

# The effect of strength exercises by decentralization stretching (p.n.f) on some elements of physical fitness for the skill of shooting from jumping for young handball players

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## Abstract:

The purpose of this paper is to preparing decentralization stretching (p.n.f) exercises in some elements of physical fitness for the jumping skill of young handball players, identifying the effect of decentralization stretching (p.n.f) on some elements of physical fitness for the shooting skill of young handball players, and identifying the superiority of the two groups (experimental and control) in some elements of physical fitness for the skill of shooting from jumping for young handball players. The researchers used the experimental method in the manner of two equal groups for his belief that it is the best and most appropriate way to solve the problem presented in the research. One of the most important results reached by the researcher is that: Stretching, and decentralization (p.n.f) exercises have a positive effect in developing some elements of physical fitness (Kinematic stretcher, instantaneous strength, Speed characteristic strength of the muscles working on them for the skill of shooting from jumping in handball), the amount of development, and some elements of physical fitness, (Kinematic stretcher, instantaneous strength, Speed characteristic strength) in the experimental group that used, stretching exercises (p.n.f) was greater, compared to the control group. One of the most important recommendations recommended by the researchers is that: The use of stretching decentralization (p.n.f) exercises in a contraction-relaxation (CR) manner, which has a significant impact on developing some elements of physical fitness for handball players, youth, especially strength and flexibility, and using stretching decentralization (p.n.f) in one way, CR on another skill of handball.

## Introduction:

The modern scientific and technological developments that the world is witnessing in the fields of sport have imposed new horizons in all scientific foundations and trends, including sports sciences such as sports training and biomechanics, which is witnessing a wide development based on modern foundations and theories, especially after the overlap of science and the interrelationship between them and the emergence of the computer and the Internet, which contributed greatly In the flow of information that many specialists and researchers in this field have benefited from to bring about this great development.

There is no doubt that the science of sports training had a clear impact in achieving a high athletic achievement for various sports, and among these sports is the game of handball, through the study of different sports movements and the development of the motor performance of the athletes. It has a role in determining the form of motor performance in general and sports in particular.

Handball is one of the team games that is witnessing a great and remarkable development due to the fast pace and dynamic style of this game when practising its motor skills and defensive and offensive duties for long periods of time playing and changing situations that require the player to have high physical and skill abilities, as well as the presence of a factor of suspense and excitement to reach levels Advanced through the use and use of means and methods or methods of training in this direction that works to invest time and economy with effort.

Therefore, studying the skill of shooting from jumping using training methods and modern technical tools in the field of modern training enables its workers to identify accurate physical details that help us identify indicators of poor physical and skill performance that the trainer must upgrade according to training data and weaknesses that workers must In the field of handball training, its knowledge and correct scientific work in how to know and direct exercises in the treatment of weaknesses, whether technical or physical. Among the modern exercises is stretching decentralization (P.N.F), which works on developing the muscles working in the performance of the shooting skill from jumping, spending Less energy in the performance of motor duty (shooting from jumping), where strength and flexibility play an important role in technical performance than shooting skill, which depends on special requirements in technical performance, where insufficient flexibility leads to difficulty and slow performance of some motor skills, and many injuries and errors in the mechanical aspects during the performance. In the game of handball, the importance of flexibility appears remarkably and effectively, especially when performing offensive skills (joints and major muscles that play a key role in performance through the flexibility of the spine, shoulders, hip joint, arm range of motion and leg range of motion).

Stretching exercises are of great importance, which in turn focus on the most specific muscles used in the specialized activity, to develop strength and flexibility and to reach the maximum requirements necessary to reach a high achievement.

**Research importance:**

The importance of the research lies in using an innovative training method to develop some elements of physical fitness by using stretching decentralization exercises (p.n.f), which is positively reflected in the level of performance of the skill of shooting from jumping and reaching the highest level through which the objective of this study is achieved.

**Research problem:**

Through the researcher's work in the field of handball and his experience as a former player in some clubs in Dhi Qar governorate and currently practising administrative work, and by following up on some training of youth club players in the governorate and reviewing previous research and studies, he noticed that there is a problem that has been identified in two directions.

