the first group (control group) of (13) students learn in the traditional manner, while the second group (experimental) of (13) students learn according to strategy of mental maps. The equivalence is conducted for the sample in (visual space intelligence) and shown in the table (1).

¹ -Thouqan Obaidat and others: (op cit, 2007) p 139.

² - Wajeeh Mahjoub: the physiology of learning, first edition (Dar Al-fikr for printing and publishing, Jordan, 2002), p 122.

³ - http://www.thin.smart.com/2/articles/mind_mapping.html.

⁴ - Ali Hassan Sulaiman; The entrance to the Sports Coaching (Library of Printing and Publishing, University of Mosul, 1983) page 60.

Devices and tools used in the research.

Table (1) shows the arithmetic mean and the standard deviation and the calculated value of (t) and the tabular between experimental and control groups in visual space intelligence for the purpose of equivalence

Means of statistical Tests	Experimental group		Control group		the calculated value of (t)	the result
	mean	standard deviation	mean	standard deviation		
Visual space intelligence / degree	16.3	0.73	15.9	0.84	1.8	Insignificant

Note : Tabulated value of T at a freedom 24. And the probability of error = 0.05 2.06

Mental maps of the setting skill, legal tennis volleyball, legal volleyballs, a scale of visual space intelligence, a scale of tracking and dynamic memory, boards of kink-dafik measuring (20 × 40 cm) , Computers, stopwatch.

Exploratory Experiment

Exploratory experiment was performed on (16-10-2011) on a sample of (4) students has been excluded from the research sample. The purpose of this experiment is to find out possible errors and work to avoid them in the course of learning, whether such errors by a team work) •) or by members of the research sample, and in order to achieve the following:

- The constraints which coincides when making the basic experiment.
- To ensure the safety and validity of the devices used.
- Measurements and tests of the research.
- To avoid the mistakes that may occur during application the test.
- The understood of the research sample for the tests that used.
- To identify the time taken to measure each individual sample.

Tests Used: -

Visual space intelligence test :

To identify the visual space intelligence, the researchers use the scale of multiple intelligences, which measures visual space intelligence as one of its types through a certain percentage, which is a scale of zero to five and on the student to estimate quickly how much the phrase applies on her and gives five points if the phrase consistent strongly with her and zero if they do not agree with her strongly, and then collect the tags for each section of this measure and record them in the appropriate column and the degree which it fits her in the relative key and the scale are shown in the Appendix (1)

Visual tracking test (eye tracking test). (5)

- The purpose of the test: Measuring visual tracking.

• - Staff Assistant of: -

-Dr. Naima Zidane / Volleyball tests and measurement. college of Physical Education for Girls.

- M. Hoda Abdel Samie. Volleyball, College of Physical Education for Girls.

⁵ - Alan Berman, OD, Institute for Sports Vision, www.opt.pacificu.edu/ce/,2011.

- Method of performing the test: The boards of kink-dfek measuring (20 × 40 cm) are hanged on the wall at a distance of three meters from the student with the illumination light detector. The student tracks the characters on the boards from left to right as soon as possible without making mistakes. As in the extension (2).

NOTE: Student must not move her head during the test, but is tracking through the movement of the eye and the head is installed in a special holder.

Method of registration: calculates the time for each test as well as the total time, given to the student (3) attempts to try and take that has been as much as possible without errors.

visual memory test (Ocular Memory Test) ⁽⁶⁾

The purpose of the test: measuring of visual memory.

Tools used: A set of different pictures, computers, test papers, stopwatch.

How to perform the test: is displayed on student 12 photos for different people represent the first group of photos separating Showing images with a time of four seconds, then is to wait for five minutes and then show the second group of photos and consisting of 12 photos of different people too, and then is Showing 48 pictures include pictures in the group I and II and 24 new images have not seen by the student before, and when showing the images in the third group to the student, she will register in the test paper provided to her the image sequence as to appear and answer, if saw the picture in the first group or second group, or she did not see the image .

Method of registration : is calculated by the degree of the test by the number of correct answers for students through (4) minutes to view the images as given, for each correct answer (2 degrees) and thus the highest grade (96) and minimum (zero), as shown in the Appendix (3).

Level of the performance of the skill of setting :

have been introduced the development of skills through the test that is described in the Appendix (4and5)

Procedures Of Search Field:

the pre-tests

the pre-tests are preformed on the sample of the research on the day (23-10-2011) in the hall of volleyball in the College of Physical Education for girls. The researchers tried as much as possible to install the circumstances relating to the test in terms of (time, place and the tools used and the method of implementation and team work) in order to work on its availability in post-tests.

