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The effect of rehabilitative exercises accompanying reflexology massage in the treatment of shoulder injury for young handball players

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Abstract: The research aims to prepare rehabilitative exercises accompanying massage with reflexology points to rehabilitate the shoulder joint after a dislocation injury, and the experimental design with one group with two pre and post tests was used on a sample of (12) players with a dislocated shoulder joint. After conducting the tribal tests, they were subjected to qualifying exercises, and before each qualifying unit, the player was subjected to reflexology for a period ranging from (5-10) minutes, and the duration of the qualifying units took 12 weeks at 36 units, and after completing the qualifying program, the post-tests were conducted. The most important results were that there are statistically significant differences between the pre and post test in the range of motion on the shoulder joint in favor of the post test, and there are statistically significant differences between the pre and post test in the degree of pain in the shoulder joint in favor of the post test. The most important recommendations were to use the proposed rehabilitation program to rehabilitate the dislocated shoulder injury for athletes to avoid the injury happening again, to use rubber rope exercises to rehabilitate the range of motion and to improve the neuromuscular response. The use of static muscle strength exercises and various flexibility exercises for the affected limb in the program with the use of reflexology points massage before each rehabilitation unit to reduce the feeling of pain.
Keywords: (rehabilitation exercises - reflexology massage - shoulder injury).

Introduction and importance:

The scientific progress that the world is witnessing in the field of sports injury rehabilitation did not come by chance, but rather came as a result of scientific and research studies on how the injury occurs to athletes, and the attempt to raise the level of sports and reach the higher levels requires that the player be fully prepared and through intensive training doses, and this constitutes a great burden and High effort. on the player and increases the possibility of exposure to various sports injuries and players are exposed to injuries as a result of this pressure on the joints, muscles, ligaments and tendons.

The handball sample is one of the group games that have spread widely recently, which requires the player to make a great effort during training and competitions, and for the player to be fully prepared to continue playing without injury, and injuries abound in a high percentage in the game of handball, especially (partial dislocation) injuries in the The shoulder joint and that is due to the fact that the joints are the main tool implementing the requirements for effectiveness, where the player shoots, passes, makes a defensive wall, and various defensive movements with the arms, in addition to friction with the opponent, and this leads to a high effort on the shoulder area, which leads to injury, so if it is not diagnosed In time, it may cause a chronic infection that is difficult to treat.

We note the rise of this type of injury as a result of the high level of competition and poor attention to the integrated physical preparation and as a result of errors in technical performance by the player when performing the basic skills of the game or as a result of not warming up well in the shoulder area, and despite all the precautionary measures currently used in the sports field to prevent and reduce sports injuries Whether it is during training or matches, we notice a continuous increase in the rate of these injuries, as a result of the high level of training that the athlete reaches to achieve high achievement.

Therefore, it became necessary to find other new ways and means with more effective rehabilitation exercises that would return the player to what he was before the injury as soon as possible, which prompted

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the researchers to find new methods in the field of injury rehabilitation, such as massage with reflexology points, in addition to rehabilitation exercises that help And accelerate the healing of injured tissues and muscles.

Hence the scientific importance of the research, which is one of the serious scientific attempts in the field of sports injuries to develop rehabilitative exercises and reflexology points massage to improve the strength and flexibility of the shoulder for those with partial dislocation of handball players, and in order to shed light on the importance of reflexology massage and its role in returning players to the practice of their normal lives And return to the stadiums at maximum speed while restoring their functional efficiency in the shortest possible time to avoid complications as a result of injury.

Research problem

The shoulder joint is one of the main and important upper extremity joints in the human body, and the most necessary movements depend on it in many of the daily tasks that the individual performs. If the shoulder joint is injured, it means losing most of his ability to move in all directions, not only when the injured tries to move it, but also when The doctor tries to move the shoulder. Its symptoms are difficulty in movement and the inability to reach the normal range of motion of the joint when moving it, which leads to the difficulty of performing daily activities normally.

