Differences in the Effect of using spaced and massed practice teaching methods on learning receiving and control skills in football

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Abstract

The major purpose of this study was to determine the differences in the effects of using spaced and massed practice teaching methods on learning of receiving and control skill in football. The two researchers adopted an experimental design known as the design of two equal groups with two pre- and post-tests. The two researchers used receiving and control skill tests to collect data from 24 students in the first stage of the department of physical education and sport sciences at Soran University: 12 students for the spaced group and 12 students for the massed group, the researchers used SPSS to analyze the data. After analyzing the data, The researcher communicated the most important results: in both groups, significant differences were observed in receiving and control skill in favor of the post-test, but when comparing the post-test results of both groups, significant differences were observed in receiving and control skills in favor of the spaced group. The results of the current study confirm that the spaced teaching method is more effective for learning and improving football skills. A strategy teaching learning that used (spaced practice) with an interval time is more effective than the strategy teaching learning that used (massed practice) without an interval time in learning receiving and control skill, according to the results of current study, it is better to arrange the educational curriculum at colleges of physical education in spaced instead of massed.

Key words: Spaced practice, massed practice, receiving skill, control skill

تأثير استخدام طرائق تدريس الممارسة المتباعدة والمتجمعة في تعليم مهارات الاستلام والسيطرة على الكرة في كرة القدم

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هدفت الدراسة لتحديد الفروق في تأثيرات استخدام طرق التدريس المتباعدة والمتجمعة في تعليم مهارات الاستلام والسيطرة على الكرة في كرة القدم. اعتمد الباحثان تصميمًا تجريبيًا يعرف باسم تصميم مجموعتين متساويتين مع اختبارين قبلي وبعدي. استخدم الباحثان اختبارين لمهارة الاستلام والسيطرة على الكرة لجمع البيانات من وتألفت عينة البحث من ٢٤ طالب من المرحلة الاولى في قسم التربية البدنية وعلوم الرياضة في جامعة سوران: ١٢ طالبًا للمجموعة المتباعدة و١٢ طالبًا للمجموعة المتجمعة، واستخدم الباحثان SPSS لتحليل البيانات. بعد تحليل البيانات توصلت الباحثان لاهم النتائج وجود فروق فروق ذات دلالة إحصائية في مهارات الاستلام والسيطرة على الكرة لصالح الاختبار البعدي. فيما ظهرت فروق ذات دلالة معنوية في الاختبار البعدي ولصالح المجموعة المتباعدة تؤكد نتائج الدراسة الحالية أن طريقة التدريس المتباعدة أكثر فاعلية في تعلم مهارات كرة القدم وتحسينها. تعد استراتيجية التدريس التي تستخدم (ممارسة متباعدة) مع فترة زمنية أكثر فاعلية من استراتيجية تعليم التعلم التي تستخدم (ممارسة المتجمع) دون فاصل زمني في تعلم مهارة الاستلام و مهارة السيطرة على الكرة، وفقا لنتائج البحث

الحالي ، من الأفضل ترتيب المناهج التعليمية في كليات التربية البدنية بشكل فترات متباعدة بدلاً من المتجمعة.

الكلمات المفتاحية : المتباعدة، المتجمعة, مهارة الاستلام ، مهارة السيطرة على الكرة.

1.Introduction:

One of the issues that was the focus of much of the early research concerned the amount of rest people need between practice trials to ensure an optimal learning environment. At issue was the question of whether massed or distributed practice trials provided for better learning of motor skills. Some researchers argued that distributed practice was better; others maintained that it did not make much difference which spacing strategy an instructor followed. Although this early controversy focused on between-trial rest intervals, the study of practice distribution also concerns the amount of practice during each session of practice and the amount of rest between sessions. In this second practice distribution issue, the question of concern is whether it is better to have fewer but longer sessions or more but shorter sessions. (Magill & Anderson, 2016)

Distributed practice refers to the spacing of practice over multiple sessions instead of compacting practice time into a smaller number of sessions (massed practice) (Krigolson et al. 2021). The terms massed and distributed are defined in a continuum; typically, a massed practice schedule involves longer active practice and shorter rest periods (or even without rest) in comparison to a distributed schedule (Magill & Anderson, 2017).

Teaching -learning situation and its application in educational process can be described as a planned and programmed process, in order to attain the desired changes in a person's behavior. In the general education, modern teaching is defined as a thoughtful, planned and systematic organization of learning. Therefore Learning is a process of acquisition of specific knowledge, skills and habits (Demirel, 1993).

