

## **The Impact of a Proposed Educational Program According to the Circadian Biorhythm Pattern for the Treatment of Learning Disabilities on the Performance of Reception Skill in Volleyball**

**\*Dr/ Naglaa Abdel Moneim El Barbary**

### **Abstract:**

The research aimed to identify the differences between the members of both experimental groups (morningness, eveningness) in the performance level of reception skill in volleyball for female students with learning disabilities, depending on the difference of biorhythm pattern. The researcher used the experimental method on a sample of 27 second-year female students with learning disabilities at Faculty of Physical Education, Port Said University. They were divided according to their pattern of the circadian biorhythm into two experimental groups. The first one (morningness) consists of 16 female students and the second (eveningness) consists of 11 female students. The research tools include physical and skill tests, pictorial IQ test, Östberg Scale to determine the

biorhythm pattern – the proposed educational program. The most significant findings include:

1. The proposed educational program according to the pattern of circadian biorhythm positively affects the performance level of reception skill in volleyball for female students with learning disabilities.

2. The group with biorhythm pattern agreed with the timing of implementation of the proposed educational program differentiates from the group with biorhythm pattern not agreed with the time of the implementation of the content of educational program.

The most significant recommendations include:

1. The proposed educational program according to the pattern of circadian biorhythm should be used to improve the performance level

---

\* Assistant Professor, Department of Team Sports Theories & Applications, Faculty of Physical Education, Port Said University

of reception skill in volleyball among the female students with learning disabilities at Faculty of Physical Education in Port Said.

2. The biorhythm theory should be taken into account when conducting applied tests for female students with learning disabilities at the faculty in order to obtain accurate results.

### **Introduction and Problem:**

Biorhythm is meant to be the ripples that occur in level the state of the various organs of the body between the rise and fall as the human body cannot remain function with full organs' power, and a high level of physiological efficiency for long periods. The course changes between the rise and fall in all body functions. The concept of biorhythm is not limited to just the changes in the physiological functions of the individual only, but it also includes all biological, psychological, and social human configurations.

The individual's behavior is affected by his biorhythm, which includes three cycles affecting him (physical, intellectual, emotional) cycle. Physical

cycle takes 23 days and affects the strength, speed, endurance, and an individual's ability to resist disease. Intellectual cycle takes 33 days and affects human intellectual skills. Emotional cycle takes 28 days and affects mood, sensation, feeling, emotion and artistic creativity.

Biorhythm of human is divided into three patterns. Morningness is involved in the individuals, who have in the morning hours high capacity to work with high vital organs, the ability to accept high loads during that period. Eveningness is involved in the individuals with high ability to work efficiently in the evening, with increasing tension and irregular central functions in the morning. The individuals with vital erratic pattern have the ability to show the highest level of work efficiency in both morning and evening periods, where their biorhythm pattern is almost equal throughout the day.

Learning disabilities are disturbances in the ability to learn effectively, which does not fit with the real abilities of the individual. This is shown by the disturbances in the individual's ability to receive

information on school performance, organize, or express it. It is also shown by a marked disparity between the intellectual abilities of the individual in general and his performance at the same time.

The reception skill is of the important basic skills in volleyball. It is the first steps of attack, and followed by good setting and then attack either this reception is for serve or spike from the opposing team. It is worth mentioning that some of the advanced teams do not perform this skill well. Thus, most of the junior teams lose many points because of poor reception skill they have. Therefore, it requires the allocation of complete training modules on the reception skill.

Through teaching volleyball curriculum for the female students of Faculty of Physical Education, Port Said University, and participating in the college's practical tests, the researcher noticed that a large percentage of female students are not able to perform reception skill well in practical tests. This drew the attention of the researcher, and this, if anything shows that the learning process does not go its

constantly successful way, but it encountered difficulties impeding its progress, especially in the acquisition of new skills. The researcher, therefore, attributed this to the lack of interest in determining the circadian biorhythm pattern of female students and benefit from this in upgrading kinetic achievement for these female students in volleyball curriculum.