And handball is one of the games that require movements and skills while playing, which leads to players being exposed to injuries as a result of friction or high effort, due to the player's interruption from the courts The researchers decided to develop a rehabilitation curriculum accompanying the reflexology massage in order to speed up the process of recovery from injury and the return of the player. to his normal state and in full functional efficiency.

research aims :-

1- Preparing rehabilitation exercises accompanying the reflexology point massage in the treatment of shoulder injury for youth handball players.
2- Recognizing the effect of rehabilitative exercises accompanied by reflexology point massage in treating shoulder injury for young handball players.

Force search:-

1- There are statistically significant differences between the pre and post tests in the treatment of shoulder injury for the research group.

Research areas:-

The human field: a sample of (12) players with partial dislocation of the shoulder area from Baghdad clubs participating in the Iraqi Youth Handball League for the season 2021-2022.

Time range: from 1/11/2021 to 21/2/2022

Spatial domain: Al-Saydiyah Closed Hall/Physical Education Directorate/Ministry of Youth and Sports.

Research Methodology: - The researchers used the experimental method by designing one group with two pre and post tests to suit the nature and problem of the research.

Research sample: - The research sample consisted of players with partial dislocation, and their number was (10) young players in the game of handball.

Tools used: One (1) video recorder (SONY) - a Dell laptop. (made in china) (1) - manual stopwatch (made in china), (1) - rubber bands of different resistance - leather rug - towel (cloth) - (6) hand balls, size (3) - device Genomics (to measure range of motion) - (6) dumbbells - (2) Swedish ball - (2) stick.

Tests used in the research:-

1. Range of motion test: (3: 2013: 46)

The objective of the test: to measure the angles of the shoulder in movement (anterior, posterior, medial and lateral flexion).

Unit of measure: degree.

Instruments used: a genomic device.

- Method of performance: (Angle of forward flexion) and (Angle of lateral displacement) of the injured arm of the injured player are measured from a sitting position.

One end of the genomics device is fixed on the lateral side of the trunk, and the other end of the device is on the medial side of the humerus, where the direction of the thumb is upward.

Then the injured player is asked to raise the arm forward high, and the measurement is taken.

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The ideal range of motion for forward flexion is from (0 - 180) degrees.
- The arms of the johnometer are placed on the acromial process of the scapula and on the back of the shoulder.
The tester raises his arm to the side, up, and at the coronary level.
- The fixed arm of the johnometer is parallel to the torso.
The movable arm of the johnometer is parallel to the humerus.
- Read and record the angle achieved between the arms of the goniometer.
The ideal range of motion for lateral movement is from (0 - 180) degrees

2. The level of pain using visual analogy: (1990: 9: 227)

The purpose of the measurement: To measure the degree of pain
unit of measure: degree
Performance description: A sheet of paper divided into ten squares numbered from (1) to (10) starting from left to right. It is asked to determine the degree of pain felt while performing the movement of the affected part by raising the arm to the side high.
the degree of pain was measured in three modes by the specialist doctor.
Raising the arm aside.
Raising the arm aside, twist the arm to the medial side.
- From the position of raising the arm aside, twist the arm to the lateral side.
Registration: The count that the patient remains in the required position is calculated.

Tribal tests: Tribal tests were conducted on a group of (12) members of the research sample with partial rupture at 11 am on Sunday 7/11/2021.

The main experience: After reviewing books, scientific sources, and using the scientific and practical experiences of therapists, as well as some experts in the field of sports medicine and sports injuries in order to achieve the objectives of the research, the researchers prepared rehabilitation exercises accompanied by massage with reflexology points to rehabilitate the injury, who were diagnosed with partial rupture of the joint Shoulder, these exercises include stretching and strength, as well as exercises to improve neuromuscular coordination and muscular balance.

The researchers adopted some foundations while performing the qualifying exercises:

1. The start of the qualifying exercises was on Thursday 9/11/2021 until 30/1/2022.
2. The use of reflexology massage at the beginning of the rehabilitation curriculum and before performing the exercises and under the supervision of the physiotherapist, as the session time ranged (5 min - 10 d), and this was based on the opinion of the physiotherapist and some sources according to the type and degree of injury that was previously diagnosed.
3. The researchers set the rehabilitation exercises, taking into account the physical and psychological characteristics of the players in the reference survey of some specialized references in sports injuries and rehabilitation, and their use in accordance with the development of rehabilitation exercises and achieving their objectives.

