The Effect of Special Exercises with A Breathing Mask on Fatigue and the Accuracy of the Front and Back Strikes for Tennis Players Under 19 Years Old

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1- Search definition:

1-1 Introduction and importance of the research:

In ancient times, humans were interested in physical training as a manifestation of daily life, which was performed through the innate natural movements practiced by primitive man, those tasks that represented a natural training of basic physical abilities such as strength, speed, endurance, flexibility and agility. With the development of the ancient man, he took from primitive folk games, which he learned through what he inherited from parents and grandparents, training in motor skills such as standing, crawling, holding and sending...etc. Those skills, using primitive tools or without them, where these skills represent the basic base of the current mathematical skills. In modern times, training has taken a new turn and a solo method, as it has become part of a more extensive and comprehensive process, which is the process of mathematical preparation, and both processes seek to achieve the highest levels of sports achievements, and therefore sports training is the main part of the process of preparing the athlete as a special physical and educational process. It is based on the use of physical exercises with the aim of developing the various qualities necessary for the athlete to achieve the highest possible level of a certain type of sports activities, as well as the capabilities of the body systems to adapt to stimuli with the presence of permanent motives while determining them according to the level with stimuli, maintaining balance and adapting or overcoming what they suffer from baffles until he had a special system aimed at preparing the athlete to high levels in various games and events. It also has systems, rules and theories based on great scientific and field knowledge and experience.

Sports training is characterized by the process of evaluation and periodic medical and educational monitoring of the individual during the training and preparation stages, as assessing the player's tolerance of physical effort is critical to raising the level of training loads as well as medical monitoring to ensure the continuation of the player's health condition. Educational monitoring is no less important than evaluation and medical monitoring in achieving levels of achievement. This requires those in charge of the training process to maintain a close relationship with all parties affecting the player, such as the school, the family, and sports and medical research centers to ensure proper medical and educational evaluation and monitoring.

Tennis is one of the games spread in many countries of the world, and there is an upward effect on the increase in the number of its practitioners. This is due to the fact that it is a fun sport for all ages, from the age of eight to the age of seventy or more, each according to his abilities and skills. It is also a suitable sport for every gender and requires only two or four players at most and plays in a

relatively short time. Which makes the development of the functional efficiency of the pulmonary system, performance endurance and the economy of effort one of the most important physiological and physical variables affecting the nature of this game, in addition to the importance of the accuracy of the front and back ground strikes as one of the two most important basic skills in this game, and this is what was indicated by the results of many previous studies and research.

The importance of the research is manifested in identifying the effect of special exercises with a breathing mask on lung variables and the accuracy of the front and back ground strikes for tennis players, and this is of great importance in raising the level of players' performance, and directing coaches towards building the training process according to sound scientific foundations.

1-2. Research Problem

It is no secret to everyone that the most important goals of sports training are to reach the best level of achievement to ascend the podiums in local and international championships, which is achieved through the athlete's preparation in an integrated physical, functional, mental, and tactical aspects, according to the requirements of each game, especially tennis. The ground, which depends in its requirements on the functional efficiency of the pulmonary system, due to what it contains in its nature, rapid successive movements, in addition to the skills it contains that require accuracy in performance, such as the front and back ground strikes.

As the researcher is one of the practitioners of this game, through her representation of the University of Al-Muthanna team for four consecutive years, as well as her continuous follow-up to the successive university and local championships, the researcher noticed the rapid emergence of signs of physiological fatigue in most tennis players, and through the tests she conducted, it was found that there is a weakness in the efficiency of the pulmonary system And what this has had on the accuracy of the front and back ground strikes, which sparked the researcher's desire to achieve the advancement of the requirements of this game according to sound scientific methods that would elevate the physiological and skill requirements of this game, by preparing a training program using a breathing mask and knowing its effect on some variables The accuracy of the front and back ground strokes for tennis players under 19 years old.

1-3. Research Aims:
1- Preparing exercises for a breathing mask for tennis players from Al-Muthanna Club under 19 years old.
2- Identifying the effect of breathing mask exercises on some lung variables and the accuracy of the front and back ground strikes for tennis players from Al-Muthanna Club under 19 years old.

1-4. Research Hypotheses   :
1- There is a positive effect of breathing mask exercises on some lung variables and the accuracy of the front and back ground strokes for tennis players under 19 years old.

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1.5- Research Areas:

1-5-1 The human field: Al-Muthanna club players (under 19 years old) for the sports season (2020-2021).

2-5-1 Spatial domain: tennis court in the College of Physical Education and Sports Sciences - Al-Muthanna University.

1-5-3. Time range: from / /2020 to / / 2021

1-5. Definition of Terms: 5-1Definition of Terms   :

Breathing mask : It is one of the means or methods used to increase the effectiveness of sports training, and it works to increase the strength of air inhalation, as it enters about 60% of fresh air despite the great need for air during exercise , that is, it is similar to training at heights ,when you remove it after completion From training, you feel that the normal amount of air is more than what you need, and you have a large breath .Among the practical benefits of this device is to strengthen the breathing muscles, enhance physical and mental performance, and increase endurance. ⁽ [2]⁾

2. RESEARCH METHODOLOGY AND FIELD PROCEDURES:

2.1Research Methodology:

The researcher used the experimental method in the manner of two equal groups, due to its suitability to the nature of the research.