The first direction is the separation between strength exercises and stretching exercises and not mixing them to obtain a training method for developing strength and kinetic ranges and correcting the mechanical aspects in the work of muscles and joints when performing the skill of shooting from jumping through them to achieve what the training process aspires to. The second direction is that the use of stretching exercises depends on Some trainers have timings that the researcher believes are not at the effective level, as their importance is not taken into consideration according to the stages of physical preparation, as they are used in the same proportions in all stages of physical preparation, in addition to not giving them the importance and neglecting them greatly in special numbers, what was given during the training unit is given only In the preparatory part as warm-up exercises or in the closing part are exercises to tone the muscles and in a simple way, while in the main part they should take up a lot of space.

**Research objective:**

- Preparing decentralization stretching (p.n.f) exercises in some elements of physical fitness for the jumping skill of young handball players.
- Identifying the effect of decentralization stretching (p.n.f) on some elements of physical fitness for the shooting skill of young handball players.
- Identifying the superiority of the two groups (experimental and control) in some elements of physical fitness for the skill of shooting from jumping for young handball players.

**Research hypotheses:**

- There is a positive effect of stretching decentralization (p.n.f) on some physical fitness components of the jump shooting skill of young handball players.
- The preference of the experimental group over the control group in the post-tests in some elements of physical fitness for the skill of shooting from jumping for young handball players.

**Research fields:**

- Human field: Al-Nasr Sports Club youth handball players.
- Time field: (15/11/2021) to (1/6/2022)
- Spatial field: Al-Nasr Sports Club hall in Dhi Qar Governorate.

**Research methodology and field procedures:**

**Research Methodology:**

Despite the multiplicity of scientific research methods, the researchers used the experimental method in the manner of two equal groups for his belief that it is the best and most appropriate way to solve the problem presented in the research.

Table (1) shows the experimental design used in the research

No.	groups	Pre-test	exercises used	Post-test
1	Experimental	Test some elements of fitness	Stretching decentralization	Test some elements of fitness

2	Control	Test some elements of fitness	Coach exercises	Test some elements of fitness
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### Community and sample research:

The research community was identified, they are handball players for the youth group aged 17-19 years in the clubs of Dhi Qar Governorate, and they are clubs (Al-Nasr Club, Al-Nasiriya Club, Al-Shatrah Club) participating in the first division league for the season 2021-2022, and their number is (60) players. The researcher, the sample of the research, who are the 23 players of Al-Nasr Sports Club, where the goalkeepers of the 3 players were excluded, so that the number was (20) players, and they constituted 33.3% where they were divided randomly and equally into two equal groups, experimental and control with ( 10) players per group. In order to show the homogeneity of the sample members, the research in the variables that may affect the results of the research, the researcher used the skew coefficient to find out the extent of their homogeneity in these variables, as shown in Table (2).

Table (2) Shows homogeneity research sample

Variables	Measuring unit	Mean	Std. Deviations	Median	Skewness
Length	Cm	175.5	4.566	175.5	0.036
Mass	Kg	69.72	4.062	68.5	0.902
Age	Year	18.166	0.857	18	0.581
Training age	Year	5.833	0.907	6	0.552

Through the tables, (2) shows that the value of the skew coefficient for the variables (length, mass, age, and training age) is confined between (+3), which indicates that the research community members are homogeneous.

### Means, tools and devices used in the research.

#### Means used to collect information:

- Resolution.
- Test and measurement.
- interview.
- Observation.

#### Tools and devices used in the research:

- A Dell laptop, of Chinese origin.
- A rheostat for measuring weight and length.
- 15 hand balls (of Thai origin).
- Medicine ball, weight (800 g), 3 pcs.
- Medicine ball (2 kg), 2 pcs.
- chair.
- A tape measure with a length of 15 meters.
- Japanese-made whistle.

#### Field research procedures:

#### Identifying the variables of the research:

After reviewing many scientific sources, and consulting with the supervisors, the variables of the research were determined, and they were presented to the scientific committee to approve the topic, as it was agreed upon in line with the problem of the research, and it was as follows:

- The instantaneous strength of the arms.

- The instantaneous strength of the two legs.
- The speed characteristic strength of the arms.
- The speed characteristic strength of the legs.
- The kinematic stretcher for the arms.
- The kinematic stretcher for the legs.

