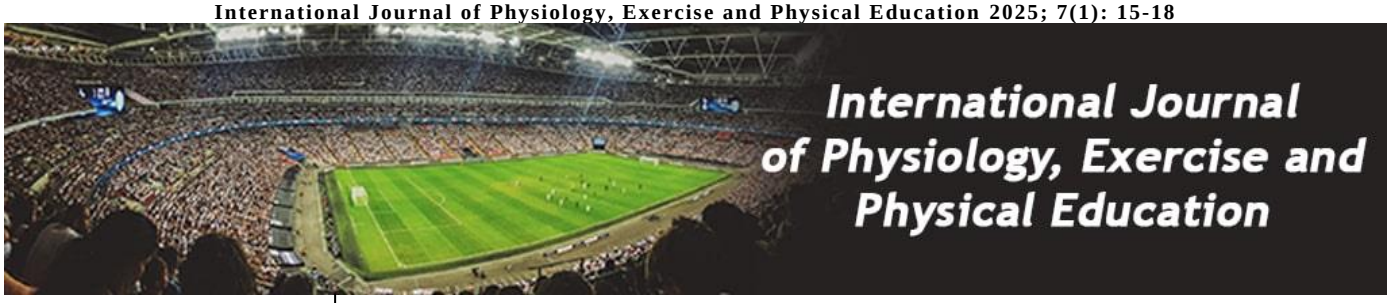

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Special exercises with auxiliary tools and their effect on learning the forehand and backhand stroke in tennis

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Abstract
The purpose of this paper is to knowing the effect of exercises with auxiliary tools in learning the skill of the forehand and backhand stroke in tennis for students. The researcher used the experimental method in addressing the research problem, as it is more appropriate to the nature of the research to reach accurate results. The research sample consisted of third-year female students, Section (B) - Department of Physical Education and Sports Sciences - Kut University College, with (15) female students who were randomly selected from the research community of (32) students and by lottery, the percentage of research students is (46.86)%, which is an appropriate percentage to represent the research community honestly and truly. One of the most important results reached by the researcher is that: The results showed significant differences between the pre- and post-tests in the level of skills of the forehand and backhand strokes in tennis in favor of the post-test, and the level of performance of the research sample in the accuracy of skill performance was more developed than the pre-test for the same test. One of the most important recommendations recommended by the researchers is that: The necessity of using auxiliary exercises in the educational process as they are of great benefit in learning basic skills in tennis, and the adoption of scientific foundations for tests and measurements by trainers and those in charge of the educational process because they show the level of performance of learners.

Keywords: Exercises, auxiliary tools, forehand, backhand, tennis, skill learning, accuracy

Introduction
Sports competition is an important and necessary factor for every sporting activity, and some believe that sports cannot continue without competition, as the training process is closely linked to the player's numbers in order to achieve the best possible level in competition, so sports competition is nothing but a test of training results.

Tennis has transformed over the past centuries from a recreational sport for amateurs to spend their free time to a highly competitive sport for professionals that requires the maximum capabilities and potential of the player and can be called a 'power' game for what it requires of courage, intelligence and skill along with skillful and tactical performance and physical adaptation.

If we look at any game, we find that the coach prepares the players physically. In tennis, physical preparation takes first place, starting with general physical exercises that prepare the body as a whole, in addition to focusing on the muscle groups that will bear the greatest burden during play, which ultimately leads to adjusting the tactic (Aline Wadih Farag. 2007) [4].

The coach's reliance on scientific methods in selection saves time and effort and leads to high levels to reach the appropriate position in a country with a seven thousand year civilization (Abdel Nabi Al-Gamal. 1988) (Radhi, & Obaid, 2020) [1, 11].

Research problem
Teaching tennis skills with their different movements and scheduling the organization of their educational exercises ensures the acquisition of good learning of those skills, as the learner can form movement programs with multiple responses to those types and benefit from them with freedom of performance during changing playing conditions.