It already becomes clear the importance of employing biorhythm theories and its various cycles (physical, emotional, intellectual, functional) in learning the reception skill in volleyball. This skill is affirmed on first-year female students at the faculty because it may contribute to overcome some of the problems facing the female teacher in the lower level of performance of reception skill among some female students, and not to perform with a high skill level during the practical test, in spite of implementing the educational program on a regular basis.

Consequently, the researcher suggested designing a proposed educational program to teach reception skill in volleyball for female

students with learning disabilities according to the pattern of their circadian biorhythm. Thus, this is a pioneer and unprecedented study in the field of teaching volleyball skills for female students of the faculties of physical education.

**Objectives:**

This research aims to identify:

1. Learning disabilities through conducting a diagnostic test to identify the difficulties and sources of errors in the reception skill in volleyball among female students with learning disabilities, members of the two experimental groups (morningness, eveningness).

2. The impact of the proposed educational program, according to the pattern of circadian biorhythm on the performance level of reception skill in volleyball among the female students with learning disabilities, members of both experimental groups: the first (morningness) and the second (eveningness).

3. Differences between members of the two experimental groups (morningness, eveningness) in the performance level of reception skill in volleyball among the female students with learning disabilities, depending on the different biorhythm pattern they have.

**Hypotheses:**

1. There would be statistically significant differences between both pre- and post-tests of both experimental groups (morningness, eveningness) in the performance level of the reception skill in volleyball and in favor of the post-test.

2. There would be statistically significant differences between both post-tests of both experimental groups (morningness, eveningness) in the performance level of reception skill in volleyball in favor of the group with biorhythm pattern agreed to the timing of implementation of the proposed educational program.

**Procedures:**

**Methodology:**

The researcher used the experimental method due to its suitability to the nature of this study, by using pre, post-test of the two experimental groups according to the biorhythm pattern (morningness, eveningness).

**Sample:**

The researcher deliberately selected the research sample among the first-year female students at Faculty of Physical Education, Port Said University in the second semester of the academic year 2014/2015. The sample consisted of 69 female students, who already studied

volleyball practically and theoretically in the first semester of college, and did not achieve the degree of success in the practical test. The total number of female students failed in the practical test of Volleyball curriculum was 35 female students.

Eight (8) female students were excluded from the research sample who characterized by irregular biorhythm pattern. Thus, the basic research sample became 27 female student divided into two experimental groups according to the pattern of their own circadian biorhythm as follows:

Experimental Group I: with morning biorhythm

pattern and their number was 16 female students.

Experimental Group II: with evening biorhythm pattern, and their number was 11 female students

The researcher indicated that she used the female students with irregular biorhythm pattern, whose numbers were 8 female students as an exploratory sample to rationalize the tests under discussion.

Equality between the two research groups, the first experimental group (morningness), the second experimental group (eveningness) was conducted in the previous variables. Tables (1) and (2) illustrate this.

**Table (1)  
Significance of Differences between the Two Groups of Research, According to Circadian Biorhythm Pattern (morningness, eveningness) in Growth Rates under Discussion**

Variables	Measure Unit	Morningness Group n = 16		Eveningness Group n = 11		“t” value
		M	S	M	S	
Age	Year	18.75	0.52	18.61	0.46	0.69
Height	Cm	165.69	4.86	164.53	4.59	0.59
Weight	Kg	67.00	5.41	66.49	5.26	0.23
IQ	Score	42.55	5.13	42.00	4.91	0.27

The value of tabular "t" at the level of 0.05 = 2.060

Table (1) indicates that there are no statistically significant differences at the level 0.05 between the first research group (morningness)

and the second (eveningness) in in growth rates (age, height, weight, IQ), which indicate the equality of the two research groups in these variables.

**Table (2)**  
**Significance of Differences between the Two Groups of Research,**  
**According to Biorhythm Pattern (Morningness, Eveningness) in**  
**the Physical and Skill Variables under Discussion**

Variables	Measure Unit	Morningness Group <i>n = 16</i>		Eveningness Group <i>n = 11</i>		“t” value
		M	S	M	S	
Arms muscle ability	meter	4.15	0.39	4.00	0.48	0.86
Legs muscle ability	meter	1.42	0.15	1.38	0.20	0.57
Compatibility	Score	11.91	3.16	11.55	2.84	0.29
Torso and thigh flexibility	Cm	7.25	2.31	7.00	2.19	0.27
Reception accuracy (1)	Skill Score	4.41	1.58	4.25	1.51	0.41
Reception accuracy (2)	Skill Score	10.23	2.33	10.00	2.29	0.26

Value of tabular "t" at the level of 0.05 = 2.060

Table (2) indicates that there are no statistically significant differences at the level 0.05 between the two groups of research (morningness, eveningness) in the physical and skill variables under discussion, which indicates equality of the two groups of research in these variables.