### Identifying the tests of some elements of physical fitness:

after the researcher reviewed many Arab and foreign scientific sources, surveyed many letters and theses that dealt with research variables, experiments and field experience, and interviewed many experts and specialists in the field of training and football, and made a special questionnaire to choose the appropriate tests with topics and sample Research, tests were determined for the purpose of measuring the investigated variables.

### Description, tests, used in, research:

#### The first test: the test of the instantaneous strength of the legs: the jump test vertical from stability (Kazem. 2010):

- The purpose of the test: To measure the instantaneous strength of the legs, from jumping up.
- Tools used: A smooth wall that is not less than 3.60 meters high above the ground, and Scale, draw, and camera at 120 fps.
- Method performance:
  - Set a scale, drawing on the wall, for the purpose, of adjusting the distance, when analyzing.
  - The laboratory stands, facing the wall, and extends, arms high, not far, and the measurement is fixed.
  - The tester then stands, facing the wall at one side, feet apart, at a small distance.
  - The tester swings the arms down and back, with the torso bent forward, down and the knees bent to a right angle position only.
  - The laboratory extends the knees, and pushes the feet together to jump up, swinging the arms, strongly forward and upward, to reach them to the maximum possible height on the wall at the highest point it reaches.
  - The laboratory swings the proximal arm forward and down to adjust the timing of the movement in order to reach the maximum possible height.
  - Jumping up is done with the feet, from a standing position, not by taking a step or rising.
  - The camera was installed at a distance of 4.15 m from the wall and at a height of 120 cm.
  - The distance that the player travelled from the ground to his feet to the highest point reached by the player is calculated, as in Figure (1).
- Recording: Instantaneous strength, is measured in newton's, according to the following equation: Instantaneous leg strength = mass x ( $\sqrt{2 \cdot m \cdot c}$ )/n



Fig.1 shows the jump test vertical from stability

#### Second test: the instantaneous strength of the arms: a throwing test a medicine ball weighing (800) g sitting on an armchair preferred to the maximum distance possible (Kazem. 2010):

- The purpose of the test: To measure the instantaneous force of the preferred arm.
- Tools: chair, medical balls weighing 800 grams, number 2, measuring tape, camera, shooting at a speed of 120 images per second, medical scale.
- Specifications, performance: The player or the tester holds the medicine ball with one hand from the sitting position on the chair, with the player fixed with a tie, from the back area and then pulls the arm back, to the farthest extent provided, not using the arm, to the other by throwing and then throwing, The ball with one hand repeats, the attempt twice, and the farthest distance is calculated, achieved and measured in newtons, as shown in Figure.(2)
- Recording: The instantaneous strength of the preferred arm is calculated through the following equation (Al-Fadhli. 2010) : Instantaneous strength of the preferred arm = (mass of the shooting arm + mass of the ball × distance)/ n<sup>2</sup>



Fig.2 shows a test, throwing a medical handball weighing 800 g to the maximum distance

### Third: a test, the three longitudinal jumps (Hassanein. 1987):

- Purpose of the test: To measure speed strength characteristic of the muscles of the legs.
- Tools used: a distance of no less than (9 m), a tape measure.
- Specifications, performance: The tester stands behind the starting line, then the tester jumps forward with both feet, and for three consecutive jumps, he gives, for each laboratory, two attempts, counting the best one for him.
- Recording: the distance from the starting point to the last footprint, after the third jump, is measured (the distance of the three jumps), as shown in Figure (3)



Fig.3 shows the characteristic strength test, with speed, for the muscles of the legs

### Fourth: speed strength characteristic of the arms tests: test of lowering and raising the medicine ball, maximum weight of (2 kg), number during (15 seconds).

- The objective of the test: to measure speed strength characteristic of the preferred arm.
- Tools: handball court, flat ground, medicine ball, weighing (2 kg), clock, timer, whistle, form, registration. ,
- Method, performance: From a lying position on the back, the tested player carries the medicine ball, weighing (2 kg) and raises it to the top by extending the arm most used in playing, (the shooting arm) right or left, and after hearing the whistle Starting, for the timer, the player bends and extends the entire arm as quickly as possible within (15 seconds), ending with the final whistle of the timer, as in Figure (4).
- Recording: The test player is recorded by the recorder, the number of times, lowered and raised the ball, medical (flexion and extension of the arm), during (15 seconds), and the tester is given the performance of the test, for one time only.



