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## The effect of educational units according to brain-based learning on the level of positivity and the performance of some offensive formations in volleyball for female students

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### Abstract

The main objective of preparing this study is a scientific addition in the field of physical education, especially in the game of volleyball, and it included the preparation of educational units according to brain-based learning and knowing the effect of these educational units on the level of positivity and learning offensive formations in volleyball among fourth-stage female students as a result of noticing weakness the obvious implementation of these formations during play, hence the idea of the study came, as the researcher used the experimental approach with two groups, the experimental and the control, and the vocabulary of the educational unit was implemented on the experimental group, and after the end of the experiment period, post-tests were conducted and the results were processed statistically. In volleyball, the researcher recommends conducting other similar studies on the basic skills of volleyball and other sporting events.

**Keywords:** Positivity, volleyball for female, offensive formations

### 1. Introduction

Motor learning is one of the important sciences in the mathematical field and is directly related to the student's performance. This is because it is a group of mental processes that occur during the exercise that helps the student to change his motor behavior, as most of the modern theories in motor learning recommend learning all the possibilities of performance and in conditions similar to competition conditions so that the student gets used to it, which helps him reduce the errors of his skillful performance.

Brain learning is based on the fact that each person has a unique brain, which is capable of learning and acquisition if the appropriate conditions are available to him, and his ability to learn increases by stimulating his nerve cells and activating them by forming the largest number of nerve connections with other nerve cells. The brain is a complex and unique adaptive system capable of processing more than one task in parallel, and brain control confirms that the difference between learners in learning and thinking patterns is due to their dependence on one hemisphere of the brain in receiving and processing information. And that the learner can learn better when both hemispheres of the brain participate in the processing, storage and retrieval of information, and the researcher agrees with this trend in the importance of cerebral control in learning, as it works to develop thinking and increase cognitive achievement, and this has been confirmed by many studies in the field of applying this type of learning and through It becomes clear to the researcher that any correct and integrated cognitive activity by the student is issued as a result of the functional integration of the work of the brain and not as parts on the basis that the process of recruitment and operation of information cannot reach its highest level of efficiency except through functional integration between the parts of the brain.

The concept of the level of positivity comes through adding theoretical information after understanding, absorbing and translating it into motor skills on the ground for self-realization

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and self-reliance and the importance of cultural interaction and taking from the cultures of others. Therefore, self-realization and capabilities must be achieved in a changing and evolving society, which helps to reassure and sufficiency in work. The ability to self-control, take responsibility, handle frustration, and lower the level of anxiety.

The game of volleyball is one of the competitive team games that occupies the forefront in terms of its spread in the world after the game of football, and it has evolved from a game for spending leisure time into an Olympic game that requires high physical requirements and tactical skill, as the game depends on basic skills as an important base upon which this game is built. The game is to advance in the level of technical and skillful performance to implement the game plans (defensive and offensive) with accuracy to score points and achieve victory. The implementation of the tactical performance requires the development of mental abilities through the process of acquiring information, which leads to the development of their tactical expertise, which helps them to think quickly and be able to make the appropriate decision according to the playing situations. Therefore, attention must be directed to the importance of offensive formations, as they require a lot of effort and practice in order to master them. Therefore, the use of educational units according to brain-based learning can have a significant and effective role in developing the level of positivity and the performance of the offensive formations under discussion for students of the fourth stage of the Faculty of Physical Education and Sports Sciences. Hence the importance of the study in preparing educational units according to brain-based learning. And developing the level of positivity in the sample because it works to employ theoretical information after assimilating it into motor skills on the ground and thus using the best latent energies in the brain to reach the best results. Also, the level of positivity helps in choosing the most appropriate and according to the playing center and helps in good communication between teachers and learners according to situations different toys.