Experimental Developmental curriculum

In order to achieve the objectives of the research. The researchers developed a evolutionary curriculum which is a collection of exercises to develop the skill of the setting in volleyball. It has been distributed into 4 evolutionary units started on Sunday, 30/10/2011 as well as the recruitment of mental maps to develop this skill through doing a full description for everything related to this skill. The researchers have worked to deliver the idea of mental map correctly to the students through two definitional units before the evolutionary program start. To reinforce that ,the supervisor teacher started to apply the program by asking the students to make mental maps ie the students do charts for the skill mentality after each evolutionary unit about what they have learned during the unit. And after the final evolutionary unit the researchers did the post-tests.

The post-tests

Post- tests were made on (21/11/2011). The researchers took into consideration making these tests under the same conditions of conducting the pre-tests in terms of space and time and tools used in the measurement.

Statistical treatments:

Results were treated statistically by spss system with using the following laws:

- The arithmetic mean, standard deviation, coefficient of torsion , T-test for averages associated with ,and T-test for averages not associated. ⁽⁷⁾

⁶ - http://www.bbc.co.uk/science/human_body/sleep/tmt/

⁷ - Wadih Yassin and Hassan Mohammed : applications of statistical and computer applications in the research of Physical Education, (Dar al kutub for Printing, University of Mosul 0.1996), pp. 101.

RESULTS, ANALYZED AND DISCUSSED :-

groups	Tests	Pre-test		Post-test		differences Means	Standard-d	Calculated (t) value	Significance
		mean	Standard-d	mean	standard-d				
Experimental group	visual tracking / s	17.3	0.6	14.4	0.8	2.9	0.73	12.6	Significant
	Visual memory / d	50	13.8	74	14.6	24	15.9	21.8	Significant
	The ability of the skill of setting / d	5	0.14	8.9	0.28	3.9	1.3	12.5	Significant
	Technique / d	6.2	0.17	9	1.25	2.8	0.9	10.7	Significant
Control group	visual tracking / s	17.13	0.85	15.9	0.92	1.4	1.6	4	Significant
	Visual memory / d	52	12.9	60	13.6	8	13.2	7.9	Significant
	The ability of the skill of setting / d	5.13	0.69	6.8	0.69	1.67	0.89	6.4	Significant
	Technique / d	6.4	0.72	7.6	0.19	1.2	1.13	4.13	Significant

Tabulated value of (T) at a freedom 12. And the probability of error 0.05 =2.15

Table (2) shows the differences between pre and post tests of experimental and control groups

Shown in Table (2) that the experimental and control groups had significant between the pre and post-tests for the post-tests, because the calculated value of (T) is greater than the tabulated value.

For the purpose of identifying any of the two groups is better, the results of the post-tests for the two groups in the table (3) have been treated by t-test for independent samples, indicating the existence of significant differences between group1 and group2 in the post-tests for the experimental group, because the calculated value of (T) is greater than the tabulated value.

This means that the learning by depending on the domain of visual space intelligence according to the mental maps had an effective role in the development of tracking, visual memory, and then the skill of the setting in volleyball. Where the skill of the setting is the most skills in the game of volleyball effectiveness as its being the foundation for building the attack on the opponent, and it is a link between two skills, one defense is the reception, and the other purely offensive is overwhelming beating, so the skill of the setting is the more skills that needs to track the movement of the ball before it reaches to the prepared player, and after getting out of his hands and it moves for the hitter player. On this basis, the skill the setting is considered the first step to build an attack against the opponent, and this in harmony with the opinion of (Tariq Hassan and Hussein Sabhan), who they see that the skill of setting (means prepare, adapt, and prepare the ball to the attacker player to hit it successfully to the opposing team. (8)

⁸ - Tariq Hassan. Hussein Sabhan. Skills and offensive and defensive plans in volleyball. "(Press of Al-kalmia Al- Tibia , Baghdad 0.2011), p 56.

Tests	Experimental group		Control group		Calculated (t) value	Significance
	Post- test					
	mean	Stan- d	mean	Sta- d		
visual tracking / s	14.4	0.8	15.9	0.92	10	Significant
Visual memory/ d	74	14.6	60	13.6	3.4	Significant
The ability in the skill of setting / d	8.9	0.28	6.8	0.69	14	Significant
Technique /d	9	1.25	7.6	0.19	6.4	Significant
Tabulated value of T at a freedom 24. And the probability of error 0.05 =2.06						

Table (3) shows the differences between the experimental and control groups in the post-test

In the view of researchers. the development of the tracking and the visual memory, those visual capabilities play the main role in coordinating and organizing works, duties and requirements of the important physical practiced activity in a muscular nervous compatibility, and composing the perfect picture for the skill which is performed by supplying the brain with information about the colors and attributes the dimensions of the objects and the impression of distance or dimension and the ability to follow the movements. Tracking and visual memory is one of the visual capabilities that have an important role in learning and examining objects and distinction its properties ,and the relationship between the elements and the integration of information to help in the formation of integrated information(9).