**Data Collection Tools:**

First: Physical tests:

1. Pushing test of Medical ball 3 Kg.
2. Standing broad jump test

3. The test of throwing and receiving balls from the wall
4. Standing forward trunk flexion test.

B - Skill tests:

1. Receiving serve test and accurate directing of the ball to the ring.
2. Receiving serve Test and accurate directing of the ball to specified areas.

II: Evaluation form of performance level of reception skill:

A form is designed to evaluate the performance of reception skill in volleyball as

a diagnostic test to determine the level of the female students and find out where the difficulties lie in performing the skill under discussion, through scientific references specialized in volleyball. Kamal Abdel Hamid, Mohammed Nasr elddin (2005) indicated that includes diagnostic evaluation is an attempt to identify learning disabilities faced by female learners during the educational process in trying to develop the appropriate remedial educational programs.

Based on the foregoing, the researcher designed an evaluation form in the light of the previous scientific references. Then the form was displayed on specialists in volleyball for opinion and determining its suitability to assess the performance level of the reception skill in volleyball. The alterations adopted by experts made, and thus the form became suitable for assessing the performance level of the skill under discussion.

III: Östberg Scale to determine the biorhythm pattern:

The Arabization and codification of this scale were done by Yousef Dahab,

Mohamed Gaber, Ahmed Mahmoud (1993). Abul Ela Abdul Fattah and Mohamed Subhy Hassanein (1997) re-codified this scale, which consists of 23 questions. Each question has more than an answer. The form results are evaluated by standard grades for each answer to determine the circadian biorhythm pattern (morningness, irregular pattern, eveningness). This scale was used in many scientific studies conducted in the sports field. [28, 1]

IV: Pictorial IQ Test prepared by Ahmed Zaky Saleh (1987): [3]

This test is designed to assess the general intellectual ability of individuals. It depends on recognizing the relationship between a range of shapes and images, and selecting different shape from among the group's units. The test consists of 60 questions, and the time available to answer all the questions is 10 minutes.

### **The Proposed Educational Program:**

The Educational Program Objectives:

1. To identify learning disabilities and the sources of

technical errors in the reception skill in volleyball.

2. To improve the performance level of reception skill in volleyball in the light of biorhythm pattern of the sample.

Foundations of Developing the Educational Program:

1. Identifying learning disabilities and the sources of technical errors in the reception skill in volleyball.

2. The appropriateness of program content to the level and capabilities of the research sample (female students with learning disabilities).

3. Gradation from easy to difficult and from simple to complex.

4. Identifying the biorhythm pattern of the members of basic research sample.

5. Taking into account the provision of instructions and guidelines that illustrate the correct technical aspects for each step to avoid errors and correct them.

6. The content of the program is to suit with the tools and abilities necessary to implement the program.

7. To take into account the appropriate frequencies to learn each skill.

8. The flexibility of the program and its acceptance to be amended in accordance with the educational position.

9. The program content is characterized by diversity, ease, and simplicity.

Treatment Plan in the Educational Program:

The researcher identified learning disabilities of the reception skill in volleyball through applying performance level evaluation form. She could identify the difficulties among the members of the experimental group; summarized as follows:

- Receiving the ball with top hands.

- A lack of consistency between the movements of arms and legs.

- The lack of follow after passing.

- The weakness of passing.

- Inaccuracy in directing the ball.

- Slow performance.

Then the researcher prepared a proposed treatment plan for female students with learning disabilities in the skill under discussion through access to specialized scientific references. This plan included the following:



1. Female students were divided according to the individual differences in the groups.

2. The Gradation from easy to difficult.

3. The necessary guidance is provided to female students during and after applying the skill.

4. The measurement is used to identify how successful the skill is.

Time Distribution of the Educational Program:

Time periods have been distributed to the contents of educational module as follows:

- The weeks number of educational program was (4) weeks.