Fig.4 shows the test of lowering and raising the medical ball (2 kg)

**Fifth: The test of Stand holding gymnastic sticks (Hassanein. 1987):**

- The purpose of the test: is to measure range kinematics of the arms.
- Tools: gymnastic stick, the cylindrical diameter of 2 cm and length 120 cm, tape measure.
- Test procedure: standing, playing, holding the stick, with the two fists from the middle, so that the two fists are close together. The tester tries to raise the arms in front of him, to the back and reach the stick behind the body as much as possible, if the elbows are not bent; the distance between the two fists is measured after the stick is stable behind the body.



Fig. 5 shows the range kinematics of the arms

**Sixth: Sitting (parallel compass) (Farhat. 2005):**

- The purpose of the test: measuring the extent of the extension of the lower legs from a sitting position, the parallel leg
- Tools: This test needs an approved scale and a ruler, and more than one place to save time can be prepared.
- Method, performance: The player slides each foot, individually and sideways, lowering the body down until it reaches a zigzag, to the ground if possible. The laboratory must remain stable in the position for as long as possible, due to the possibility of measuring when the legs are apart, and the arbitrator must be behind the test performer, noting that the ruler is horizontal and outward from one end of the ruler and vertically from the measuring gradient (horizontal and the other vertical). It is placed comfortably under the seat of the test performer, and as the test performer goes down, the measuring ruler goes down with him, until it reaches a more, lower point and takes the reading in this position.



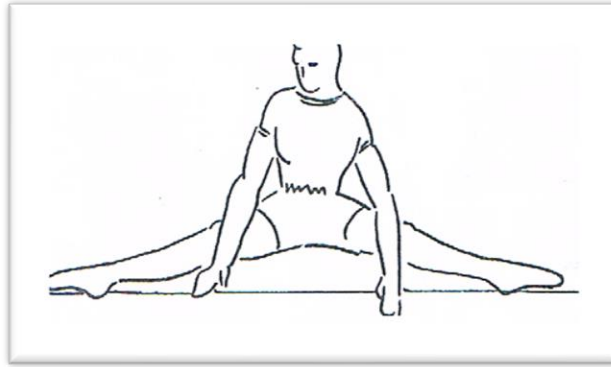


Fig. 6 shows the measurement of the range kinematic for the legs

### Experimental, exploratory:

The exploratory experiment is a preliminary mini-experimental study and similar to the main experiment carried out by the researcher, on a small sample before carrying out his research, with the aim of choosing, methods and tools of research, through which, obtaining a quantity and a number of important observations, in order to identify the difficulties and obstacles Which the researcher may encounter, in the main experiment, and the efficiency and validity of the devices used in the research, as well as the preparation and guidance of the assistant work team, according to the objectives of the research. 12/2021 at exactly 3:00 p.m. on the players of the experimental group, and the goal was:

- The willingness of the sample members to perform the tests.
- Knowing the appropriateness of the nature of the exercises set for the level of the research sample.
- Determining the maximum intensity for each, exercise, of the exercises and for each practitioner, on a limit.
- Organizing work, team, assistant work.

### Pre-tests:

The researcher and the assistant work team conducted the tests over a period of two days, at the Al-Nasr Sports Club hall in Dhi Qar, and for both the control and experimental groups. On the first day (Monday) 24/12/2021, tests were conducted for the elements of physical fitness and the test (instantiated strength of the legs, instantaneous strength of the arms, characteristic strength, speed of the legs, speed characteristic strength of the arms, kinematic orbit of the arms, and kinematic orbit of the legs) At three o'clock in the evening. The researcher arranged the players according to the sequence of the information collection form, for the purpose of knowledge and significance, when analyzing K. Significant signs were also placed on the joints of the body for each player, and a scale was used, drawing with a length of (40 cm), which was photographed, before and during the performance as a guiding mark for controlling distances and heights when kinetic analysis, using the (Kenova) program.