Determining the muscular strength and flexibility exercises that work on the shoulder joint according to the anatomical aspects and the direction of the muscular work of the joint.
Gradient repetition.
Diversity in exercise.
- Privacy.
Taking into account the individual differences of the injured players.
Flexibility of the qualification curriculum and its suitability for practical application.
The degree of severity in rehabilitation is proportional to the degree of pain and the range of motion of the shoulder joint, in terms of frequency and total rest periods.

4. The goal of the qualifying exercises is to rehabilitate the injured players in the research sample and to rehabilitate them to return to training and tournaments again.
5. Taking into account the individual differences between the degree of infection among the sample members.
6. Stop continuing to perform the qualifying unit if the player feels tired or bored.
7. Taking into account the factors of security and safety.

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8. The program contains (6) weeks of three qualifying units daily to become (18) qualifying units.
10. The researchers gave appropriate rest times for the rehabilitation exercises.
The researchers used rest times between repetitions (30 seconds) between groups of (1-2) minutes.
12. The number of repetitions ranged from (3-5) repetitions for each exercise, and the totals were from (2-4).
13. The qualifying exercises were completed on Wednesday 30/1/2022.
Post tests: Post tests were conducted for the research sample on Tuesday, February 21, 2022 at 11 am.
Statistical means: The researchers used the statistical package (Spss) to carry out the statistical treatments.

Presentation, analysis and discussion of results

Presentation and analysis of the results of the pre and post test of the research sample in the kinetic range tests

Table (1)

Shows the tribal and arithmetic means, mean difference, its standard deviation, the calculated t value, and the significance of the differences in the kinetic range tests of the research sample and its analysis.

Variables	Measure-ment	pretest		post test		Calculated T	Statistical significance	Moral Connotation
		M	S	M	S			
Kinetic range test D	Degree	81.37	2.61	90.58	1.60	7.68	0.000	Moral
flexion range kinetic test	Degree	26.37	0.87	32.41	1.16	20.53	0.000	Moral
Lateral Rotation Range Test	Degree	87.62	1.27	96.13	2.04	8.24	0.000	Moral
Side motor range test	Degree	85.71	1.37	92.76	1.27	12.11	0.000	moral

Below the significance level (0.05) and the degree of freedom (11)

Presentation of the results of the pre and post test of the research sample in the tests of the degree of pain variable (visual symmetry)

Table (2)

It shows the pre and post arithmetic means, mean difference, standard deviation, calculated t value and significance of differences in pain degree tests (visual symmetry) for the research sample and its analysi

Variables	Measure-ment	pretest		post test		Calculated T	Statistical significance	Moral Connotation
		M	S	M	S			
Pain degree raise to the side	Degree	5.87	0.37	2.07	0.59	29.97	0.000	Moral
Pain degree wicking out	Degree	5.88	0.39	2.09	0.55	33.60	0.000	Moral
Pain degree wicks inside	degree	5.83	0.33	1.93	0.41	29.60	0.000	Moral

Below the significance level (0.05) and the degree of freedom (11)

Discussing the results of the pre and post test of the research sample in the motor range tests

Through Table (1), it was found that the kinetic range test (extension, flexion, rotation to the lateral side, rotation to the medial side) there are differences between the pre and post tests and in favor of the post test. The researchers applied it to the sample members, which had a positive effect on the motor range of the joint, and that the injury to the muscles affected the motor range of the joint and the weakest muscles surrounding the joint, and that the joints always need continuous movement as well as movement in a wide range in order to maintain their range of movement appropriately. (4: 2010: 291). When applying the rehabilitation exercises, the researchers worked to use the appropriate gradation, use the appropriate repetitions, and take into account the rest times, which led to the emergence of this improvement between the pre and post tests, and (Naif Mufdi) stresses that it is not possible to gain and maintain flexibility by