- The number of educational modules was (8) modules by two modules per week

- The module time was (45) minutes distributed as follows:

- Warm-up (12) minutes.

- The main part (30) minutes.

- The last part (3) minutes.

#### **Pre-tests:**

The researcher conducted the pre tests of the members the two research groups (morningness group, eveningness group) in the performance level of the reception skill in volleyball. The test for the first experimental group (morningness) was conducted

from 9 to 11 AM and the second experimental group (eveningness) from 3 to 5 PM in the period from 03/03/2015 to 05/03/2015.

#### **Application of the Proposed Educational Program:**

The content of the proposed educational program was applied to the members of first experimental group (morningness) from 9.45 to 10:30 AM, and to the members of the second experimental group (eveningness) from 10:35 to 11:20 AM in any period contrary to the biorhythm pattern they have. The program was applied by two educational units per week, for (4) weeks, from 08/03/2015 to 04/04/2015.

#### **Post-tests:**

The post-tests were conducted for the two research groups in the same order and manner in which the pre-tests were conducted in the performance level of reception skill in volleyball, from 06/04/2015 to 09/04/2015.

#### **Results Presentation and Discussion:**

I: The presentation and discussion of the results of the first research hypothesis, which states: "There would be statistically significant differences between both pre and post tests of both experimental groups (morningness, eveningness) in the performance level of the

reception skill in volleyball and in favor of the post test."

**Table (3)**

**Significance of Differences between Pre- and Post-Tests of the First Experimental Group (Morningness) in Performance Level of Reception Skill in Volleyball n = 16**

Variables	Measure Unit	Pre-test		Post-test		"t" value
		M	S	M	S	
Reception skill accuracy (1)	Score	4.41	1.58	18.25	3.14	14.92*
Reception skill accuracy (2)	Score	10.23	2.33	47.91	5.17	23.66*

Value of tabular "t" at the level of 0.05 = 2.131

\*Significance at level of 0.05 tests of the first experimental group (morningness) in the performance level of reception skill in volleyball and in favor of the post-test. Table (3) indicates that there are statistically significant differences at the level of 0.05 between both pre- and post-

**Table (4)**

**Significance of Differences between Both Pre- and Post-Tests of the Second Experimental Group (Eveningness) in Performance Level of Reception Skill in Volleyball n = 11**

Variables	Measure Unit	Pre-test		Post-test		"t" value
		M	S	M	S	
Reception skill accuracy (1)	Score	4.25	1.51	14.93	2.88	11.29*
Reception skill accuracy (2)	Score	10.00	2.29	43.55	4.63	20.86*

Value of tabular "t" at the level of 0.05 = 2.228

\*Significance at level of 0.05 skill in volleyball and in favor of the post-test.

The researcher attributed the improvement in the performance level of the reception skill in volleyball to the effectiveness of the proposed educational program, in which the diagnosis of Table (4) indicates that there are statistically significant differences at the level of 0.05 between both pre- and post-tests of the second experimental group (eveningness) in the performance level of reception

learning disabilities is taken into account by assessing the performance level of the skill under discussion, and then developing a set of educational procedures to address learning disabilities. A set of skill exercises graduated from simple to complex was developed to address these technical errors (the lack of ball accurate directing, slow performance, and lack of compatibility) which reflected positively on the performance level of the reception skill in volleyball among members of the two experimental groups; the first group (morningness) and the second group (eveningness). This result is consistent with what indicated by Nielson (2004) that the kinetic achievement improves significantly when using diagnostic tests for motor learning disabilities. [32] Hence, therapeutic educational programs were developed for these difficulties, where the learner retains what he/she learned for a long period. This result is also consistent with the results of the study conducted by Hoogendoorn & Elisa (2004), Hamid Mohamed El Komy (2008), and Ahmed El Sayed Habashy

(2013) on the effectiveness of educational programs designed according to the diagnosis of technical errors in the skill performance, which have a positive impact on improving motor performance level of learners with learning disabilities. [31, 9, 2]

Cooper (2003) adds that educational programs for students with learning disabilities increase the rate of learner's kinetic achievement and productivity through the motor recall of what has been in the educational situation to reform the technical errors in the motor performance. [30]

Thus, the first hypothesis is realized.