Teaching is considered as a practical aspect of the educational process, which includes strategies, methods, and models represent tools and procedures that address communication in order to help students learning motor skills.

The examination of teaching effectiveness, within educational domains such as sport pedagogy, as an remains an important focus. As many different variables contribute to learning, teachers should have the skills and competencies to use various

teaching methods to match the demands of their students (Jaakkola, & Watt, 2011). In physical education, Kulinna and Cothran (2003) suggested that an effective approach to pedagogical practice is to use teaching styles.

The acquisition of motor skills is a general goal of physical education, it is recognizing how motor skills are acquired to be essential for planning and controlling motor skills learning experiences, and it is evident that time is of great value in the field of motor skills learning, especially in the physical education lesson.

Spaced teaching method process is a powerful strategy that involves teaching courses in spreading way; it is boosts learning by spreading lessons and retrieval opportunities out over time, so learning is not crammed all at once. By returning to content every so often, students' knowledge has had time to rest and be refreshed. This method develop a consistent routine of memory retrieval, teaching the mind to quickly and automatically recall specific information, describes a more spaced-out method, where you study in intervals over time (Pooja K. Agrawal, 2020). In education, a few studies have shown that, gradually expanding the interval between each could enhance long term memory retention teaching sessions (Pyc & Rawson 2009).

Massed practice is a learning method that is implemented without interrupting breaks between specified times. Some limitations on Massed Practice learning methods include the type of learning movement in which individuals or practice groups continue without any alternate activities between trials, in which the amount or duration of rest periods that given is very short or nonexistent (Ilham Kamaruddin, 2018)

According to researcher's knowledge searching the previous research in the field pedagogy , little of studies searched the interval and non-interval period among lesson and its effects on students' learning.

The aim of this study is to examine the effect of spaced and massed teaching learning strategy on students learning some of basic football motor skills.

1.2 Problem of the study:

The teaching strategies used in the physical education colleges is not a recent phenomenon. It was noted by the researcher during teaching football skills in the school of physical education, that sometimes students are not learning the required motor skills very well. From experience as a teacher in the department of physical education at Soran University, observed some problems associated with the use of teaching

strategies, which do not help students learning adequately. Actually, this result might be attributed to the appropriate learning process.

As it is well known to educators, the learning process should be linked to the teaching process. The mechanism or method of the teaching process determines for the students as clear as possible and degree of learning of motor skill or any other goal should be clarified.

All researchers and educators agree that modern education is a complex process that requires the integration of modern factors and methods to activate student education. while researchers tell us that two main strategies that students learn after teaching process. The first is called massed teaching which result in massed practicing, which means practicing for learning is done less frequently, information memorized this way might be very likely to be forgotten once the students' practice done. The second way is called distributed teaching which result in distributed practicing which means a more spaced out method, where students learning could be classified in to intervals over time.

At this moment, and according to the researcher knowledge, researchers do not know which strategy will be more effective in terms of students' learning and skills acquisition, and there

is no previous research conducted under this topic as far as the researcher know on the football skills. Because of this, this recent study would be as a trial to search the effect of massed and spaced teaching learning strategies on students' learning and acquisition of selected football skills.

1.3 Purpose of the study:

1. The effect of using the teaching learning strategy without an interval time between lessons on students' learning of receiving and control skill (Massed).

2. The effect of using the teaching learning strategy with an interval time between lessons on students learning receiving and control skill (Spaced).

3. The differences between the utilization of teaching learning strategy without an interval time between lessons and the teaching learning strategy with an interval time between lessons on students learning receiving and control skills.

1.4 Hypothesis of the study:

$H1_1$: There is significant difference between pre-test and post-test of receiving and control skill of massed group in favor of the post test.

$H1_2$: There is significant difference between pre-test and post-test of receiving and control skill of spaced group in favor of the post test.

$H1_3$: There is significant difference between post-test of massed group and post-test of spaced group of receiving and control skill in favor of the spaced group.

1.5 Areas of research

1.5.1 The human field

male students of the first stage in the department of Physical Education and Sports Sciences at the Soran University for the academic year 2021-2022.

1.5.2 the temporal field

From 06/3/2022 until 05/05/ 2022.

1.5.3 the spatial field

The outdoor football stadium in the school of Physical Education and Sports Sciences at Soran University.