### 1.2 Research Problem

Through the fact that the researcher is a teacher of volleyball for more than ten years, she found a weakness in the application of offensive formations for the students of the fourth stage, and the fact that the curriculum of the fourth stage included defensive and offensive formations in addition to playing and arbitration. (Formations) and the difficulty of implementing them within the changing playing situations and their multiple states, and this requires high proficiency, efficiency and excellence in carrying out the tasks and duties of the formation to be applied during the performance of the game. And the matter is not limited to the theoretical material, but rather extends to the practical material, in addition to the failure to prepare educational curricula that depend on the use of brain functions in the learning process. The researcher developed the level of positivity and performance of offensive formations in volleyball for female research students

### 1.3 Research objective

1. Preparing educational units according to brain-based learning at the level of positivity and learning offensive formations in volleyball for female students.
2. Identifying the effect of educational units according to brain-based learning on the level of positivity and learning offensive formations in volleyball for female students.

3. Identifying the effect preference of educational units prepared according to brain control in the positive level and learning offensive formations in volleyball for female students.

### 1.4 Research hypotheses

1. There is a positive effect of educational units according to brain-based learning in the level of positivity and learning offensive formations in volleyball for female students between pre and post-tests.
2. The educational units, according to the brain-based learning at the level of positivity and learning offensive formations in volleyball, have female student's preference in the post-tests.

### 1.5 Research field

**Human field:** Fourth-year students - College of Education for Girls - Department of Physical Education and Sports Sciences 2022-2023.

**Time field:** The period from (6/10/2022) to (2/7/2023).

### Spatial field

The indoor playground in the College of Education for Girls - Department of Physical Education and Sports Sciences, University of Kufa.

### 1.6 Definition of Terms

1. **Brain-based learning:** It represents a method or a comprehensive approach to education. Learning is based on modern neuroscience assumptions that explain how the brain works naturally and is based on what is currently known about the anatomical structure of the human brain and its functional performance in its various stages of development. (Al-Salti, Nadia Samih, 2004, p. 108) <sup>[1]</sup>.
2. **The level of positivity:** It is the ability to see responsibility, make decisions after deliberation and reflection, and the ability to face new situations within the limits of available flexibility, as well as the ability to give and feel others, cherish them, belong to them, and care for them in their life matters in the light of their standards and habits. (Al-Qaftan, Samia, 1981, p.34) <sup>[2]</sup>.

### 2. Research methodology and field procedures

**2.1 Research Methodology:** The researcher used the experimental method due to its suitability and the nature of the research.

### 2.2 Research community and sample:

The research sample is determined by female students of the fourth stage in the Department of Physical Education and Sports Sciences - College of Education for Girls - University of Kufa for the academic year 2022-2023, whose number is 41 students. 10 female students were selected as a survey sample, and one female student was excluded due to injury, as shown in the following table:

**Table 1:** Shows the description of the sample:

Sample	N	Percentage
Main	24	59 %
Exploratory	12	29 %
Excluded	5	12 %
Total	41	100 %

## 2.3 Homogeneity and equivalence of the research sample

### 2.3.1 The homogeneity of the research sample

For the purpose of homogeneity of the research sample in the

variables (age - length - mass), as the researcher extracted the torsion coefficient for the experimental and control groups, as shown in the following table.

**Table 2:** Shows the homogeneity of the research sample in the variables (age - length - mass):

Variables	Measuring unit	Mean	Median	Std. Deviation	Skew ness	Result
Age	Year	22.603	22.6	0.438	0.020	Homogeneous
Length	Cm	170.388	171	3.349	0.547	Homogeneous
Mass	Kg	67.538	67.25	3.857	0.086	Homogeneous

Through the results of Table (2), it is clear that the values of the torsion coefficient are smaller than  $(1 \pm)$ , which indicates the homogeneity of the research sample in the variables (Length, body mass, chronological age).