II: The Presentation and discussion of the results of the the second research hypothesis, which states: "There would be statistically significant differences between both post tests of both experimental groups (morningness, eveningness) in the performance level of reception skill in volleyball in favor of the group with biorhythm pattern agreed to the timing of implementation of the proposed educational program."

**Table (5)**  
**Significance of Differences between the Two Post-Tests of First Experimental Group (Morningness) and Second Experimental Group (Eveningness) in Performance Level of Reception Skill in Volleyball**

Variables	Measure Unit	Morningness n = 16		Eveningness n = 11		“t” value
		M	S	M	S	
Reception skill accuracy (1)	Score	18.25	3.14	14.93	2.88	2.68*
Reception skill accuracy (2)	Score	47.91	5.17	43.55	4.63	2.16*

Value of tabular "t" at the level of 0.05 = 2.060

\*Significance at level of 0.05

Table (5) indicates that there are statistically significant differences at the level of 0.05 between both post-tests of the first experimental group (morningness) and the second experimental group (eveningness) in the performance level of the reception skill in volleyball and in favor of the first experimental group (morningness).

The researcher attributed the improvement in the performance level of the reception skill in volleyball to the agreement and appropriateness of the influence of the environment surrounding the female learner (the conditions, timing and educational process

characteristics with the circadian biorhythm pattern properties), making the results of the educational process positive with the members of the group with a biorhythm morningness. All educational modules of the proposed educational program were implemented from 9:45 to 10:30 A.M. This result is consistent with that indicated by Ali El Baik and Sabry Omar (1994) that the effectiveness of educational and training programs increases whenever there is a greater synchronization between the pattern of biorhythm and timing of the implementation of educational and training programs for the players of various sports activities. [14]

This result is also consistent with the results of the study conducted by Maha Attar Mohamed (2000), Medhat Younis Abdel Razek (2004), Tarek Mahdy Attia (2006), Hamid Mohamed El Komy (2008), Moataz Hilal Hilal (2014), Mustafa Jassim El Shammary (2015) that there are superiority and excellence of the groups with circadian biorhythm pattern agreed with the timing of the implementation of the proposed educational and training programs over the groups with circadian

biorhythm pattern non agreed with the timing of the implementation of educational and training programs. [26, 23, 12, 9, 25, 24]

In this regard, Yousef Dahab (1993) indicated that when training and education processes are appropriate and compatible with biorhythm, we find that there is a positive impact on the development process in the motor performance. [29] In the case of incompatibility with the biorhythm, the effects are negative.

**Table (6)  
Progress Ratios of Post-Test over Pre-Test of Experimental Groups, First (Morningness) and Second (Eveningness), in Performance Level of Reception Skill in Volleyball**

Variables	Morningness n = 16			Eveningness n = 11		
	Pre	Post	Progress ratios	Pre	Post	Progress ratios
Reception skill accuracy (1)	4.41	18.25	313.83%	4.25	14.93	251.29%
Reception skill accuracy (2)	10.23	47.91	368.33%	10.00	43.55	335.55%

Table (6) indicates that the first experimental group (morningness) is more superior than the members of the second experimental group (eveningness) in the improvement ratios of the post

test rather than the pre-test in the performance level of the reception skill in volleyball.

This result is consistent with what indicated by Ali El Baik (1990), Ahmed Ibrahim (1995), Fadel Sultan, and

Farida El Khaldy (2000) that those who work in the sports field (education, training), must take into account the general and individual characteristics of biorhythm during the planning of the educational and training process. [13, 4, 16] The identification of biorhythm pattern of the individual helps to absorb the kinetic sentences in proportion to the best of circumstances; in addition to explode the individual's potential energies to achieve the best achievements.

Thus, the second research hypothesis is realized.

#### **Findings:**

**In the light of the research procedures, the limits of the basic sample and statistical analysis, the following results were concluded:**

1. The proposed educational program according to the pattern of circadian biorhythm positively affects the performance level of reception skill in volleyball among female students with learning disabilities.