Procedures, equivalence: After conducting pre tests and measurements, the researcher conducted the process of equivalence for the sample members, using the T-test for the samples, independent of the results of the pre tests, in the two groups, in order to control the variables that change, by experiment, and the starting point is one, For the two groups, the results showed random differences between the two groups by comparing the computed t-table, corresponding to it, as shown in the table (1).

Table (1) shows the equivalence of the experimental and control groups in the research variables

No.	variables	Measuring unit	Experimental		Control		T value calculated	Level Sig	Type Sig
			Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
1	Instantaneous strength of the two legs.	Newton	1905.0360	24.32298	199.0360	30.46358	0.406	0.801	Non sig

2	Instantaneous strength of the arms	Newton	224.9390	5.24911	226.5190	8.30650	0.508	0.176	Non sig
3	Speed characteristic strength of the arms	Count	22.70	1.41814	22.70	1.76698	0.588	0.558	Non sig
4	Speed characteristic strength of the legs	cm	625.50	15.3713	625.60	15.450	0.016	0.971	Non sig
5	Kinematic stretcher for the arms	cm	80.50	1.77951	80	1.8257	0.620	0.817	Non sig
6	Kinematic stretcher for the legs	cm	46.30	1.41814	46.60	1.8378	0.409	0.191	Non sig

The value of (T), tabular = (2.101), at the level of significance (0.05), and the degree of freedom (18) is not significant, at the level of significance (0.05), if it is level, error  $\leq$  or = (0.05). 5) All levels of significance were greater than (0.05) for all variables, and this indicates that there were no significant differences between the two groups, the control and experimental in the tests, and measurements of the variables, all of which indicated that they were equivalent.

#### **Application the training program:**

After completing the pre-test, the researcher used the prepared exercises within the training program designated for them and was done, according to the following:

- The training program was started on Sunday, 7/1/2022
- Where the method of training used in stretching decentralization (P.N.F), is the method of repetitive training, the intensity ranged between (90-100%).
- The researcher applied the exercises during the special preparation period, and they lasted (8), weeks and at a rate of (3) three training units per week, and they were days (Sunday, Tuesday, Thursday), where the total number of training units 24 training units.
- The researcher performed (P.N.F) exercises in a contraction-relaxation method, where the technique of this method is contraction and relaxation through the coach or colleague stabilizing the performance-related limb for the colleague to the maximum, the extent to which it can reach a mechanism through contraction Isometric and for a limited number of seconds (7-14) seconds and then the muscle relaxes for a while, time (2-3 seconds), and when the player feels that he is able to achieve a new point, the coach or colleague moves the limb, concerned with a wider range The player resists this change in order for the muscle contraction to change from (fixed contraction to shortened contraction), for a period of (7-15) seconds, and the player is given appropriate rest periods before he repeats the exercise.
- The exercises are given, under the supervision of the trainer.
- The end date of the experiment was on Thursday 29/2/ 2022.
- While the control group applied its usual training program to it, and at the same time to the experimental group.





Fig. 7 shows the **performance method of exercises, (P.N.F)**

### **Post-test:**

After completing the application of the (P.N.F) exercises, which he prepared, the post-tests were conducted on Saturday (2/3/2022- 3/3/2022) for a period of two days, using the same method (pre-tests), taking into consideration the location of the pre-tests. Time, circumstances, sequence, auxiliary team, devices and tools as much as possible.

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

### **Presentation, analysis and discussion of the results.**

In order for the researcher, to arrive at his research objectives, and to achieve his hypotheses, which he developed, he presented the arithmetic means and standard deviations, with illustrative tables, after performing all the necessary statistical operations, in order to facilitate the process of observing the results, and making a comparison between, both experimental groups And, the control in the (pre-and post-test) tests (post-tests) between the two groups, experimental and control as well, through the interpretation and analysis of the results of each test to find out the differences and their statistical significance, according to the precise scientific bases, to achieve the objectives and the research hypotheses, by recognizing the effect of stretching decentralization exercises (P.N.F) on some elements of physical fitness and kinematic variables, on the skill of shooting, of jumping for young handball players. The researcher put the results of the tests, obtained through statistical treatments, appropriate to the objectives and hypotheses of his research, in the form of statistical tables, for analysis and discussion.