2-Search procedures:

2-1.Research Methodology :

In the field of scientific research, choosing the correct method to solve the problem depends mainly on the nature of the problem itself, where the research problem imposes the use of a scientific approach on the basis of which the research problem is solved, to achieve the objectives of the research and to reach scientific facts based on subjectivity basis, the researcher used the experimental method using the (equivalent groups) approach due to its suitability to the nature of the problem, as experimental research is "the most accurate type of scientific research that can affect the relationship between the variables of the experiment."(Obeidat et al, 2024, P.248). This method is the best that can be followed to reach accurate results, as it is "the only method that can truly test hypotheses of relationships by cause or effect." (Al Zobaie and Al-Ghannam, 1991, P.108)

2.2 Population and sample of the study

The research population was deliberately chosen from the first-stage students in the department of Physical Education and Sports Sciences at Soran University the total number of population is (31) student. As for the research sample, it was

chosen by the simple random method which numbered (24) students %77.41 percentage of the population, by (12) students for each group, and by means of lots the first experimental group was chosen used the spaced teaching method and the second experimental group used massed teaching method.

2.3 Experimental Design

The researcher adopted the experimental design, which is known as the design of the two equal groups with two pre and post-tests. The use of the appropriate experimental design is important in every experimental research because it helps in obtaining answers to the research hypotheses, the process of choosing the experimental design for research is necessary in every Experimental research, which provides the researcher with the means to reach the required results (Muhammed, 1997, P.12). This can be illustrated in table (1).

table 1: Demonstrates the experimental design of the research

Groups	Pre-test	Independent variables	Post-test
1st experimental	some football skills	Massed	some football skills
2nd experimental		Spaced	

Demonstrates the experimental design of the research

2.4 Homogeneity and equivalence of the sample

In order to show that there is no difference between the two groups, the researchers took some measures of homogeneity and equivalence between the two samples, and Table (2) shows that.

Table 2: Show the homogeneity and equivalence of the variables of age – mass - height between the two research groups

variables	groups	N	Mean	Std. Deviation	Skewness	Kurtosis	T-test	P
Age	Spaced	12	247.37	8.12	0.214	0.391	0.653	0.39
	Massed	12	245.91	7.09	−0.562	−0.253		
Mass	Spaced	12	173.59	4.17	0.769	1.694	0.071	0.89
	Massed	12	171.32	4.02	0.684	−1.081		
height	Spaced	12	70.34	3.75	0.652	0.743	0.112	0.87

	Massed	12	68.95	3.97	−0.437	−1.421		

It is clear from Table (2) that:

Homogeneity: The values of skewness for the variables of age, mass and height were confined to (±1) and the values of Kurtosis were confined to (±2). These two indicators are considered homogeneous for the spaced and massed groups in all variables.

Equivalence: The probability values of the (t) test were greater than (0.05) in the variables of age, mass and height, and this indicates that there are no significant differences between the members of the spaced and massed groups, and this is an indication of the equivalence of the members of the spaced and massed groups in the variables of age, mass and height.

Table 3: Show the homogeneity and equivalence of the two research groups in physical fitness variables

variables	groups	N	Mean	Std. Deviation	Skewness	Kurtosis	T-test	P
Speed performance	Spaced	12	57.08	7.19	0.187	0.836	0.79	0.43
	Massed	12	55.16	4.34	0.179	−0.732		
Agility	Spaced	12	21.74	0.90	−0.158	−1.183	1.32	0.19
	Massed	12	21.24	0.91	−0.391	0.141		
muscular	Spaced	12	2.32	0.12	0.175	−1.669	1.31	0.20

capacity of legs	Massed	12	2.42	0.22	−0.479	−0.213		
transitional speed	Spaced	12	4.29	0.26	0.275	−0.093	1.05	0.30
	Massed	12	4.38	0.15	−0.306	1.789		

It is clear from Table (3) that:

Homogeneity: The values of skewness for all selected physical fitness variables in the above table were confined to (±1) and the values of Kurtosis were confined to (±2).These two indicators of the homogeneity of the two groups in all physical fitness variables.

Equivalence: The probability values of the t-test were greater than (0.05) in all physical variables, and this indicates that there are no significant differences between the members of the spaced and massed groups, and this is an indication of the equivalence of the members of the spaced and massed groups in the selected physical fitness variables.