2-2. The Community of the Research

The research community, represented by the 12 players of Al-Muthanna club under 19 years old, was identified for the sports season (2020-2021 AD), they were divided randomly and by lottery into two groups (control and experimental), with (6) players for each group .The researcher took into account the normal distribution of the two groups, as shown in Tables (2) and.(3)

Table(2) : Normal distribution, control group

Indication	The Difference	Skewness	Mediator	Deviation	The Middle	Variables	
Homogeneous	5.547	0.706	0.511	0.029	0.515	Tidal Size(TV)	
Homogeneous	1.141	0.200	1.805	0.021	1.808	Expiratory Reserve Volume(ERV)	
Homogeneous	0.388	0.492-	2.332	0.009	2.331	Remaining Functional Capacity(FRC)	
Homogeneous	0.256	0.014	3.049	0.008	3.049	Forced Exhalation in The First Second)FEVI(	
Homogeneous	0.461	0.155	101.750	0.469	101.800	Maximal Pulmonary Ventilation (MVV)	
Homogeneous	6.478	0.993	0.074	0.005	0.075	Fatigue Index	
Homogeneous	11.296	0.984	5.300	0.618	5.475	Ground Forehand	

| Homogeneous | 6.454 | 0.632 | 4.850 | 0.316 | 4.900 | Ground Backhand | |

3- 2 Tools And Methods and Devices Used In The Research:

3-1. Research Tools:
- Arab and foreign sources.
- Personal interview with experts and specialists Appendix (1).
- Tests and measurements.
- Appendix 2 - The auxiliary work team.

2-3-2. The means used in the research :
- Appendix 5 data registration form.
- Handy calculator number one.
- stopwatch type) SONY.(
- Racket balls (3) set.
- Rackets number.(14)
- Legal tennis court.
- Whistle.

2-3-3. Devices Used In The Research:
- A rheostat for measuring lengths.
- Medical scale for measuring weights.
- Respiratory mask device.
- Dry spirometer.
- Casio type photocopy machine, one number.
- Calculator (laptop) type (DELL).
- Laser printer of the type (Canon-4410) and laser discs.

2-3-4. Breathing Mask
2-4-1 The idea of a breathing mask:
The breathing mask called exercise mask, hypoxia mask, altitude mask, or simulating altitude mask is a relatively recent product, and it was designed to mimic and simulate the effect of altitudes above sea level (because it allows 60% of fresh air to pass through despite the great need for air). During training exercise) by restricting and limiting the flow of air to the lungs, as many believe that this effect is useful for strengthening the respiratory muscles and creating a state of hypoxia in the blood, in order to achieve the ultimate goal of improving athletic performance. Training with a breathing mask is one of the training methods applicable in many countries where there are no heights, or the club or federations that cannot set up training camps in the highlands due to its material cost, as the purchasing cost of this product is very simple compared to providing the players' needs for housing and food. As well as bear the hassle of travel.

At a time when hypoxia exercises were used as exercises similar to training heights by reducing the number of breathing times or holding the breath during the performance stages, it is now possible to regulate the breathing process using this mask, without the coach having to remind the players of the times of stifling breathing, which most coaches find practical. rather complicated. It is also possible to control the degree of oxygen deficiency through the valves contained in the mask that allow air to pass through to the extent determined by the coach in proportion to the

players' ability represented by the training age and the level of hypothetical rise and fall (simulation) above sea level in the area in which they live. Therefore, through this mask, it is possible to easily wave with the intensity of the training load followed.

**2-4-2 Components of the breathing mask (): Transfer to the second chapter**

1- The face of the mask is made of a rubber material, designed in a way to suit the anatomical structure of the bones of the trainee's face, and there are three nozzles, two lateral, and an upper middle one closer to the trainee's nose. See Figure.(1)

3- The face of the mask is surrounded by a belt of flexible fabric made to suit all sizes (the size of the head). Excessive sweating .See Figure (2-a, b)   .

4- The mask consists of a set of tools called resistance caps, which are the focus of the mask idea and its most important components, see Figure (3-a, b).

5- The resistance caps consist of a base called the male column, and another placed above it called the female column, and the female base column is always in the upper middle opening outward, and the female base column in the right-side nozzle is always inward, and the female base column is in the left side nozzle It varies according to the altitude (height from sea level) planned to be trained, see Figure.(4)

6- Among those tools (resistance caps) are flow valves. The number of valve openings in the upper middle nozzle is seven. As for the valves in the side nozzles, the number of their openings varies according to the level of height planned for training, as the number of openings decreases as the default height increases (simulation), See Figure.(5) The mask is designed to train at five heights (3000m, 6000m, 9000m, 12000m, 15000m and 18000m). The flow valves differ for each height as follows:

- In the case of a height of (3000 m and 12000 m), the flow valves with four openings are used.
- In the case of two heights (6000 m and 15000 m), two-hole flow valves are used, and both lateral female bases protrude inward at the height (6000 m), and the left female base protrudes outward at the height (15,000 m).
- In the case of the two heights (9000 m, 18000 m), one-way flow valves are used, and both side female bases protrude inward at the height (9000 m), and the left female base protrudes outward at the height (18000 m).
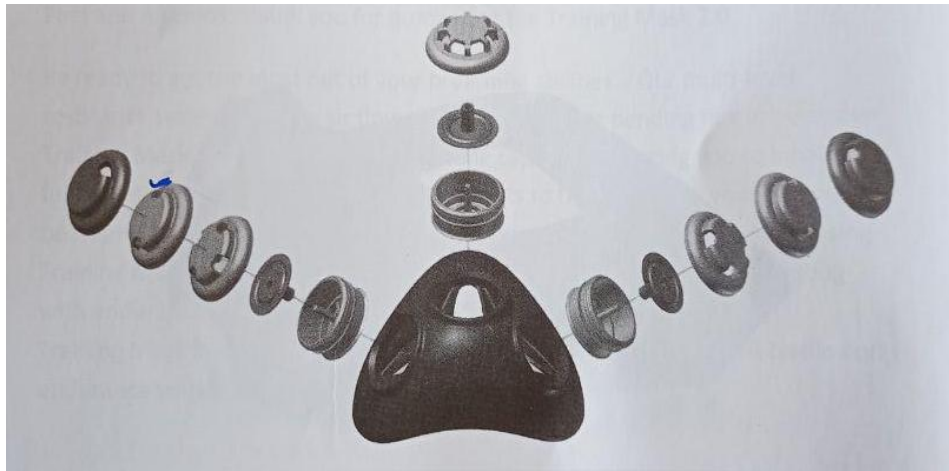

Picture (1) shows the face of the breathing mask.