Through the researcher's review of many studies and research and his follow-up of tennis education lessons and his being a former player and current teacher of tennis, I found that educational lessons may not depend on diversifying the forms of tools to learn the skill of the forehand and backhand ground stroke, especially not including the forms of performing the skill itself that is to be taught, and that it is common to use a group of tools that can serve in the process of one skill and then move to a second and third skill, and through this, the researcher tries to know whether the use of auxiliary tools helps to learn better and faster to complete the curriculum followed by the subject teachers in learning to perform the forehand and backhand ground stroke helps to perform these strokes with good accuracy.

Research objective
Knowing the effect of exercises with auxiliary tools in learning the skill of the forehand and backhand stroke in tennis for students

Research hypotheses
That exercises with auxiliary tools have a positive effect in learning the skill of the forehand and backhand stroke in tennis for students

Research fields
- Human field: Department of Physical Education and Sports Sciences - Kut University College for the academic year 2023/2024
- Time field: (15/11/2023) to (1/4/2024)
- Spatial field: Tennis court of the College of Physical Education and Sports Sciences

Research methodology and field procedures
Research Methodology: The researcher used the experimental method in addressing the research problem as it is more appropriate to the nature of the research to reach accurate results.

Community and sample research
The research sample consisted of third-year female students, Section (B) - Department of Physical Education and Sports Sciences - Kut University College, with (15) female students who were randomly selected from the research community of (32) students and by lottery, the percentage of research students is (46.86)%, which is an appropriate percentage to represent the research community honestly and truly.

Research methods, tools and devices used
Research methods: The researcher used several research methods, including:
- Arab and foreign scientific sources and references.
- Technical performance evaluation form.
- Data entry form.
- Personal interviews.

Tools and devices used
The researcher used the following tools and devices:
- Legal tennis court.
- Legal tennis rackets, number (15).
- Legal tennis balls, number (30).
- Metal tape measure for measuring length.
- Colored chalk.
- Medical scale for measuring weight

Determining the skill test
Tests used in the research
First: The forehand and backhand stroke test in tennis (Dhafer Hashim Al-Kazemi and Mazen Hadi Al-Taie 2013) [5].

Test name: The modified White test to measure the accuracy of the forehand and backhand strokes in tennis. This test is conducted on a regular tennis court with rackets, (30) tennis balls, a registration form, and a fixed rope as in Figure (2), showing the areas where the tester stands, how to conduct the test, and the evaluation marks.

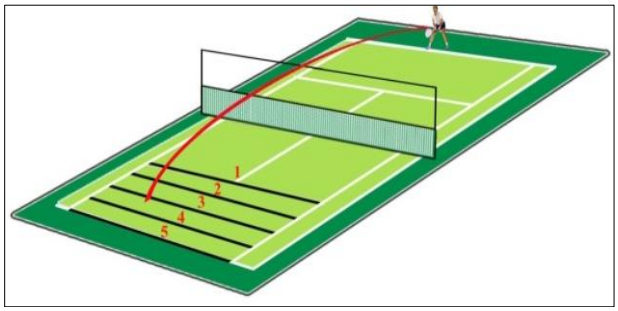

Fig 1: shows the evaluation marks, the testers' standing areas, and how to conduct the modified White test in tennis for the forehand and backhand stroke skills.

- A rope is fixed to two columns on the net posts adjacent to the posts and parallel to them at a height of (2.13) meters from the ground and 1.22 meters from the net as in Figure (1).
- Three parallel lines are drawn between the forehand and backhand stroke line and the base line so that the distance between the lines is (1.37) meters.
- The player stands on the center mark, which is located in the middle of the baseline, and is given five trial attempts to know the performance of the test after providing instructions by the coach, provided that the ball is thrown directly behind the forehand and backhand stroke line by the ball thrower, if available, or by the specialized coach. The player begins by trying to return the ball with his racket using the forehand or backhand stroke, and each player is allocated ten attempts for the forehand stroke and ten attempts for the backhand stroke. The player's score is the total points he obtains by adding up his ten attempts. The ball must cross the net and under the rope, and the student obtains ascending scores from (1-5) points. If the ball passes over the rope, it is given half the evaluation score for the correct area on which it falls, and the highest score the examiner obtains is (50) points for the forehand stroke and (50) points for the backhand stroke.