Table 4: Shows the homogeneity and equivalence of the two research groups in football skills

variables	groups	N	Mean	Std. Deviation	Skewness	Kurtosis	T-Test	P
Receivin	Space	1	11.0	1.27	-0.841	-0.635	1.0	0.3

g	d	2	0				5	0
	Massed	12	10.33	1.77	0.016	-1.163		
Control	Spaced	12	5.08	1.31	0.000	0.150	1.13	0.27
	Massed	12	4.41	1.56	0.255	-0.996		

It is clear from Table (4) that:

Homogeneity: The values of skewness for all selected football skill variables in the above table were confined to (±1) and the values of Kurtosis were confined to (±2). These two indicators are considered to be homogeneous for the members of the two groups in all football skills.

Equivalence: The probability values of the (t) test were greater than (0.05) in all skill variables, and this indicates that there are no significant differences between the members of the spaced and massed groups, and this is an indication of the equivalence of the members of the spaced and massed groups in selected football skills.

2.5 Selected football skill tests:

The basic skills of football were identified by using scientific references and previous studies in the field of football and presenting them in the form of a questionnaire to a group of

experts and in the field of teaching method, training and football science specialists number of them (13) appendix number (1), as well as the most appropriate test for each skill selected by number of specialist (10) appendix number (2). The researchers presented the educational curricula according to (spaced - massed) to a group of specialists number of them (11) appendix number (3) with specialization in teaching methods and expressed their opinions and observations in the educational curricula in terms of ensuring the validity of applying the educational curricula and the time division of the parts of the unit and the exercises that were developed from to achieve the objectives of the educational curriculum.

After collecting the questionnaire forms, and according to the percentage of agreement of the specialists, the basic football skills that will be included in the teaching curriculum were nominated, which are (receiving, control) and the appropriate skill tests to measure these skills, which got an agreement rate of (75%) or more from the opinions of experts and specialists.

A- Validity of the skill tests: The validity of the tests was verified by obtaining the skill tests in the research with an agreement percentage of (75%) or more. In addition, the self-validity of these tests was found by calculating the square root of the test stability coefficient.

B- Reliability of skill tests: - The researchers extracted the reliability by using the method of applying the test and re-applying it. The tests were conducted on a sample of

(6) student from the research population, and the test was re-conducted on the same sample ten days after applying it for the first time, and a simple correlation coefficient was found between the degrees of the first application and the second application, and through it the stability coefficient was found, and the tests achieved a high stability coefficient as shown in table number (4).

Table 5: Shows the coefficients of validity and reliability for skill tests

Skill tests	Unit measurement	reliability	Validity
Receiving	degree	0.781	0.879
Control	degree	0.793	0.973

2.6 Tests used in the study:

- Control skill.
- Receiving skill

2.7 Variables studied in this research:

- Independent variables: spaced teaching method and massed teaching method.

- Dependent variables: receiving and control skill.

2.8 Exploratory experience:

An assistant team conducted the exploratory experiment on 21/02/2022 on a sample of (6) student from the research population. The purpose of the exploratory experiment was to ensure the accuracy of the implementation of physical fitness and skill tests, including:

- Identifying the efficiency of the assistant work team, the extent of their understanding of the measurement process, and how to record the results.

- The extent of the efficiency of the devices and tools used in the physical and skill tests.

Ensure the sequence of selected tests according to ease and difficulty.

The suitability of the physical and skill tests for the research sample and the extent of their interaction with them.

- Dimensions and distances for the tests between them.

2.9 The time plan for the educational curriculum:

The two educational curricula included (32) educational units for both research groups as follows:1- (16) educational units for (spaced) - for the first experimental group. 2- (16) educational units for (massed) - for the second experimental group.3- The implementation of the educational curriculum took (8) weeks, during which the educational units were distributed at the rate of (2) educational units per week for each group, and the time for each unit was (90) minutes.4- spaced (Saturday and Tuesday). 5- massed (Sunday and Monday) 6- The amendment was made based on the amendments and observations of the

arbitrators and specialists, and the researchers implemented the curricula under their supervision, starting from 6/2/2022 until 05/04/2022.

2.10 Pre-tests:

An assistant team conducted the pretest on the research sample on Saturday, Sunday, Monday and Wednesday corresponding to the date (26-27-28/02/2022 and 03/02/2022) at exactly 09:00 am in the stadium of Soran University.

2.11 The main research experience:

After conducting the exploratory experiment and avoiding the obstacles and difficulties facing the research and after conducting pretest, the main experiment was conducted, which extended from 06/02/2022 to 05/04/2022, on the two groups the same educational material after making equivalence between them in a number of variables that were mentioned above and the educational curricula were applied to the members of the two research groups.