Picture (2-a) shows the side strap of the respirator.
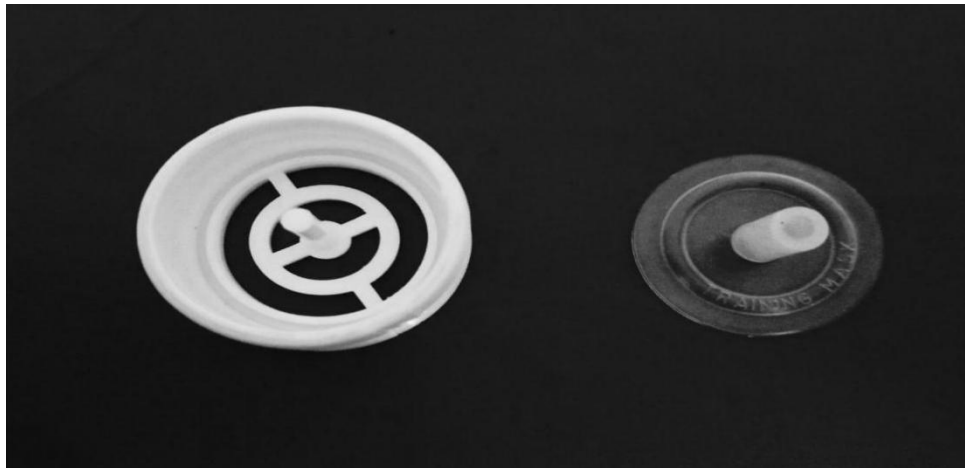**Picture (2-b) shows the head strap of the respirator**.
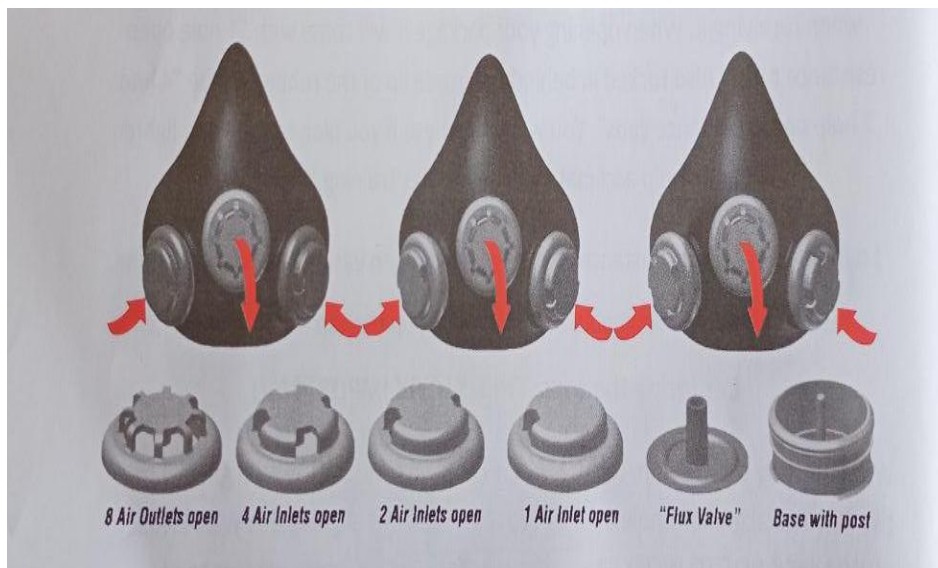
Picture (3 - A,B) Shows The Details And Components Of The Resistance Caps Of The Respirator.

Picture (4) shows the female and male base of the resistance caps.

Picture (5) shows flush valves with different orifices.

2-5. Steps to implement The Research:
2-5-1. Specifying the Research variables:
The researcher ,by reviewing the previous sources and references, and in cooperation with the supervising professor , prepared a questionnaire) in which a group of pulmonary variables were identified , which is on a group of (12) experts and specialists, whose names are listed in Appendix (1), in order to determine the most important variables based on an acceptance rate of (75%) or more of the answers of the experts and specialists , as shown in Table.(5)

Table (5) shows the percentages and the chi -square score) Ka (^{2} for the experts' answers to lung variables.