### 2.3.2 The equivalence of the research sample

Equivalence was conducted between the research variables and for both groups, as it was found that the two groups are equivalent, according to the following table

**Table 3:** Shows the homogeneity and equivalence of the research sample (experimental and control) in the dependent variables:

N	Offensive formations	Measuring unit	Experimental		Control		calculated (t) value	Tabular (t) value
			Mean	Std. Deviation	Mean	Std. Deviation		
1	Formation (3-3)	Degree	6.750	0.753	7.083	0.792	1.5	2.07
2	Formation (2-4)	Degree	6.250	0.965	5.916	0.792	1.36	
3	Formation (1-5)	Degree	6.083	0.668	5.833	0.834	1.33	
4	positivity level	Degree	40.28	11.75	40.11	11.31	0.04	

At 22 degrees of freedom and a level of significance of 0.05 It is clear from the above table that the sample is equal in terms of the dependent variables.

## 2.4 Field Research Procedures

### 2.4.1 Procedures for determining the level of positivity scale

The level of positivity scale prepared by Reem Mostafa was adopted, and it consists of 89 items, which contains 5 dimensions, namely:

- The second dimension (self-esteem) and its 22 paragraphs, from 28-49 between the positive and negative paragraphs
- The third dimension (emotional balance) 12 paragraphs from 50-61 between the positive and negative paragraphs
- The Fourth Dimension (Ego Strength) 15 paragraphs from 62-76, three of which are positive only
- The fifth dimension (emphasis) 13 paragraphs from 77-89 between the positive and negative paragraphs

### 2.4.2 Correction key for scale

The paragraphs of the scale were formulated in the form of positive and negative paragraphs, and the response scale consisted of four responses (applies to me a lot, applies to me to some extent, applies to me a little, does not apply to me at all), and the distribution of scores according to the response was as follows:

- In the positive statements, give 3 marks for the answer (it applies to me a lot)
- Two degrees for the answer (applies to me to some extent)
- 1 mark for the answer (applies to me a little)
- Zero for the answer (does not apply to me at all)
- Conversely, negative statements

## 2.5 Scientific foundations of the scale

### First: The validity of the scale

The researcher relied on the validity of the content of the scale by applying it to the exploratory sample of 12 female students. The internal consistency coefficient was calculated through the correlation of the paragraph with the total score of

the scale. The values of the correlation coefficient ranged between (0.68-0.85), which is a positive correlation with this. Is the scale true in what it is designed to measure?

### Second: The stability of the scale

To verify the stability of the scale, the researcher used the test and re-test method, and the Pearson correlation coefficient was extracted between the two tests, as the stability coefficient was 0.86.

## 2.6 Procedures for determining the degrees of offensive formations

Reliance was made on the offensive formations used in the study of Riyadh Amuri, (Amuri, Riyadh, 2021) who used the offensive formation (3-3) (4-2) (5-1), in which the students were divided into 4 groups, and each group consisted of 3 students, and each student wore a flannel (training shirt). In a different color (red - green - orange).

**Receiving service:** Preparatory 3 Main 5 Final 2.

**Lifting:** Preparatory 4 main 4 final 2.

**Spiking:** Preparatory 3 main 4 final 3.

Each student is given three attempts, and the expert (the evaluator) has to follow the student according to the color of the shirt during its rotation to change the three skills, and the total score for each attempt is 10 degrees. 10 degrees, and (5) degrees are added to it, representing a degree for the implemented formation form, which was placed by the evaluator in the last field of the form for each of the four cooperating groups, it is combined with the total score extracted from the three skill scores (10) degrees, so that the final offensive formation score becomes (15) degrees, and for the researcher to deal with it statistically. This final score becomes obtained by each individual in the cooperating group, for example, for the cooperating group A The group in the offensive formation (3-3) got (12) degrees, so each member of the group got (12) degrees in this formation, and so on for the rest of the groups and for all the offensive formations under discussion.

## 2.7 Main experiment

**2.7.1 Pre-tests:** Pre-tests were conducted for both groups in

measuring the level of positivity and offensive formations on 10-4-2023.