2.12 Post-tests:

After completing the application of the educational curriculum, the post-test was applied on 10,11/04/ 2022.

2.13 Statistical tools:

For analyzing the date Arithmetic mean, standard deviation, Skewness, Kurtosis, Paired sample t-test, Independent sample t-test was performed. electronic statistical program SPSS (Version 26.) was used for analyzing data.

3. Presentation, analysis and discussion of results

3.1 Presentation, analysis and discussion of the results related to the first research Hypothesis:

$H1_1$: There is significant difference between pre-test and post-test of receiving and control skill of massed group in favor of the post test.

3.1.1 Presentation and analysis of the results related to the first research Hypothesis:

Usable data from (12) participants from massed group were analyzed using mean, standard division and paired sample t-test as a suitable statistic for the natural of this research.

To answer first question, descriptive statistics were applied (Paired t- test). Comparison values of pre test and post test in table number **6**.

Table 6: Show Paired t-test for the differences between the Pre test and Post test of the massed practice method for receiving and control skills in football

Variable / Skills	Measureme / nt tool unit	N	Pre-Test		Post-Test		T-Value	P – Value
			X	± sd	X	± sd		
Receiving	second & degree	12	10.75	1.35	12.92	1.08	-13.00	0.000

							0	
Control	degree	12	5.33	1.07	6.83	1.03	-9.950	0.000

0.05, degree of <Paired t-test performed, at the level of significance P*
freedom (n-1=11)

The table number **(6)** shows the results of the tests for the some basic football skills in the pre test and post tests, and the results showed that there were significant differences in the massed groups. As the arithmetic mean for the pre-test for the receiving the ball test is (10.75) with a standard deviation of (1.35). And for the post test the arithmetic mean is (12.92) with a standard deviation of (1.08). And after calculating the value of T calculated using the law of T for the correlated samples that were (-13.000) it is a function compared to the value of (sig) at the significance level (0.05) and degrees of freedom (11) amounting to (0.000) which is less than (0.05). This means that there is a statistically significant difference between pre test and post test in favor of the post test.

Another skill is control skill for the control test arithmetic mean for the massed group in the pre test is (5.33) with a standard deviation of (1.07). And for the post test the arithmetic mean is (6.83) with a standard deviation of (1.03). And after calculating the value of T calculated using the law of

T for the correlated samples that were (-9.950) it is a function compared to the value of (sig) at the significance level (0.05) and degrees of freedom (11) amounting to (0.000) which is less than (0.05). This means that there is a statistically significant difference between pre test and post test in favor of the post test.

3.1.2 Discussing of the results related to the first research Hypothesis:

As stated in table number (6) means, there were clear differences between the mean values in the pre tests and post tests for all football skills under study. The scores obtained were compared using the paired t-test statistics and presented in Table 5, it is evident that there were significant differences ($\alpha \leq 0.05$) between the Pre and Post - test on receiving and control skills by using the massed practice method. These results might be attributed to the fact that first stage student of the department of physical education of school of physical education at Soran university will learning and getting improvement of football skills when using any kind teaching method and teaching strategy but the percentage of learning or the amount of learning is different, as a researcher in this study was looking that which teaching method (spaced or massed) is

more effective for teaching receiving and control football skills.

After two month teaching with massed practice in the receiving ball skill learning and improvement observed because there was significant difference between pre test and post test of receiving skill P value is (P=0.000), Another research finding showed similar results which was done by (Agustina et al. 2019) in the study (The Effect of Practice Method and Motor Ability on Improving Complex Motor Skill in Football Games) they are show that the group trained with the distributed method gives a better influence than the group trained with the massed method in the results of complex motor soccer skills, dependent variable of the study (Agustina et al. 2019) is different with current research variable, complex motor soccer more difficult if we compare to receiving ball in football, that is why if learning and improvement was happen with complex motor soccer, learning and improvement will happen with simple skills more easily like receiving the ball.

Another skill in massed group is control skill test which there is statically significance between pre test and post test because p value is (P= 0.000), Another research finding showed similar results which was done by (Jasim et al 2020) in the study (the impact of using KICK training to learn basic football skills for

middle school students) the independent variable and sample of this study is different with current research, but due to less article on the current study as a researcher I support my results by this kind of study as we know so many research has been done on the learning on basic football skills but each study has different percentage of learning and improvement as already we mentioned my focus in current study looking for which teaching method (massed or spaced) more effective and more active for teaching in the school.