No.	Axes	Acceptors		Rejectors		Kay Value		Validity
		No.	%	No.	%	Calculated	Sig. Level	
1.	Tidal Volume (TV)	12	%100	1	%8.33	12	-	Allow
2.	Expiratory Reserve Volume (ERV)	11	%91.67	4	%33.33	8.333	0.004	Allow
3.	Total Lung Capacity (T.L.C)	8	%66.67	Zero	%0	1.333	0.248	Reject
4.	Functional Residual Capacity (FRC)	12	%100	4	%33.33	12	-	Allow
5.	Maximum Respiratory Capacity (M.B.C)	8	%66.67	5	%41.67	1.333	0.248	Reject
6.	Forced expiratory volume per second (FEV2)	7	%58.33	2	%16.67	0.333	0.564	Reject
7.	Forced exhalation in the first second (FEVI)	10	%83.33	1	%8.33	5.333	0.021	Allow
8.	Maximum pulmonary ventilation (MVV)	11	%91.67	1	%8.33	8.333	0.004	Allow

2-5- 2. Identification And Characterization Of Measurements And Tests Used In The Research:

2-5-2-1. determine the measurements and tests used in the search:

Through the researcher's review of the previous sources and references, the pulmonary measurements and the test for the fatigue index were determined. As for the skill tests for the accuracy of the front and back ground strokes for tennis, a set of tests were determined , [*] was presented to a group of (12) experts and specialists, whose names are listed in Appendix (5), and by relying on a percentage of (75%) and above according to Bloom's classification, the) White (test was chosen as it has a The highest percentage of the answers of experts and specialists, as shown in Table.(6)

Table (6): The percentage shows the value of Kai answers experts and brain T .China on testing skills.

test acceptance	chi square		disapproves		Agrees		axles	
	indication	Calculated v	%	Number	%	Number		
Acceptance		12	%0	zero	%100	12	Standardized hobby test	
to reject	248 .0	333. 1	% 33.33	4	% 66.67	8	Standardized and approved test by the	

							International Tennis Federation.	
to reject	0.564	0.333	%41.67	5	%58.33	7	unregulated test	

2-5-2-2.Characterization Measurements and Tests Used in The Research:
2.5.2.3. 1measuring lung variables:

-**Purpose Of The Test : To** Check Lung Parameters

-**Tools :** A Spirometry To Examine Lung Variables

-**Procedures test** : I have been measured lung variables by using the device Alspiromitr electronic) spirometer spirometer (As in Figure (1) where it is taken to measure weight, height and age players, then this intervention information to the device ,the researcher explained the mechanism of using the device for the sample tested (do maintenance of tube rubber test related to the device and inserted into the mouth and confined by the lips lab to block out air during The test is outward, and the nasal opening is closed by means of a nasal snub to prevent part of this air from leaving through the nose. Three attempts are given to each laboratory, and the middle attempt is taken. After each laboratory, the test tube is disinfected with a disinfectant solution .In order to measure the parameters of the player, he sits in front of the device and then holds his hand. A hose connected to the device, where there is a rubber tube at the end of it that helps the laboratory to control its insertion into the mouth and the dishes on it without leaking any part of the air during the test. Putting the nose down, then trying to take inhalation and preliminary exhalation from (3-1) attempts naturally and somewhat deep and when the player takes the instruction by the researcher and under the supervision of the specialist doctor, he starts by taking the maximum inhale and then gives the maximum exhalation by repeating one or more times in Khartoum .The procedures for measuring the variables are as follows:

1. Research procedures for forced expiratory volume variable in the first secondFEV1:

    It is the expiratory volume measured immediately after the first second for each laboratory.

2. Research procedures for tidal volume variable (breathing air) TV:

    It is to breathe several times outside the device and then to inhale the inhaled air from the outside air, then the laboratory is placed in a stinging device and the air is released into the device.

3. Research Procedures for Rapid Vital Capacity Variable FVC:

    It is the maximum amount of air expelled by a person after he has taken the deepest possible inhale, and it is the sum of the exhaled reserve, the volume of normal breathing air, and the volume of the inhaled reserve.

4. Research procedures for variable expiratory reserve volume   ERV:

    It is the subtraction of the expiratory air reserve + the volume of normal breathing air from the vital capacity.

5. Research Procedures for Variable Maximum Pulmonary Ventilation) MVV : (

It was completed measurement And that work maneuver breathing max inhale and exhale Maybe for (12) a second, Then adjust to me minute hit her in a the number five, And with this We get the amount air Which May be inhale it and take it out From lungs max Speed in a one minute.

6. Search procedures for the remaining functional capacity variable (FRC):

It expresses the volume of air remaining in the lungs after normal exhalation and cannot be measured directly,and is extracted by summing) tidal volume + expiratory reserve volumeFRC = TV+ERV

Then, the researcher extracted, through the device, a complete measurement of lung variables in the form of a paper tape on which all data were printed with Curvet drawings to measure the player himself and all members of the sample .Figure (6)shows the device for examining lung variables, while Figure (7) shows the measurement mechanism for the player, and the extracted chart paper is shown in Figure (8) for the pre and post tests.