Eye is largely responsible for receiving information and understand it , then stored and restored it properly, especially the person receives approximately 80-90% of the information via the sense of sight, therefore, any defect in the visual system in the case of the absence of diagnosis and treatment will result a significant decline in the level of vision efficiency (10). since the concept of learning according to the mental maps depends entirely on linking relations by the sense of sight, so we find that the experimental group achieved a better evolution than the Control group. As those visual capabilities have been done through the exchanged functional relations between the nervous and visual system , therefore, it is a (physiology, sensory perception) compound , moreover, it is the most important means of communication between man and the world around him (11).

It Means to change the size of the angle of sight for the components of the visual scene according to the size of the part that the eye focuses on, where the angle of sight that is made up as a stimulus differs from those that made up for one of its features. So, the movements of deviation differ from the jumping movements in the time it takes, they are faster than movements deviation, because the movements of deviation always focus on the accurate details of objects to realize it(12). The nervous centre plays a major role in the process of directing parts of the body in the space through getting information that it receives from the external environment. Receiving this information has a great role in the accuracy of control process of direction and moving the body. The information is transmitted from the eye to the center of vision in the nervous system which does the the temporal and spatial analysis for movement completion, as the vision system controls the rest of the sensory systems, so it deserves a special attention for the great role in movement control(13).

CONCLUSIONS AND RECOMMENDATIONS:

Conclusions:

The visual space intelligence according to strategy of mental maps contributes effectively to develop visual tracking and visual memory for the skill of setting in volleyball.

⁹ - Ibrahim Abdullah Faraj Alzeriqat. Visual disability - basic concepts and educational considerations. I 1 (Amman: Dar al-maseerah for publication, distribution and printing, 2006), pp. 54

¹⁰ - [Http://WWW.lebarmy.gov.16/](http://WWW.lebarmy.gov.16/) arricle

¹¹ - Abdul-Aziz Abdul-Karim Mustafa. Motor evolution of the child. M 2 (Rawaea Al-faker for publication and distribution, Riyadh: 1996) p. 138 .

¹² - Jehan Mohammed Fouad, Iman Abdullah Zaid; the effectiveness of visual training on some of the skill variables and visual capabilities in volleyball, research published in the Scientific Conference VIII (University of Zigzag, Faculty of Physical Education for Benin, 2005) p 25 .

¹³ - Mohammad Hassan Allawi, Abu-Ela Abdel Fattah. Physiology of sports training. (Dar Al-faker Al-Arabia, Cairo: 2000) p 87.

- ☞ The existence of significant differences between the pre-test and the post-test in both groups the experimental and the control for the experimental group in visual tracking and visual memory for the skill of setting in volleyball.
- ☞ The existence of significant differences between the two groups of research the experimental and the control in the post-tests for the experimental group in visual tracking and visual memory for the skill of setting in volleyball.

Recommendations :

- ☞ Paying attention to the visual space intelligence for its importance in developing the skills of volleyball.
- ☞ Paying attention to the strategy of mental maps for its importance in the process of learning and evolution
- ☞ Paying attention to the visual capacities for its importance for the development of volleyball skills.
- ☞ Doing further studies about visual space intelligence according the mental maps, and about other skills in other sport games and activities .

REFERENCES

Abdul Aziz Abdul Karim Mustafa.E Motor development of the child m 2 (House masterpieces of thought for publication and distribution, Riyadh: 1996).

Alan Berman, OD, Institute for Sports Vision [www. opt. pacificu. Edu /ce/](http://www.opt.pacificu.edu/ce/),2011.

Ghosooun Natiq : The effect of exercise in the development of some compatibility functions and visual processing with players Ramat soil (PhD thesis, 2010).

<http://www.bbc.co.uk/science/humanbody/sleep/tmt>.

<http://WWW.lebarmy.gov.16 /arricle>.

Ibrahim Abdullah Faraj Alzeriqat: visual disability- basic concepts and educational onsiderations. E I 1 (Amman: Dar al-maseera for publication and distribution, and printing, 2006).

Jehan Mohammed Fouad, Iman Abdullah Zaid; the effectiveness of visual training on some of the variables skill and visual capabilities in volleyball, research published in the Scientific Conference VIII: (University of Zagazig, Faculty of Physical Education for Benin, 2005).

Mohamed Mohamed Zaki; visual vision skills of athletes: (Egypt, Egyptian Library for printing and publishing and distribution, 2004).