While spaced practice is generally favored for long-term learning, massed practice can still have benefits in certain situations. For example, it can be useful for intensive skill development in a short period or when immediate performance gains are desired. This can be seen in studies like the one by Bjork and Bjork (2006).

3.2 Presentation, analysis and discussion of the results related to the second research Hypothesis:

$H1_2$: There is significant difference between pre-test and post-test of receiving and control skill of spaced group in favor of the post test.

3.2 Presentation and analysis of the results related to the second research Hypothesis:

Usable data from (12) participants from spaced group were analyzed using mean, standard division and paired sample t-test as a suitable statistic for the natural of this research.

To answer second question, descriptive statistics were applied (Paired t- test). Comparison values of pre test and post test in table number 7.

Table 7: Show Paired t-test for the differences between the Pre test and Post test of the spaced practice method for receiving and control skills in football

Variable / Skills	Measurement / tool unit	N	Pre-Test		Post-Test		T-Value	P – Value
			X	± sd	X	± sd		

Receiving	second & degree	12	10.33	1.77	14.75	1.54	-12.337	0.000
Control	degree	12	5.50	0.79	8.50	1.24	-6.760	0.000

0.05, degree of <**P**aired t-test performed, at the level of significance P***** freedom (n-1=11)

The table number **(٧)** shows the results of the tests for the some basic football skills in the pre test and post tests, and the results showed that there were significant differences in the spaced groups. As the arithmetic mean for the pre-test for the receiving the ball is (10.33) with a standard deviation of (1.77). And for the post test the arithmetic mean is (14.75) with a standard deviation of (1.54). And after calculating the value of T calculated using the law of T for the correlated samples that were (-12.337) it is a function compared to the value of (sig) at the significance level (0.05) and degrees of freedom (11) amounting to (0.000) which is less than (0.05). This means that there is a statistically significant difference between pre test and post test in favor of the post test.

Another skill listed in the table number 6 is control skill for the control test arithmetic mean for the massed group in the pre test is (5.50) with a standard deviation of (0.79). And for the post test the arithmetic mean is (8.50) with a standard deviation

of (1.24). And after calculating the value of T calculated using the law of T for the correlated samples that were (-6.760) it is a function compared to the value of (sig) at the significance level (0.05) and degrees of freedom (11) amounting to (0.000) which is less than (0.05). This means that there is a statistically significant difference between pre test and post test in favor of the post test.

4.2.2 Discussing of the results related to the second research Hypothesis:

As stated in table number (٧) means, there were clear differences between the mean values in the pre tests and post tests for all football skills under stud. The scores obtained were compared using the paired t-test statistics and are presented in Table 7, it is evident that there were significant differences ($\alpha \leq 0.05$) between the Pre test and Post test on all six skills by using the spaced teaching method. These results might be attributed to the fact that first stage student of the department of physical education of school of physical education at Soran university will learning and getting improvement of football skills when using any kind teaching method and teaching strategy but the percentage of learning or the amount of learning is different as a researcher I am looking for that which teaching method is more effective.

According to results of spaced group, there are significant differences between the results of the receiving and control skills tests, before and after, for spaced groups. Therefore, I refer the reasons for these differences in receiving and control skills to the effectiveness of the educational plans applied to the students of the spaced groups who use the spaced method. Also, the choice of exercises aimed at teaching these skills and the organization of the skills listed in each teaching plan. Moreover, the optimal investment of real time allocated to the implementation of motor duty, which leads to an increase in real practice by participating in the performance of all students, which has led to an increase in movement and activity and learning these skills. Gréhaigne et al. (2013) confirm that the use of lesson time to increase performance and motor skills will allow learners to develop many physical, motor and motor skills. The ability to stabilize this learning is not an easy process, so it is necessary to practice correctly.

After two month teaching with spaced practice in the receiving ball skill learning and improvement observed because there was significant difference between pre test and post test of receiving skill P value is (P=0.000), Another research finding showed similar results which was done by (Agustina et al. 2019) in the study (The Effect of Practice Method and Motor Ability on Improving Complex Motor Skill in Football Games)

they are show that the group trained with the distributed method gives a better influence than the group trained with the massed method in the results of complex motor soccer skills, dependent variable of the study (Agustina et al. 2019) is different with current research variable, complex motor soccer more difficult if we compare to receiving ball in football, that is why if learning and improvement was happen with complex motor soccer, learning and improvement will happen with simple skills more easily like receiving the ball.

3.3 Presentation, analysis and discussion of the results related to the third research Hypothesis:

$H1_{3:}$ There is significant difference between post-test of massed group and post-test of spaced group of receiving and control skill in favor of the spaced group.