### 2.7.2 Preparing and applying educational units

After the units were prepared by the researcher, the implementation of the educational units took 4 weeks, one unit per week, and the time per unit was 90 minutes. The educational units were implemented according to brain-based learning, according to the following steps:

1. After the units were prepared by the researcher, the implementation of the educational units took 4 weeks, one unit per week, and the time per unit was 90 minutes. The educational units were implemented according to brain-based learning, according to the following steps:
2. A brief explanation of the common mistakes for each type of offensive formation, with an explanation of how to overcome them, i.e. an explanation of the correct technique for performance.
3. Studying and reading each of the attacking formations and stopping for a moment to remember the most important main points of those formations from correct

technical performance and the mistakes that he overcame to ensure that he does not fall into them and does not move to another formation except after making sure of mastery and knowledge of the formation that precedes it.

4. Understanding what each formation includes without memorizing it, because memorization is doomed to disappear after a short period.
5. The use of a display device (data show) to display the game using a specific formation.
6. Displaying posters (pictures) of the movement parts of the player while performing the formation
7. Using music because it has a great impact in creating a fertile environment that helps better learning

### 2.7.3 Post-tests

After completing the implementation of the educational units, post-tests were conducted on 12-5-2023 to measure the level of positivity and offensive formations.

### 2.8 Statistical methods

A group of statistical methods were used to obtain the results.

## 3 Presenting the results

### 3.1 Presenting the results of the pre and post-tests of the experimental group for the research variables

**Table 4:** Shows the arithmetic means, standard deviations, and the value of (t) calculated for the pre and post-tests of the experimental group for the research variables:

N	Offensive formations	Measuring unit	Pre-test		Post-test		calculated (t) value	Tabular (t)value
			Mean	Std. Deviation	Mean	Std. Deviation		
1	Formation (3-3)	Degree	6.750	0.753	11.583	1.443	11.359*	2.20
2	Formation (2-4)	Degree	6.250	0.965	12.166	0.937	23.224*	
3	Formation (1-5)	Degree	6.083	0.668	10.833	0.834	27.892*	
4	Positivity level	Degree	40.28	11.75	78.32	16.34	6.277	

\* At a degree of freedom of 11 and a level of significance of 0.05

### 3.2 Presenting the results of the pre and post tests for the control group of the research variables

**Table 5:** Shows the arithmetic means, standard deviations, and the value of (t) calculated for the pre and post tests for the control group of the research variables

N	Offensive formations	Measuring unit	Pre-test		Post-test		Calculated (t) value	Tabular (t)value
			Mean	Std. Deviation	Mean	Std. Deviation		
1	Formation (3-3)	Degree	7.083	0.792	10.916	0.996	13.664*	2.20
2	Formation (2-4)	Degree	5.916	0.792	10.083	0.996	16.335*	
3	Formation (1-5)	Degree	5.833	0.834	9.916	0.792	17.776*	
4	Positivity level	Degree	40.11	11.31	55.28	11.79	3.08	

\* At a degree of freedom of 11 and a level of significance of 0.05

### 3.3 Presenting the results of the post-tests for the experimental and control groups

**Table 6:** It shows the arithmetic means, standard deviations, and the calculated (t) value for the post-tests of the two research groups (experimental and control)

N	Offensive formations	Measuring unit	Experimental		Control		calculated (t) value	Tabular (t)value
			Mean	Std. Deviation	Mean	Std. Deviation		
1	Formation (3-3)	Degree	11.583	1.443	10.916	0.996	13.664*	2.07
2	Formation (2-4)	Degree	12.166	0.937	10.083	0.996	16.335*	
3	Formation (1-5)	Degree	10.833	0.834	9.916	0.792	17.776*	
4	Positivity level	Degree	78.32	16.34	55.28	11.79	5.35	

\* At 22 degrees of freedom and a level of significance of 0.05

## 4. Discuss the results

Through the results presented in the previous tables, it was found that there were significant differences between the pre and post-tests, in favor of the post tests, and in favor of the experimental group, and this is due to:

The educational units, which were appropriate in terms of the

theory of brain-based learning, which relied on providing a fertile learning environment, providing appropriate devices and tools, using musical melodies, and showing explanatory films, as the theory had a positive impact on progress in learning offensive formations in volleyball, and each student has a rule His cognitive style is capable of performing certain

tasks and acting positively to various stimuli produced by the educational environment.