Figure (6) Shows A Device for Measuring Lung Parameters.
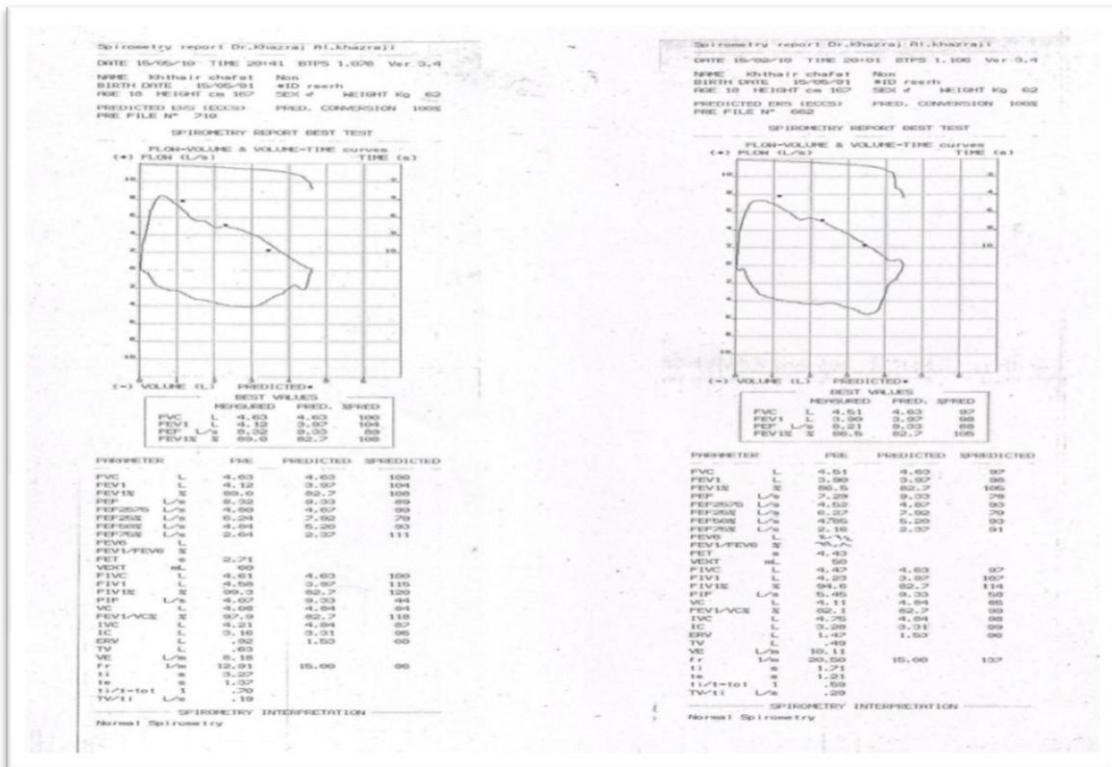
3-2-2-5-3 Characterization of White's Forehand Ground Strike Accuracy Test'

❖ Objective of the test: To measure the accuracy of the forehand groundstroke in tennis.

❖ Age level :Suitable for university, college and high school students.

❖ Equipment used :rackets ,(21) tennis balls ,(21) regular court, chalk, basket of balls, tape measure, registration form.

❖ procedures:

-The tennis court is planned from one side as shown in Figure (5).

- A rope shall be placed parallel to the net and at a height of (7) feet from the ground and (4)feet from the net.

-it is drawn three parallel lines between the transmission line and the base and the distance between the lines (4.5) feet .

❖ How to perform the test:

-the player stands laboratory in the middle of the base line (line rear) point) a , (while the teacher or assistants standing in half of the pitch opposite at the point (b) and with an appropriate number of balls ,the teacher beat the ball to the lab behind where to take the appropriate laboratory situation transmitter line For the forehand kick and perform the kick to pass over the net and under the rope so that the ball falls in the areas shown in the aforementioned figure in the facing half of the court .

- The laboratory is given (5) attempts for the purpose of training for the test.
- The test begins with the tester performing the forehand strike (10) times, i.e (10) .balls in the same way, provided that the balls are given to the laboratory in a similar way as possible .

❖ Registration:

The ball that passes over the rope is given half of the calendar degree on which it falls, bearing in mind that the height of the rope is (4) feet above the net   .