3.3.1 Presentation and analysis of the results related to the third research question:

Usable data from (24) participants 12 from massed group and 12 from spaced group were analyzed using mean, standard division and independent sample t-test as a suitable statistic for the natural of this research.

To answer this question, descriptive statistics were applied (independent sample t- test). Comparison values of post test of massed group and post test of spaced group in table number 8.

Table 8: Show independent t-test for the differences between the post test of massed group and spaced group for receiving and control skills in football

Variable / Skills	Measuremen / unit t tool	N	Massed		Spaced		T-Value	P – Value
			X	± sd	X	± sd		
Receiving	second & degree	24	12.92	1.08	14.75	1.54	-3.36	0.003
Control	degree	24	6.83	1.03	8.50	1.24	-3.57	0.002

<Independent sample t-test performed, at the level of significance P* 0.05, degree of freedom (n-2=22)

The table number **(8)** shows the results of the tests for some basic football skills between post-test of massed group and post-tests of spaced group, and the results showed that there were significant differences in receiving and control skills. As the arithmetic mean of post-test of massed group for receiving

skill test is (12.92) with a standard deviation (1.08). As arithmetic mean of post-test of spaced group for receiving skill is (14.75) with a standard deviation (1.54) and after calculating the value of T calculated using the law of T for the independent samples that were (-3.36) it is a function compared to the value of (sig) at the significance level (0.05) and degrees of freedom (22) amounting to (0.003) which is less than (0.05). This means that there is a statistically significant difference between post-test of massed group and post-test of spaced group for receiving skill in favor of the spaced group.

Another skill listed in the table number 8 is control skill for the control test arithmetic mean of post-test of massed group for control skill test is (6.83) with a standard deviation (1.03). As arithmetic mean of post-test of spaced group for control skill is (8.50) with a standard deviation (1.24) and after calculating the value of T calculated using the law of T for the independent samples that were (-3.57) it is a function compared to the value of (sig) at the significance level (0.05) and degrees of freedom (22) amounting to (0.002) which is less than (0.05). This means that there is a statistically significant difference between post-test of massed group and post-test of spaced group for control skill in favor of the spaced group.

3.3.2 Discussing of the results related to the third research Hypothesis:

In the current study, we compared the effectiveness between a distributed teaching schedule and a massed teaching schedule on learning receiving and control skill. The results show that, distributed teaching schedule consisting of inter-trial intervals of 2 days between first lesson and second lesson in the week during two months more effectively for learning basic football skills than massed teaching schedule consisting of zero-day inter-trial intervals between first lesson and second lesson in the week during two months. the results, showed (Table 8) there are statistically significant differences between the scores of the spaced groups and the massed group in receiving and control skill of football in favor of the spaced group applied in the spaced teaching schedule.

There is a need to identify and test teaching strategies which can be useful in increasing students' long term knowledge. As curriculum modifications strive to include effective strategies, solid evidence from actual classrooms is needed to convince teachers of their effectiveness. (Grote, 1995).

(Magill & Anderson , 2016) motioned there are at least three possible reasons why the distribution of practice sessions across more days leads to better learning than massing the

sessions within fewer days. One is that fatigue negatively influences learning for massed practice schedules. Although none of the experiments discussed in this section assessed participants' levels of fatigue, it is possible to suspect that fatigue influenced learning because of the task performance requirements.

For example, in the Shea et al. (2000) experiment, participants performed a continuous dynamic balance task for 90 sec on each trial. The massed practice schedule required them to perform 14 trials on the same day with only a 20 min break between trials 7 and 8. On the other hand, participants in the distributed practice schedule performed the second set of seven trials on the following day. Similarly in the Dail and Christina (2004) experiment, participants who experienced the massed practice schedule performed 240 putts in one session, with short rest breaks only after each set of 10 trials. In contrast, those who practiced according to the distributed schedule performed only 60 trials in each session.

Second reason, the massing of practice within a day or a few days may reduce the amount of cognitive effort used on each trial as practice continues beyond a certain critical amount. The massing of practice trials may institute a practice condition in which performance of the skill on each trial becomes so repetitious that it becomes monotonous or boring. As a result,

the learner begins to decrease the amount of cognitive effort involved in each trial, which in turn diminishes the level of learning.