Exploratory experiment
It is a small preliminary experimental study for training the researcher and is one of the very important and necessary tools in implementing research. Through it, the researcher can identify the positives and negatives, the flow of work, know the difficulties and obstacles, know the time period for implementing the experiment, ensure the efficiency of the work team, test the validity of the tools and devices, and the

suitability of the sample and its response to the experiment and to the tests participating in achieving the scientific conditions for the tests (validity, stability, objectivity, and close connection to the subject of the goal)

On this basis, the researcher conducted a small exploratory experiment on 11/15/2023 on a sample of (10) female students other than the main research sample. The goal of the exploratory experiment was:

- Identify the obstacles and difficulties that the researcher may face.
- Know the assistant work team * for the course of events and tests related to the research.
- Know the time of application of the tests and their suitability for the research sample.

Pre-tests

Before starting the tests, an introductory lecture was given on the required skill by the researcher on Monday 11/20/2023, then the test of the skills studied in the research, which is the forehand and backhand skills, was applied on Tuesday 11/21/2023 on the research sample after preparing all the test requirements and tools, with the help of the assistant work team and under the supervision of the researcher.

Post-tests

The post-tests for the forehand and backhand skills were conducted on Sunday 3/27/2024 for the experimental and control groups, using the same procedures followed in the pre-tests.

Educational units

The researcher implemented the educational units, which are (12) educational units, over a period of (12) weeks for the (experimental research) group, at a rate of one unit per week with a time of (90) minutes for each educational unit. From 12/17/2023 to 3/14/2024 for all experimental and control groups (5) educational units were given for each skill (front and background stroke).

The focus was on the practical section to learn the two skills, while the warm-up, educational part and final section were unified for all groups.

As for the (control) group, it took (12) educational units over (12) weeks at a rate of one educational unit per week and a time of (90) minutes, and took the method followed (the command method) by the subject teacher.

Statistical methods

The search data was processed through the Statistical Package for the Social Sciences (SPSS).

Results and discussion

Presentation, analysis and discussion of the results of the tests under study

Table 1: shows the results of the tests under study

Tests	Pre-test		Post-test		T value calculated	Type Sig
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
Forehand	13	3.91	26.9	1.02	3.76	Sig
Backhand	11	4.33	24.5	2.22	4.49	Sig

Table score = (2.14) at a significance level of (0.05) with 14 degrees of freedom

Table (1) indicates that the research sample achieved an arithmetic mean in the pre-test of (13) with a standard deviation of (3.91), while the same group achieved an arithmetic mean of (26.9) in the post-test with a standard deviation of (1.02). The calculated (t) value was (3.76), which is greater than the tabular (t) value of (2.14) at a significance level of (0.05) and under a degree of freedom of (14). This tools that there is a significant difference between the pre-test and post-test for the technical performance test of the forehand and backhand stroke skill in tennis. The researcher attributes this difference to the use of auxiliary exercises that improve technical performance because auxiliary exercises are an important educational tool and have an effective impact on acquiring the process of learning basic skills, including the skill of the forehand and backhand strokes in tennis, as the forehand and backhand strokes are the key to offensive play and have a sure and great opportunity to win the match. (Ahmed Khater and others. 2000) [3] This agrees with the opinion of (Mufti Ibrahim Hammad. 1988.) [6] since "the inter-assessment and the final assessment represent two important elements in the learning strategy, and treating students who have not reached mastery is also a basic element in the learning mastery strategy."