### **Presentation and analysis of test results:**

#### **Presentation and analysis of the results of the tests in the pre and post –test of the experimental group for the research variables.**

Table (2) shows the mean values, arithmetic mean, standard deviations, calculated (t) value, level, and type of significance in, some elements of physical fitness of the experimental group, in the pre and post-tests.

variables	Measuring unit	Tests	Arithmetic mean	Standard deviation	Difference between arithmetic mean	Difference between standard deviations	T value	Level sig	Type sig																																																													
Kinematic stretcher for the arms	cm	pre	80.5	1.7795	7.5	2.460	9.637	0.000	sig																																																													
		post	73	1.885						Kinematic stretcher for the legs	cm	pre	46.300	1.41814	8.800	2.65832	10.468	0.000	sig	post	37.500	1.64992	post	75.80	3.71782	Instantaneous strength of the arms	Newton	pre	224.939	5.24911	169.9510	14.1098	38.089	0.000	sig	post	394.890	11.2436	Instantaneous strength of the two legs.	Newton	pre	1905.036	24.32298	312.7880	36.3798	27.189	0.000	sig	post	2217.8240	33.03265	Speed characteristic strength of the legs	cm	pre	625.50	15.3713	36.900	32.8412	3.553	0.000	sig	post	662.40	28.9605	Speed characteristic strength of the arms	cont.	pre	22.70	1.4181	8.7000
Kinematic stretcher for the legs	cm	pre	46.300	1.41814	8.800	2.65832	10.468	0.000	sig																																																													
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		post	662.40	28.9605																																																																		
Speed characteristic strength of the arms	cont.	pre	22.70	1.4181	8.7000	3.68330	7.469	0.000	sig																																																													
		post	31.40	2.45855																																																																		

Tabular = (2.26) at the degree of freedom (10-1 = 9).

Significant at the level of confidence (0.05) if the level of error is  $\leq$  or = (0.05).

Table (2) shows the statistical indicators of the results of the tests, in the pre and post- test of some elements of physical fitness for individuals, the group, and the experimental. Measurement, post from the pre-test, and there are significant differences between the two tests, in favor of the post-test, and this is what the mechanism indicated, the levels of significance, if they were, less than an error rate, (0.05), which indicates, that there is a significant difference, for the two pre-measurements and dimensional and in favor of post-test.

**Discuss the results of tests of some elements of physical fitness in measurement, pre and post, for the experimental group.**

the moral differences that occurred in the variable, the range of motion of the muscles, arms and legs, between the pre and post-tests, and in favor of the post-test, and the researcher attributes the reason for this to the stretching, decentralization (PNF) strength exercises in a contraction-relaxation method, which was prepared by the researcher, which It lasted (8 weeks), was sufficient to make adaptations, good in this, important characteristic. This was confirmed it is possible for the training program to make constant changes and adaptations in the kinetic and ranges characteristic, especially if it exceeds a period of (6 weeks) (Al-Jumaili. 2014) Here, indicates that "flexibility can be developed to the maximum, through the use of muscle stretching exercises, (P.N.F) to obtain complete flexibility through, through stability in the position, elongation from (7-14), seconds with use, external resistance" (Al-Jumaili. 2014) also asserts that This type of muscle stretching training method is a development of the negative static stretching method and aims, to take advantage of neurophysiological processes, to achieve muscle relaxation until it can lengthen, the muscle to a range of motion. , farther under the best conditions (Al-Nimr, Al-Khatib. 2017).

As for the tests of the instantaneous strength of the muscles, the arm and the legs, there were significant differences between the two tests, the pre-test and the post-test of the experimental group, in favor of the post-test. To develop the instantaneous strength of the muscles, arms and legs in a manner that is compatible with the nature of the skill, the specialization and the objectives of the training unit. The use of external resistances, represented by the weight of the body, rubber ropes and medical balls, had a clear impact on the kinetic range of the arm or leg, resulting in explosive, instantaneous force output, with eccentric contractions, consistent with the nature of performance" emphasizes special exercises within a short circuit, and it is one of the most effective forms of developing explosive power (instantaneous strength), as these exercises impose physical effort on the body, and in particular, on the muscles and tendons, working with performance which leads to an increase in the instantaneous power (explosive power) of the nature of the specialized activity "( Omosegnard (1999).