2. The group with biorhythm pattern agreed with the timing of implementation of the proposed educational program differentiate from the

group with biorhythm pattern non agreed with the time of the implementation of the content of educational program.

3. The use of circadian biorhythm pattern through addressing learning disabilities positively reflected on the performance level of the reception skill in volleyball among the female students with learning disabilities.

#### **Recommendations:**

Based on the research results, and the consequent results, the researcher recommends the following:

1. The proposed educational program according to the pattern of circadian biorhythm should be used to improve the performance level of reception skill in volleyball among the female students with learning disabilities at Faculty of Physical Education in Port Said.

2. The biorhythm theory should be taken into account when conducting applied tests for female students with learning disabilities at the faculty in order to obtain accurate results.

3. The officials who in charge of the educational process should give due attention to achieve the

synchronization between the biorhythm pattern of female students with learning disabilities in the college and the timing of the implementation of the educational plan to ensure greater effectiveness.

4. Further scientific studies on rationalizing biorhythm theory in teaching other volleyball skills, giving the opportunity to achieve the best results.

#### References

##### First: Arabic References:

1. **Abul Ela Abdul Fattah and Mohamed Subhy Hassanein (1997):** Physiology and Morphology of Athlete and Methods of Testing and Evaluation, Dar El Fikr El Araby, Cairo.
2. **Ahmed El Sayed Habashy (2013):** "The Impact of Using Therapeutic Teaching Method on Swim Learning among Students with Learning Difficulties", Master Thesis, Faculty of Physical Education, Benha University.
3. **Ahmad Zaky Saleh (1987):** Pictorial IQ Test, Test Booklet Instructions, Dar El Nahda El Arabia.
4. **Ahmed Ibrahim Mahmoud (1995):** Principles of Planning for Educational

Programs and Sports Training, Monshaat El Maaref, Alexandria.

5. **El Sayed Abdul Hamid Suleiman (2005):** Learning Disabilities History, Concept, Diagnosis, Treatment. 2nd Edition, Dar El Fikr El Araby, Cairo.
6. **Ellen Wadih Farag (1990):** Volleyball, Guide of Teacher, Coach, and Player, Monshaa El Maaref, Alexandria.
7. **Gaber Abdel Hamid Gaber (2005):** Psychology of Learning and Learning Theories, Anglo-Egyptian Bookshop, Cairo.
8. **Gamal El Din El Shafei (1997):** Programmed Instruction in Physical Education and Sport, Dar El Fikr El Araby, Cairo.
9. **Hamid Mohamed El Komy (2008):** "A Proposed Educational Program According to the circadian Biorhythm Pattern for the Treatment of Learning Disabilities in Handball Skills," Journal of Sports Science and Arts, Vol. (30), 1st edition, faculty of Physical Education for Girls, Helwan University.
10. **Zaky Mohamed Hassan (2002):** Volleyball is a

Modern Methodology in Coaching and Teaching, Moltaka El Fikr, Alexandria.

11. **Saad Kamal Taha (1994):** The Biorhythm in Athletic Activity, Scientific Article, Journal of Sports Science and Arts, Volume (6 ), 2nd edition, Faculty of Physical Education for Girls, Helwan University.

12. **Tarek Mahdy Attia (2006):** "The Impact of a Proposed Training Program according to the circadian Biorhythm Pattern on the Physical Efficiency and Digital Level for 100 M Freestyle, " Journal of Sports Science and Arts, Vol. (25), 1st edition, Faculty of Physical Education for Girls, Helwan University.

13. **Ali El Baik (1990):** Biological Rhythm and Sports Achievement, The First Scientific Conference, Faculty of Physical Education for Girls, Zagazig University.

14. **Ali El Baik and Sabry Omar (1994):** Biorhythm and Sports Achievement, Monshaat El Maaref, Alexandria.

15. **Ali Hassab Allah, Ali Mustafa, Medhat Abu Serec (2002):** Volleyball, Theories and Applications, Peter Printing, Cairo.

16. **Fadel Sultan, Farida El Khaldy (2000):** Biological Rhythm and its Impact on Athletic Achievement, the Arab Union of Sports Medicine, Riyadh, Saudi Arabia.