Brain-based learning is also one of the recent trends in the educational process, which pays great attention to the learner's brain and the appropriate learning, and that this theory consists of five stages (preparation, acquisition, elaboration, memory formation, functional integration) according to which learning based on the brain, where it contributed to giving organized teaching and moving away from randomness and improvisation in learning as well as linking previous information with new information, and providing rest periods during these stages, which contribute to the formation of memory for the learner and benefit from the cognitive aspects in the practical application of the researched formations, and through the stages of learning based on The brain is the student at the center of the educational process, and therefore the self-acquired learning is the best, which contributed to the development and strengthening of the knowledge structure of the learner, and brain-based learning provides an encouraging learning environment rich in positive stimuli, which makes learning more interesting and positive. Through displaying pictures and posters, watching scientific and explanatory films about the parts of movement and skill, and using music, all of this is in harmony with the work of the brain according to this theory. The researcher believes that the use of more than one skill within a single offensive formation (receiving the transmission - the fairest - the crushing hit) helped the experimental group to master these skills, unlike the control group in which the student resorted to memorizing the material automatically and thus deals with the information superficially as well as Therefore, the diversification in the use of stages works to create motives and create a desire among the learner to reach the goal. The theory of brain-based learning can also be used in education and the adoption of educational and visual aids and programs for displaying pictures and explanatory and detailed films in teaching female students.

The effectiveness of brain-based learning lies through the various procedures that address all the senses, as it includes a visual display by displaying scientific clips related to the offensive formations under study, as well as images and music in harmony with the brain and displaying diagrams to detail the formations. In addition to drinking water in specific periods of the unit, it gives benefit to the nervous system in activating the brain, and the researcher believes that the learner did not previously receive such a type of education, as they were accustomed to traditional education with one context and a fixed routine, and therefore this new education was born with a strong motivation for education, as it takes into account their capabilities and their condition It takes into account individual differences and simplifies the educational material for them, in addition to the atmosphere available for learning. All this leads to effective learning and achieving the goal of the prepared curriculum.

Brain-based learning also helped bring about a development in the level of response in the experimental group. This is due to the method of positive thinking and the optimal use of brain energies, thus organizing and retrieving information and the ability to apply it on the ground, which is one of the manifestations of a healthy personality. The thinking process is a purposeful behavior that changes and develops according to the growth of the individual. And what he goes through during the stages of his life and linking these skills to achieve psychological balance and reach a degree of positivity, which constitutes a strong motivation for him in facing challenges in

addition to that the learning process is full of situations in which the student seeks to do everything possible to reach the high level and achieves this by linking what the learner possesses of Positive balanced personality and use of his brain in an integrated manner.

## 5. Conclusions and recommendations

### 5.1 Conclusions

1. The educational units according to the theory of brain-based learning had a clear and effective impact on developing the level of positivity among fourth-stage female students.
2. The educational units according to the theory of brain-based learning had a clear and effective impact on learning some offensive formations in volleyball for female students.
3. The experimental group excelled in the results of the post-tests over the control group in the level of positivity and learning some offensive formations in volleyball for female students.

### 5.2 Recommendations

1. Relying on the theory of brain-based learning in educational teaching units for students of the Faculty of Physical Education and Sports Sciences.
2. Conducting other studies that include other sporting events according to the brain-based learning theory.
3. Preparing educational units based on the theory of brain-based learning in developing basic skills in volleyball.

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