-   The ball that passes from under the rope and falls on the ground inside the playing field in specific areas in a row and shown in Figure ,(10) and is given successive and different grades of evaluation and its value ranges from (5-1) degrees.
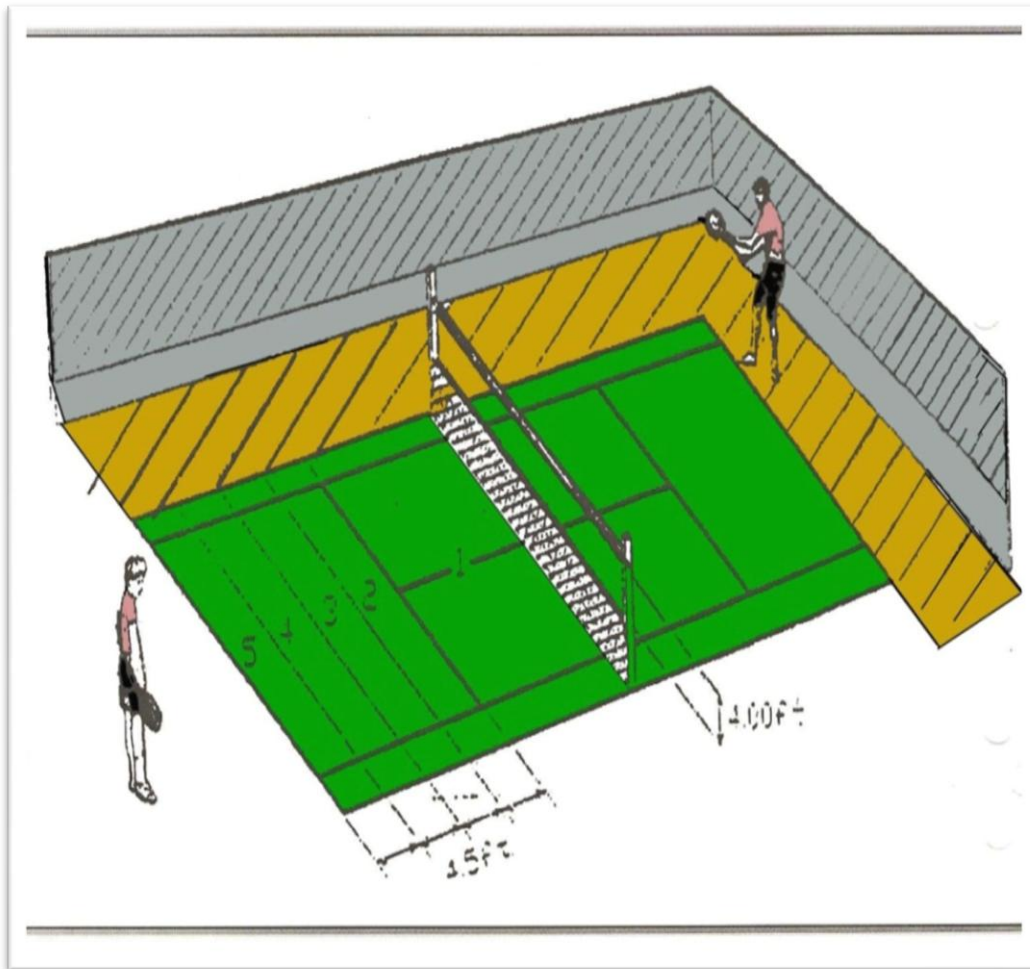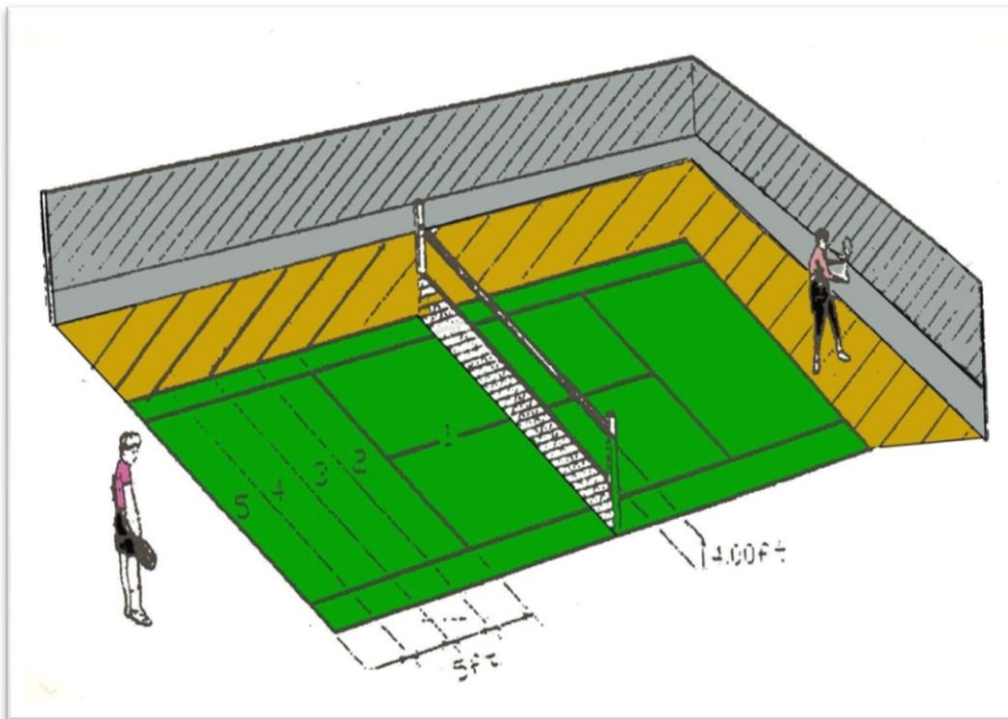

Figure (10):The layout of the court represents the) White (forehand groundstroke test in tennis.

4-2-2-5- 2characterization test White accuracy strike ground background: ([5])
The same procedures used in the forehand kick are applied on the same court as well as the calculation of scores except for the way the kick is performed is different as in Figure. (11)

Figure(11)**shows White's backhand groundstroke test**.

6-2. Exploratory Experiment

For the purpose of obtaining accurate and reliable results and in order to avoid the difficulties and obstacles that the researcher may face during the conduct of the main experiment, scientific research experts emphasize conducting the exploratory experiment, which is defined as "a practical training for the researcher to identify himself on the negatives that he encounters during the test to avoid them."

Therefore, several exploratory experiments were conducted on two players from the research community, with the help of the assistant work team, and under the supervision of the supervisor, and they were as follows:

First: the exploratory experience of the devices used:

The researcher conducted the exploratory experiment of a breathing mask and a spirometer , on Sunday (24/1/2021) in the Sports Physiology Hall at the College of Physical Education and Sports Sciences - Al-Muthanna University ,for the following objectives:

- Ensure the safety and validity of the work of the devices.
- Training on how to use the equipment.
- Detecting any other obstacles that the researcher may face to avoid during the main experiment.

Second :The second exploratory experiment on physiological and skill measurements and tests:

It conducted a researcher of the second exploratory experiment for testing the physiological and skill , at ten o'clock in the morning, a brief summary on Tuesday (26/01/2021), on the ground and tennis court at the Faculty of Physical Education and Sports Science - University of Muthanna ,in order to reach the following:

1- Identifying the obstacles encountered researcher of the pre - test procedure   .
2- Determine the accuracy and validity of the measurements and tests for the research   .
3- Ensure that measurements and a no Tests enjoys scientific and valid application bases on the research sample .
4- Knowing the time taken to implement each measurement or test   .
5- The extent of the research sample's understanding of the measurements and tests used.
6- Training and practice of the assistant work team on the implementation of measurements and tests and recording the results.
7- Ensuring the validity of the tools and the suitability of the place for implementation.