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performing flexibility exercises at a rate of four repetitions for each muscle group and at a rate of 2- 3 times a week for functional health (5: 255), and (Abu El-Ala Ahmed) mentions that the greater the range of motion in the joint, the greater the strength level (1: 1997: 248). Since the lengthening of the muscles working on the shoulder joint has improved and this is reflected On increasing its strength and the improvement in the range of motion of the affected muscles in the research sample as a result of the rehabilitation exercises implemented in the rehabilitation program that were prepared scientifically to achieve the objectives of the research. The rehabilitation exercises helped to improve the elasticity of the muscles, which affected the movements and extensions of the shoulder joint. The integrated musculoskeletal system when rehabilitating, the work cannot be focused on the muscles without the articular ligaments and the neuromuscular control to provide coordination in the work of the muscle groups and then pull the joint bones The emergence of movements with natural ranges and the return of the joint to work as best as possible within a sufficient period. (Jeremiah) mentions 8 weeks of musculoskeletal rehabilitation. Indicators of the shoulder joint can develop in athletes after recovery from pain and swelling, and the factors of shoulder joint injury can be transmitted in the future. (8: 2011: 2)

Discussing the results of the pre and post test of the research sample in the tests of the degree of pain variable (visual symmetry)

Through Table (2) we notice the differences between the pre and post tests in favor of the post test in the degree of pain tests. The researchers believe that the reason for these differences in the post tests is due to the exercises prepared by the researchers and the use of massage with reflexology points that contributed to reducing and improving injury. The diversity of rehabilitative exercises was Which were used during the period of application of the rehabilitative exercises and the development of the motor range was the result of the disappearance of pain, and this was confirmed by (Mackenzie). The exercises must be performed carefully to include the level that prevents the occurrence of pain, especially in the first stage of performance (7: 1989: 339)). Significant improvement and muscle activation as a result of injury. The researchers believe that reducing and relieving pain sensors that are sent through the nervous system, and (prenticew) mention that with the start of the rebuilding phase, a strong range of motion must be introduced and some strengthening exercises facilitate the rebuilding of tissues and restore their function, and will impose a feeling of pain The rate of progression to a large extent, although the pain is severe at the beginning of the injury, but it decreases and then disappears as the treatment progresses, and any pain, tumor or Other clinical symptoms in case of exacerbation during or after a particular exercise or activity reflects the intense stress of the load relative to the level and repair or reconstruction of the tissue and the sports therapist must be aware of the time required for the treatment process (8: 1999: 110). The rehabilitative exercises used during the application of the rehabilitative curriculum in proportion to the severity of the injury and the ability of the players to perform the exercises and according to the correct scientific foundations and the basic objectives in the implementation of the rehabilitative exercises that fit the exercises followed, as well as the selection of exercises whose paths were similar to the kinetic performance of the effectiveness in addition to the time for the application of the exercises, which was one of the most important criteria The success of rehabilitation for injured players and that the disappearance of pain helped progress in muscle strength training and the use of auxiliary means that helped in improving the research variables and gradually getting rid of the feeling of pain as a result of the improvement in the injury. This was confirmed by (Sari Ahmed and Norma Abdel-Razzaq) between the need to build rehabilitation exercises on the basis of the ability to tolerate pain. (2: 2001: 21).

Conclusions and Recommendations:

Conclusions

1 - Rehabilitation exercises preceded by massage with reflexology points have an effective effect on tests, kinetic range and pain scale for the research sample.

2 - The development in the range of motion of the shoulder joint is linked to the cessation of pain. Therefore, the positive effect of rehabilitative exercises in reducing or eliminating pain has led to a clear improvement in the range of motion.

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3 - The degree of pain was clearly improved after starting to apply the rehabilitative exercises according to the reflexology point massage.

Recommendations:

1 - The necessity of using rehabilitative exercises with reflexology points to rehabilitate the partial dislocation of the shoulder joint and rehabilitate it in the treatment and rehabilitation centers for sports injuries.

2 - Paying attention to the principle of diversifying exercises and the type of tools used during rehabilitation to avoid boredom among the injured.

3 - The necessity of using reflexology massage along with rehabilitative exercises in rehabilitating injuries and in accordance with the level of injury.

4 It is necessary to conduct studies similar to that of the two researchers, but on other muscles in the shoulder joint and on similar samples

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Supplements

Appendix (1) Rehabilitation exercises used

1- Exercise name: quadriceps shoulder circles

Exercise objective: improve shoulder flexibility

How to do it: Start on your hands and knees with your knees directly under your hips and your hands directly under your shoulders. Press the floor and keep your elbows straight as you rock your shoulders up toward your ears, back toward your hips, down away from your ears, then forward toward your head, creating a gentle circle. Do these circles in both directions, and then you can try to do circles with alternating shoulders.