Also, there were significant differences in the tests of Speed characteristic strength of the muscles of the arms and legs between the two tests, the pre and post-tests of the experimental group, and in favor of the post-test. The obvious effect on the muscles involved in performance, such as the muscles of the legs and arms, which were by nature, within the circle of stretching and shortening, which helped to develop, these two qualities (strength and speed) with us, and the stretching exercises, prepared by the researcher, which depend on the application, The correct scientific foundations, the nature of the formation of exercises, and their use to train this, the skill that targets the muscles, participation in the performance and more, the peculiarity, as these exercises were consistent with, the requirements of the skill of shooting, jumping and more effective, in developing the distinctive strength, with the speed of the muscles of each, from The legs and arms, through these exercises, contain these elements to develop both strength and speed together because they are considered essential elements for developing this skill and achieving better, achievement. Training, or special exercises Implemented, to achieve an effective training effect, it must be exercises taken from the game, or the sporting activity, which, working on the involvement of the muscles, which have the largest space, in the speed, strength and direction, movement of the skill" (Ali and Sajit. 2017).

### **Presentation and analysis of the results of tests of some elements of physical fitness in the pre and post-test of the control group.**

Table (3) shows the values of the arithmetic means, standard deviations, the calculated (t) value, and the level and type of significance in some fitness elements of the control group in the pre-post-tests.

variables	Measuring unit	Tests	Arithmetic mean	Standard deviation	Difference between arithmetic mean	Difference between standard deviations	T value	Level sig	Type sig
Kinematic stretcher for the arms	cm	pre	80	1.8257	2.5	1.4337	5.5141	0.000	sig
		post	77.5	2.4152					

Kinematic stretcher for the legs	cm	pre	46.60	1.83787	3.300	2.21359	4.714	0.000	sig
		post	43.30	3.36815					
Instantaneous strength of the arms	Newton	pre	226.519	8.30650	20.654	13.8134	4.728	0.000	sig
		post	247.173	15.15769					
Instantaneous strength of the two legs.	Newton	pre	1900.036	30.46358	45.7090	53.3897	2.707	0.000	sig
		post	1945.745	31.56683					
Speed characteristic strength of the legs	cm	pre	625.60	15.45028	8.7000	6.14727	4.475	0.000	sig
		post	634.30	13.84076					
Speed characteristic strength of the arms	cont.	pre	22.300	1.76698	2.6000	1.07497	7.649	0.000	sig
		post	24.900	1.59513					

Tabular = (2.26) at the degree of freedom (10-1 = 9).

Significant at the level of confidence (0.05) if the level of error is  $\leq$  or = (0.05).

#### **Discussing the results of tests, some elements of physical fitness in the pre and post-test of the control group:**

By noting the differences between the pre and post measurements in the table that was presented (3) for the control group, we notice there is a development in the results of the tests, for the control group between the two measurements, the pre and post, and in favor of the test, the post and the researcher attributes the reason to, the method the normative followed by the coach, which is a natural result of training and commitment to it, especially as they are young people who are characterized by speed, development with the continuation of the curriculum for two months and this is enough time, to bring about development in results. The daily, usual training represents an important place in the athlete's preparation program, at all levels, because of its importance in developing the elements of comprehensive and special physical fitness through the development of flexibility and control, while helping the player maintain muscular abilities, Parts of the body in a specific way, and a relative development has been achieved in the arithmetic circles in the variables investigated for the control group. His basic skill duties, especially shooting from jumping.

#### **Presentation and analysis of test results for some elements of physical fitness in the post-measurement of the experimental and control groups.**

Table (4) shows the value of the arithmetic means, the standard deviations, the level, the type of significance and the (t) value calculated for some elements of physical fitness for the post-tests for the experimental and control groups.