Third.Exploratory Experience for The Training Program:

Conducted a researcher of the third exploratory experience for the training program, at ten o'clock am On Sunday (01/31/2021), on the golf College of Physical Education and Sports Science- University of Muthanna, where he applied where a few exercises using breathing mask ,to find out for Its suitability to the research sample and the extent of each player's ability , as well as the rationing of training intensity.

2-9. Training Program:

After the completion of the results of tribal tests , and in order to achieve the research objectives and to reach the most accurate results to solve the problem , the researcher of numbers and organization of exercises [*] specific to the game of tennis (and using a breathing mask) and its application within a training program to know the extent of its impact on some lung variables and the accuracy of the front and back ground strikes.

Where the researcher prepared these exercises by reviewing some sources and previous studies, as well as video recordings on websites (YouTube) and sports forums related to tennis .And it took into account the researcher of all the conditions and characteristics of the lifting load of exercises and spikes in it .(Muhammad Abdul Ghani Othman) stressed that " it is necessary to work on gradually raising the training during the training plan, and the change in volume and after that the intensity and duration of rest should be noted, as it is possible to secure the adaptation that secures the occurrence of upgrading the level [7] "

It was the start of field application of the training program [*] dated 14/2/2021, after specifying and taking into account the following points:

1- The duration of the training program was only two months.
2- The number of training units per week (3) units.
3- A set of training units (24) units.
4- The duration of mask training during one training unit was (28-37.5 minutes) from the time of the main section, which is equivalent to (28-35%) of the total time of the training unit, which is (90 minutes).
5- The intensity of exercise ranges .(%95-80) It was determined by the pulse (maximum heart rate for the exercise), and through the following equation:

$Pulse\ rate\ with\ desired\ intensity = Maximum\ pulse\ rate\ x\ intensity\ to\ be\ used/100$

The Effect of Special Exercises with A Breathing Mask on Fatigue and the Accuracy of the Front and Back Strikes for Tennis Players Under **19** Years Old

2-10. Measurements And Posteriori Tests:

Post-measurements and tests were carried out on the sample of the two groups (control and experimental) on Tuesday (3/5/2021), after the completion of the field application period for the units of the training program. Where the assistant team, place, time, tools and devices all.

3- Presentation, analysis and discussion of the results:

This chapter deals with the presentation, analysis and discussion of the results of the research, after the researcher completed the collection of data resulting from the tests used that were placed in tables, because of the ease in extracting scientific evidence, and because it is an explanatory tool suitable for research that enables the achievement of research hypotheses and objectives in the light of the field procedures that it has undertaken researcher.

3-1- Presentation, analysis and discussion of the results of pulmonary variables:

3-1-1- Presentation and analysis of the results of the pulmonary variables of the control group:

Table (8) The significance of the differences between the pre and posttests in some lung variables for the control group

Indication level	Values t calculated	P	S		Post Test	Pretest		measuring unit	.variable
			P	S			S		
0.003	8.668	0.029	0.128	0.016	0.643	029.	0.515		tidal size(TV)
0.002	10,508	0.044	-0.233	0.064	2.040	021.	1.808		expiratory reserve volume(ERV)
0.002	10,848	0.020	-0.111	0.019	2.442	009.	2.331		remaining functional capacity(FRC)
0.001	14.812	0.016	-0.116	0.010	3.165	008.	3.049		forced exhalation in the first second(FEVI)
0.016	4.899	0.816	-2.000	1.219	103.800	469.	101.800		maximal pulmonary ventilation (MVV)

In light of the data extracted for the research sample individuals, the table ( ) shows the differences in the values of some lung variables (tidal volume (TV), expiratory reserve volume (ERV), functional residual capacity (FRC), total lung capacity (TLC), forced expiration per second The first (FEVI), maximum pulmonary ventilation (MVV) in the pre and posttests, and as shown in

the table above, the nature of the sample members of the control group showed differences between the pre and posttests.

In a tidal volume variable (TV)and by using the (t) test of the interconnected samples to extract the differences, as its calculated values reached (8.668) at the level of significance (0.003) and the degree of freedom (3), between the pre and posttests of the control group and in favor of the post test.

As for the expiratory reserve volume variable) ERV (And by using the (t) test of the interconnected samples to extract the differences, as its calculated values amounted to (10.508) at the level of significance (0.002) and the degree of freedom (3), between the pre and posttests of the control group and in favor of the post test.

And in the residual functional capacity variable) FRC (And by using the t-test of the interconnected samples to extract the differences, as its calculated values reached (10,848) at the level of significance (0.002) and the degree of freedom (3), between the pre- and post-tests of the control group and in favor of the post-test.

And in the forced expiratory variable in the first second) FEVI (By using the t-test of the interconnected samples to extract the differences, as its calculated values amounted to (14,812) at the significance level (0.001) and the degree of freedom (3), between the pre and post tests of the control group and in favor of the post test.

As for the maximal pulmonary ventilation variable) MVV (And by using the (t) test of the interconnected samples to extract the differences, as its calculated values reached (4.899) at the level of significance (0.016) and the degree of freedom ,(3) between the pre and post tests of the control group and in favor of the post test

Figure(12) **It shows the significance of the differences in the pre and post tests in some lung variables for the control group**.

2 -1-2- Presentation and analysis of the results of the pulmonary variables of the experimental group:

Table (9) **the significance of the differences between the pre and post tests in the pulmonary variables of the experimental group**.