Presentation and analysis of the results of the accuracy test for the skill under study

Table 2: shows the arithmetic tools, standard deviations, and the calculated and tabulated t values between the pre- and post-test of the accuracy test for the skill under study

Tests	Pre-test		Post-test		T value calculated	Type Sig
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
Forehand	12.22	4.03	22.13	1.28	4.46	Sig
Backhand	10.9	1.22	18.32	2.94	3.43	Sig

Table score = (2.14) at a significance level of (0.05) with 14 degrees of freedom

Table (2) indicates that there are significant differences between the pre-test and post-test in the forehand and backhand skill test in tennis. The results indicate that the research group achieved an arithmetic mean of (12.22) with a standard deviation of (4.03) in the pre-test. As for the post-test, the same group achieved an arithmetic mean of (22.13) with a standard deviation of (1.28). Thus, the calculated (t) value was (4.46), which is greater than the tabular (t) value of (2.14) at a significance level of (0.05) and under a degree of freedom of (14). The researcher attributes the reason for this difference to the research sample using auxiliary exercises, which are exercises that help the learner form a base or background on which the learner relies to develop the learning process and thus develop his kinetic

performance. The superiority of the second experimental group over the rest of the groups is because using mental exercise with mastery reduced the effort expended during the exercise. Using the relaxation process and the correct mental visualization of the skill gave the learner an opportunity. To improve the skill without exerting much effort can lead to fatigue and tension. This is consistent with (Abu Al-Naja Ahmed) who states that "muscle relaxation at the beginning of the educational unit through auxiliary tools frees it from excessive excitement in the brain and everything that is not related to the skill that is required to be thought about" (Abu Al-Naja Ahmed Ezz El-Din; Hamdi Abdel Fattah Al-Jawahari. 2003) [2]. Also, using visualization in this type of exercise, which is the core of the thinking process, made the process of correcting errors better, as "most of those who have a clear idea about the main aspects of implementing the skill can, through mental visualization, compare their responses with the optimal performance and then try to correct incorrect responses" (Nahida Abdel Zaid and Mazen Abdel Hadi. 2018) [7] (Jerri el al, 2020) [10].

Presentation and analysis of the results of the accuracy test for the skill under study:

Table 3: shows the arithmetic tools, standard deviations, and the calculated and tabulated t values between the pre- and post-test of the accuracy test for the skill under study

Tests	Experimental		Control		T value calculated	Type Sig
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
Forehand	26.9	1.02	22.13	1.28	3.10	Sig
Backhand	24.5	2.22	18.32	2.94	2.99	Sig

Table score = (2.14) at a significance level of (0.05) with 14 degrees of freedom

Table (3) indicates the presence of significant differences between the experimental and control groups in the post-tests in favor of the experimental group in the test of the skill of the forehand and backhand strokes in tennis, as the results indicate that the research group achieved an arithmetic mean of (14). The researcher attributes the reason for this difference to the use of the research sample of exercises with auxiliary tools, which are exercises that help the learner in forming a base or background on which the learner relies to develop the learning process and thus develop his kinetic performance. Thus, the researcher agrees with what specialists see in that "exercise with auxiliary tools aims to improve appropriate kinetic performance, by developing the students' ability to stabilize movements within the muscle skill. As well as the ability to re-execute movements with sound and tight performance with the correct physical physiological activity, to ultimately affect the elements of fitness in progress and development after removing obstacles from the educational process." (Wajih Mahjoub. 2002) [8] (Hashem *et al.*, 2022) [9] This is consistent with what was reached in the results of our current research, as there were basic skills in tennis under study, and the method (auxiliary tools) was preferred in teaching students the game. Tennis, and from the above we see that the objectives and hypotheses of the research have been achieved when the results of the research appeared.

Conclusions and recommendations

Conclusions

- The results showed significant differences between the pre- and post-tests in the level of skills of the forehand and backhand strokes in tennis in favor of the post-test.
- The level of performance of the research sample in the accuracy of skill performance was more developed than the pre-test for the same test.

Recommendations

Through the conclusions shown by the research results, the researcher recommends the following:

- The necessity of using auxiliary exercises in the educational process as they are of great benefit in learning basic skills in tennis.
- The adoption of scientific foundations for tests and measurements by trainers and those in charge of the educational process because they show the level of performance of learners

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