variables	Measuring unit	groups	Arithmetic mean	Standard deviation	T value calculated	Level Sig	Type Sig
Kinematic stretcher for the arms	cm	Experimental	73	1.885	4.644	0.002	Sig
		Control	77.5	2.415			
Kinematic stretcher for the legs	cm	Experimental	37.5	1.6499	4.89	0.000	Sig
		Control	43.3	3.36815			
Instantaneous strength of the arms	Newton	Experimental	394.89	11.2436	24.751	0.000	Sig
		Control	247.173	15.1576			
Instantaneous strength of the two legs.	Newton	Experimental	2217.824	33.03265	18.831	0.000	Sig
		Control	1945.74	31.5668			
Speed characteristic strength of the arms	Count.	Experimental	31.222	2.53859	6.575	0.000	Sig
		Control	24.9	1.59513			
Speed characteristic strength of the legs	cm	Experimental	662.4	28.96051	2.768	0.013	Sig
		Control	634.3	13.8407			

Significant at the confidence level (0.05) if the error level is  $\leq$  or = (0.05).

#### Discussion of the test results of some elements of physical fitness in the post-measurement of the experimental and control groups:

Table (5) shows that there is a significant difference for both the control and experimental groups, but the development of the experimental group compared to the control group is higher for the experimental group. by the coach. As for the experimental group that showed significant differences, the researcher attributes this development to the nature of stretching exercises prepared by the researcher, where stretching exercises were applied within scientific bases in terms of legalizing stress, as well as periods of rest, gradual transition, and systematic increase in training, taking into account the use of stretching in various joints of the body and moving from a joint to another that enables the player to perform other repetitions and is designed in a way that simulates the performance of the shooting skill of jumping, joints, tendons and muscles, the main participation in the performance, and its reflection on the physical and mechanical side, and the increase in strength and range of motion of the muscles, working as an inevitable result, of the regular practice of exercises, which It aimed to reach the best results that can be obtained to achieve the desired goal, and this is confirmed "Its share in training, in the basic and final stages of construction, in training at high levels and for all periods, of training is greater than the other exercises (Harrah. 1975).

The kinetics of the muscles participating in performance, as confirms that the (P.N.F.) method is an advanced technique through which the best results can be obtained as it works on the stretching method, passive in the first stage (Al-Fadhli. 2010). And the development that occurred, in the variable of instantaneous strength of the muscles of the arms and legs in relation to the dimensional tests between the two experimental and control groups and in favor of the experimental group, where the researcher attributes the development to the nature of the exercises, which were carried out on the members of the experimental group, which depended on the application of scientific foundations, and the nature of the formation of These exercises, and their selection to training this skill that targets the muscles participating in the performance, and the most special one, were suitable for developing (The instantaneous strength of the arm and the instantaneous strength of the legs) Where, the stretching exercises were characterized in releasing energy, which was highly explosive, during the explosive performance. The researcher attributes the development in the speed-

distinguished force variable of the muscles of the legs and arm in relation to the dimensional tests between the experimental and control groups and in favor of the experimental group to the nature of the exercises that were applied to the members of the sample that had a positive effect on the development of these two traits for them. About the high intensity, and the maximum effort, on the muscles, working when performing stretching (p.n.f) exercises, which work physiologically to lengthen the muscle fibres and thus take place, the cycle of lengthening and shortening the muscle fibres, to produce a movement characterized by great strength within a short time and this was confirmed quoting from (Abu Al-Ala Ahmed, Abdul-Fattah and Muhammad, Hassan Allawi) "The methods of neuromuscular facilities for sensory receptors are among the important methods that are used in developing flexibility and strength, In addition to many other physical attributes, such as muscular endurance, muscular ability, speed, and motility (Jabbar. 2014).

### **Conclusions and Recommendations:**

#### **Conclusions:**

- Stretching, and decentralization (p.n.f) exercises have a positive effect in developing some elements of physical fitness (Kinematic stretcher, instantaneous strength, Speed characteristic strength of the muscles working on them for the skill of shooting from jumping in handball).
- The amount of development, and some elements of physical fitness, (Kinematic stretcher, instantaneous strength, Speed characteristic strength) in the experimental group that used, stretching exercises (p.n.f) was greater, compared to the control group.

#### **Recommendations:**

- The use of stretching decentralization (p.n.f) exercises in a contraction-relaxation (CR) manner, which has a significant impact on developing some elements of physical fitness for handball players, youth, especially strength and flexibility.
- Using stretching decentralization (p.n.f) in one way, CR on another skill of handball.
- Conducting studies and other research using stretching decentralization exercises (p.n.f) on other skills and specializations.

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