The possibility that either or both fatigue and reduced cognitive effort accounted for the poorer learning that resulted from the massed compared to the distributed practice sessions can be seen in the results of the Shea et al. (2000) and Dail and Christina (2004) experiments. This suggests that as participants continued to practice, the effects of fatigue and/or reduced cognitive effort eventually began to influence their performance in a negative way. And this influence affected not only their practice performance but also their retention test performance, indicating an influence on their learning the skills. The build-up of fatigue has been shown to have a slight negative effect on learning in massed practice (Lee & Genovese , 1988).

(Schmidt et al, 1991) found that it is "good to explain to the learner that even though fatigue may come during practice, participants are still learning effectively." In addition, the student also should be informed that the learning gained during the fatigue will become evident in the future after the fatigue reduced.

The third reason relates to memory consolidation, which is a long term memory storage process. The memory consolidation

hypothesis proposes that to store in memory the relevant information we need to learn a skill, certain neurobiochemical processes must occur. These processes, which transform a relatively unstable memory representation into a relatively permanent one, require a certain amount of time without additional practice of the same skill. The distribution of practice across several days provides a better opportunity for the memory consolidation process to take place than does the massing of practice within a day or a few days (Brashers-Krug, Shadmehr, & Bizzi, 1996; Shadmehr & Brashers Krug, 1997)
Receiving and control is continuous skill that is why spaced group has better learning compare to massed group, Lee and Genovese (1988) review found that the consistent result has been that distributed schedules lead to better learning than massed schedules for learning continuous motor skills. In other hand they are provided evidence that massed practice schedules result in better learning for discrete motor skills.

Overall, the result of current study and results of most previous study confirm that spaced teaching schedule more effectiveness for learning and improvement on sport skills, according to scientific results had better arranging educational curriculum at school and colleges distributed instead of massed.

4-Conclusions and recommendations

4-1.Conclusions

Based on the results of this study, the researchers concluded that:

1. A strategy teaching learning that used (massed practice) without an interval time has a positive effect on students' learning of receiving and control skill.
2. A strategy teaching learning that used (spaced practice) with an interval time has a positive effect on students' learning of receiving and control skill.
3. A strategy teaching learning that used (spaced practice) with an interval time is more effective than the strategy teaching learning that used (massed practice) without an interval time in learning receiving and control skill.

4-2 Recommendations

1. Conducting more experimental research on spaced teaching method and massed teaching method in different educational subject.
2. Conducting more experimental research on spaced teaching method with annual curriculum and massed teaching method with semester curriculum in colleges of physical education to known exact the effective of each method.

3. It is better to arrange the educational curriculum at colleges of physical education spaced instead of massed, if curriculum is annual system or semester system.
4. Holding seminars and courses for teachers in the field of teaching physical education and sports sciences to get acquainted with spaced and massed teaching methods, clarify its advantages and importance in the teaching process, and identify its patterns.

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ملحق (١)

اسماء الخبراء حول تحديد المهارات

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٢	حامد مصطفى بلباس	استاذ	طرائق التدريس	جامعة صلاح الدين
٣	جاسم محمد نايف	استاذ	التعلم الحركي	
٤	هاوكار سالار احمد	استاذ مساعد	فسلجة التدريب وكرة القدم (والصالات)	جامعة سليمانية
٥	نوار عبدالله حسين	استاذ مساعد	علم التدريب – كرة القدم	جامعة القادسية
٦	عصام ناجح أبو شهاب	استاذ مساعد	التدريب الرياضي	جامعات الاردنية
٧	بيلال عواد الدمور	استاذ مساعد	كرة قدم	جامعات الاردنية
٨	بسيم عيسى يونس	استاذ مساعد	تعلم الحركي	جامعة صلاح الدين
٩	ربيع حازم سلمان	مدرس	طرائق تدريس	جامعة الحمدانية
١٠	كهلان رمضان صالح	مدرس	طرائق التدريس–كرة القدم	جامعة تكريت
١١	نورفارس احمد	مدرس	طرائق تدريس	جامعة موصل
١٢	عمر عالي كريم	مدرس	تعلم الحركي	جامعة سوران

١٣	نقي حمزه جاسم	مدرس	علم النفس / كرة القدم	جامعة سوران

ملحق (٢)

اسماء الخبراء حول الاختبارات الاجنبية

ت	الاسم	اللقب	الاختصاص	المكان
١	فالح جعاز شلش القيسي	استاذ	القياس والتقويم	جامعة سوران
٢	مكي جبار عودة	استاذ مساعد	القياس والتقويم	جامعة البصرة
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الملحق (٣)

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