Mohammad Hassan Allawi, Abdel Fattah Abu-Ela.E Physiology of sports training. (House of the Arab Thought, Cairo: 0002).

Mohammed Ibrahim Qattawi: methods of teaching social studies, i 1, House of the Arab Thought Oman .2007

Suleiman Ali Hassan; the entrance to the Sports Coaching (Library of Printing and Publishing, University of Mosul, 1983).

Tariq Hassan.E Hussein Sabhan. Skills and Attacking skills and defense in volleyball. "(Press Baghdad Alkalma al tayba 0.2011).

Thouqan slaves and others: the brain and learning and thinking, i 1, (Publishers and Distributors of Dar al fikr, 2007).

[ttp://www.thin .smart.com/2 /articles /mind mapping.html](http://www.thin.smart.com/2/articles/mindmapping.html).

Wadeaa Yassin and Mohammed Hassan; statistical applications and uses of computer research in Physical Education, (National Library of Printing, University of Mosul 0.1996).

Wajeah Mahjoub: the physiology of learning, i 1 (House thought for printing and publishing, Jordan, 2002).

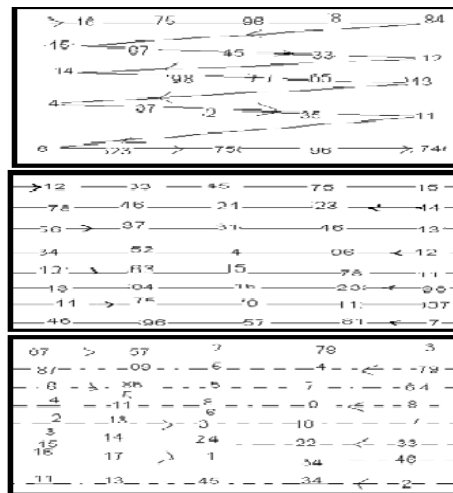
APPENDIX (1) shows the scale of visual space intelligence⁽¹⁴⁾

Dear student : In your hands a group of questions, please read it carefully with focus then answer it clearly. In case the phrase agree strongly with you, give yourself (5) points and if the phrase disagree strongly with you, give yourself (0) but if your answers are between (5 / 0) choose one of the numbers between the two numbers (1,2,3,4) you determine.

Phrases of questionnaire	Degree
1 – I express myself in writing manner easily.	
2 – I follow a lecture or a written essay easily.	
3 – I have a large sum of vocabulary.	
4 – I have good ability to explain things to others	
5 – I have a tendency to deal with numbers	
6 - I possess a good capacity to distinguish between models	
7 – I enjoy solving problems	
8 – I like treating the task in an organized and logical way	
9 – I have good ability for reading the maps	
10 – it is easy to solve the puzzles, which include the successive forms	
11 – I can keep some pictures in my mind	
12 – I find charts and graphs a way help me to understand information	
13 – I can remember the tune easily	
14- I can play the music	
15 - I can distinguish between the different musical instruments.	
16- I can spend time listening to music or musicians	

¹⁴ - Mohammed Ibrahim Qattawi: methods of teaching social studies, i 1, House of the Arab Thought Oman .2007. P 242.

Appendix (2) shows Kank- Defek plates for measuring visual tracking



Appendix (3) shows the test of visual memory

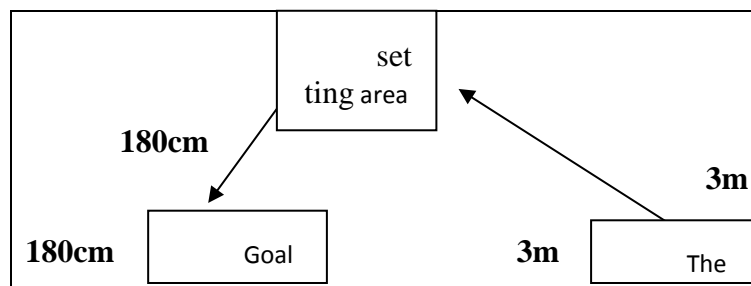


Appendix (4) shows the form of the skill of setting (technique) test ⁽¹⁵⁾

Shows the performance evaluation form that was used by the evaluators ⁽⁹⁾ in the test for assessing the performance of volleyball skill of setting..

sequence	Preparatory section (3)	Main section (5)	The final section (2)	Final degree (10)

Appendix the skill of setting (accurate)



(5) shows the test in volleyball

¹⁵ - Loma Samar: The impact of the use of utilities in the learning speed and accuracy of some basic volleyball skills, Master Thesis, University of Baghdad, College of Physical Education 1999.

• - Expert evaluators (a. M. D. Suhad denominator, m. D. Hoda M. Badawi. D Sondos Moses - Volleyball)