17. **Kamal Abdel-Hamid Ismail, Mohamed Nasr El Din Radwan (2005):** Introduction of Evaluation in Physical Education, 2nd edition, Dar El-fikr el-Arabi, Cairo.

18. **Mohamed Hassan Allawi, Mohamed Nasr elddin Radwan (2001):** Motor Performance Tests, 5th edition, Dar El Fikr El Arabi, Cairo.

19. **Mohamed Saad Zaghloul, Mohamed Lotfy El Sayed (2001):** Technical Foundations of volleyball Skills for Teacher and Trainer, Markaz El Ketab Publishing, Cairo.

20. **Mohamed Subhy Hassanein (2001):** Measurement and Evaluation in Physical Education and Sports, Part 1, 4th edition, Dar El Fikr El Arabi, Cairo.

21. **Mohamed Subhy Hassanein, Hamdy Abdel Moneim (1997):** The Scientific Bases of Volleyball and Measurement Methods for assessment (Physical, Skill,



Cognitive, Psychological, Analytical), Markaz El Ketab Publishing, Cairo.

22. **Mohamed Osman (2000):** Motor Learning and Sports Training, 3rd edition , Dar El Taloum, Kuwait.

23. **Younis Medhat Abdel Razek (2004):** "The Impact of a Proposed Physical Program on some Specific Physical Abilities among Basketball Players according their circadian Biorhythm pattern" Journal of Sports Science and Arts, Vol. (21), Faculty of Physical Education for Girls, Helwan University.

24. **Mustafa Jassim Al-Shammari (2015):** " The Impact of a Training Program in Accordance with Physical Biorhythm Pattern on Development of Some Basic Physical Abilities of Indoor Football Players, "Master Thesis, Faculty of Physical Education for Girls, Alexandria University.

25. **Moataz Hilal Hilal (2014):** "The Impact of Rationing the Variables of Training Load in terms of Biorhythm Indicators on some Physiological and Skill Variables among Kumite Players in Karate," PhD thesis,

Faculty of Physical Education, Mansoura University.

26. **Maha Attar Mohamed (2000):** "The Impact of Education, according to the Biorhythm Pattern on the Functions of the Compatibility of Nervous System, Some Physiological Variables, and the Performance Level in the Kinetic Expression," Journal of Physical Education Research, Vol. (24), edition (55), Faculty of Physical Education for Boys, Zagazig University.

27. **Yousef Dahab, Mohamed Gaber, Ahmed Mahmoud (1993):** The Arabization and Rationing of Östberg Scale to Determine the Biorhythm Pattern, "Scientific Conference" Future Vision of Physical Education in the Arab World, Faculty of Physical Education for Boys, Helwan University.

28. **Yousef Dahab, Mohamed Gaber, Ghada Mohamed Abdel Hamid (1995):** Encyclopedia of Biorhythm, Monshaat El Maaref, Alexandria.

29. **Yousef Dahab (1993):** "Biological Rhythm of Sports Body as an Indicator of Rates of Academic Achievement and Physical Activity," Scientific Conference of Gymnastics,

Exercise and Sports for All,  
Faculty of Physical Education  
for Boys, Alexandria  
University.

Second: Foreign References:

30. **Cooper, E. (2003):**  
Teaching and Learning  
Physical Education in  
Secondary Schools, Wm . C.  
Brown, Company Publishers.

31. **Hoogendoorn-elisa**  
**(2004):** Children with  
movement difficulties perceive  
teachers to treat students in  
physical education differently  
according to skill level,  
Dissertation Abstracts  
International.

32. **Nilson, R.(2004):** The  
Effect of Reciprocal Style on  
Student Teachers in Teaching  
Physical Education, Merrill  
Publishing Company  
Columbus London.

33. **Tirm, M. & Morgan,**  
**W. (1995):** Influence of time  
of day on psychological  
Responses to Exercise.  
Influence of Sports Medicine;  
Auckland, vol. 20. Part 5.  
Third: The Internet:

34. <http://www.Sahaara.com/Vb/Showthread.Php=27323>.

35. [http://www.Tesreen.com/circadian/2002\\_aprmool/So.htm](http://www.Tesreen.com/circadian/2002_aprmool/So.htm)