Indication level	Values t calculated	P	S	Post Test		Pretest		measuring unit	.variable
				P	S	P	S		
0.002	10.682	0.031	0.163	0.009	0.677	0.026	0.514		tidal size(TV)
0.002	10.221	0.067	-0.343	0.058	2.155	0.017	1.813		expiratory reserve volume(ERV)
0.007	6.691	0.165	-0.552	0.163	2.878	0.006	2.327		remaining functional capacity(FRC)
0.005	7.466	0.053	-0.199	0.058	3.247	0.007	3.048		forced exhalation in the first second(FEVI)
0.009	6.124	1.633	-5.000	1.345	106.325	0.862	101.325		maximal pulmonary ventilation (MVV)

In light of the data extracted for the members of the research sample, the table (9) shows the differences in the values of some lung variables (tidal volume) TV ،(expiratory reserve volume)ERV ،(residual functional capacity) FRC ،(total lung capacity) TLC ،(forced exhalation in the first second) FEVI maximal pulmonary ventilation) MVV   , (in the pre and posttests, and as shown in the table above, the nature of the sample members of the experimental group showed differences between the pre and post tests .

In a tidal volume variable(TV) by using the t-test of the interconnected samples to extract the differences, as its calculated values reached (10.682) at the significance level (0.002) and the degree of freedom (3), between the pre and posttests of the experimental group and in favor of the post test.

As for the expiratory reserve volume variable) ERV (And by using the (t) test for the interconnected samples to extract the differences, as its calculated values reached (10,221) at the level of significance (0.002) and the degree of freedom (3), between the pre and posttests of the experimental group and in favor of the post test.

And in the residual functional capacity variable) FRC (And by using the (t) test of the interconnected samples to extract the differences, as its calculated values reached (6.691) at the level of significance (0.007) and the degree of freedom (3), between the pre and posttests of the experimental group and in favor of the post test.

And in the forced expiratory variable in the first second) FEVI (And by using the (t) test for the interconnected samples to extract the differences, as its calculated values reached (7.466) at the significance level (0.005) and the degree of freedom (3), between the pre and post tests of the experimental group and in favor of the remote test.

As for the maximal pulmonary ventilation variable) MVV (And by using the (t) test of the interconnected samples to extract the differences, as its calculated values reached (6.124) at the level of significance (0.009) and the degree of freedom (3), between the pre and post tests of the experimental group and in favor of the post test.

3-4. Summary Of Results:

The training program that was applied using a breathing mask (training under hypoxia) led to sensitization and development in many pulmonary and skill variables among the members of the experimental group, and this was confirmed by many experts and specialists, as (John West) stated that "when training the control in Breath results in some physiological adaptations due to a decrease in the level of oxygen and an increase in the level of carbon dioxide in the blood on the central chemical receptors in the brain by 80-85% and on the surrounding chemical receptors in the carotid and aorta, causing an increase in the rate of pulse and respiration and invalidating the voluntary action that does not exceed breathing

4-1. Conclusions

By observing and analyzing the results of the pre and post tests for the control and experimental groups, as well as the differences in the post test for both groups, we clearly showed the role of the training program using a breathing mask on some of the variables of this study, as follows:

- There is a positive effect of the breathing mask training program on some lung variables and the accuracy of the front and back ground strokes, and thus the first hypothesis of this study was achieved.

- There are significant statistically significant differences between the pre-test and the post-test for both groups in favor of the post-test, and thus the second hypothesis of this study has been achieved.

- There are significant statistically significant differences between the control and experimental groups in the post-test for all study variables, in favor of the experimental group, and thus the third hypothesis of this study was achieved.

4-2. Recommendations:

This study is nothing but a simple attempt and limited to our available capabilities, yet we wanted to give the field for other research in this field to expand and more in depth, and in the light of these results, we offer some suggestions and recommendations to everyone who is interested, whether they are coaches, officials, or players that We hope that it will be constructive ,making it easier for them to avoid many of the problems that they find during their work, and among those recommendations are:

- The necessity and necessity of using technological techniques in modern sports training, which facilitate the work of coaches on the one hand, and entice sports practitioners to perform and practice them regularly on the other hand.

The necessity of providing the necessary facilities for the training process   .

The Effect of Special Exercises with A Breathing Mask on Fatigue and the Accuracy of the Front and Back Strikes for Tennis Players Under **19** Years Old

The need for the coach to know the modern methods of training in general, and to teach them to the players in a simplified manner, according to the culture and mental capabilities of each player.

References
[1] Samia Muhammad Ismail. (Recognizing the relative importance of physical education and sports for the national youth players in tennis in the state of Khartoum). Master's thesis. Sudan University of Science and Technology: 2016. p. 52.
[2] The World Wide Web :The Egyptian Mathematical Sciences website ,2016 .p. 2.
[3] -Ahmed Khater, Ali Fahmy : Measurement in the Mathematical Field4 , th Edition , 1996 , pp. 165-167.
[4] Majid Raysan Khouribet : Encyclopedia of Measurements and Tests in Physical Education , Basra University, Higher Education Press, 1989, p. 254.
[5] Raysan Khribit Majid :The previous source , p. 254.
[6] Vandalen . Scientific research methods translation .Nabil Muhammad and others. Al Cairo .Anglo-Egyptian. 1985 .p. 348.
[7] Abdul Ghani. Othman. Muhammad .Kinetic learning and sports training . Kuwait . Dar Al-Ilm for Publishing and Distribution: 1987. Pg. 238.
[8] Dr. Aarushi Kataria, Dr. Naveen Nandal and Dr. Ritika Malik, Shahnaz Husain -A Successful Indian Woman Entrepreneur, International Journal of Disaster Recovery and Business ContinuityVol.11, No. 2, (2020), pp. 88–93
[9] John .NS .West : Foundations of Respiratory Physiology , (translation) Khair Al-Din Mohi Al-Din, University of Mosul, Dar Al-Kutub, 1982.

p. 41.