2- The name of the exercise: L-shaped arm stretch

The goal of the exercise: to improve the flexibility of the shoulders

How to do it: Start lying on your stomach with your arms at your side. Extend your other arm across your chest with your palm facing up and without letting your shoulder stand out from your shoulder toward your ear. Use your shoulder muscles to pull your chest down toward the floor, creating a gentle shoulder purse stretch. Move in and out of the stretch position, then hold. Once you find a comfortable position, move in and out.

3- The name of the exercise: Lifting the arms high, extended from the kneeling position

The goal of the exercise: to improve the flexibility of the shoulders

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How to do it: Start in a kneeling position (also called a seiza) and sit with your feet under your butt. Raise your hips as you raise your arms straight. Make sure your shoulders open correctly in that overhead position, but don't arch your back. Move up and down

4- The name of the exercise: raising the arms high and to the side

The goal of the exercise: to improve the flexibility of the shoulders

How to do it: Start in the same long kneeling position, putting your feet under your butt and then pushing your hips forward and your body straight. Now, keep one arm down at your side and reach the other arm up and then to the other side. Really focus on reaching your shoulder until you feel a nice stretch. Through your glutes and the back of your shoulder.

5- The name of the exercise: stretching the clenched hands

The goal of the exercise: to improve the flexibility of the shoulders

How to perform: Start in a sitting position. Sitting should be comfortable. Clasp your hands behind your back and straighten your elbows, pull your arms up and back pressing your shoulder blades together as you move into the stretch

6- The name of the exercise: exercise with the ball on the wall

The goal of the exercise: to improve the muscle strength and flexibility of the shoulders. Use handball size (3)

Method of performance: The player catches the ball with both arms extended and then exerts pressure towards the ball (front facing the wall).

7- The name of the exercise: stretching clenched hands

The goal of the exercise: to improve the flexibility of the shoulders

How to perform: Start in a seated position. Sitting should be comfortable. Interlock your hands behind your back and straighten your elbows, pull your arms up and back by pressing your shoulder blades together as you move in the stretching exercise

8- The name of the exercise: the ball on the wall exercise

The goal of the exercise: to improve the muscle strength and flexibility of the shoulders Use a handball size (3)

Method of performance: The player catches the ball with both arms extended and then rotates the ball in a circle once to the right and once to the left

9- The name of the exercise: the ball on the wall exercise

The goal of the exercise: to improve the muscle strength and flexibility of the shoulders Use a handball size (3)

Method of performance: The player catches the ball with one arm, provided that it is extended, and then rotates the ball in a circle, once to the right and once to the left

10- The name of the exercise: dumbbells exercise on the Swedish ball

The goal of the exercise: to improve the muscle strength of the shoulders

Method of performance: The player lies on his back on the Swedish ball and holds the dumbbell with one hand, then extends the arm upwards and makes circles, provided that the movement is from the shoulder joint and once to the right and once to the left

11- The name of the exercise: an exercise using the rubber band

The goal of the exercise: to improve the muscle strength of the shoulders

How to perform: From a standing position, the player installs the rubber band on the wall and then pulls the tape with both arms toward the chest

12- The name of the exercise: an exercise using a rubber band

The goal of the exercise: to improve the muscle strength of the shoulders

Method of performance: The player from a standing position installs the rubber band with his feet and then pulls the tape with one arm and that it is extended towards the front. Once to the right and once to the left.

13- The name of the exercise: exercise using dumbbells

The goal of the exercise: to improve the muscle strength of the shoulders

Method of performance: From a standing position, the player raises the dumbbells up (press dumbbells) with one arm once to the right and once to the left

14- Name of the exercise: Pulling the rubber band from standing

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The goal of the exercise: to improve the muscle strength of the shoulders
Method of performance: The player from a standing position installs the tape with his feet and then pulls the tape with his arms forward and the arms are fully extended
15- The name of the exercise: Pulling the rubber band from standing to the side
The goal of the exercise: to improve the muscle strength of the shoulders
Method of performance: The player from a standing position installs the rubber band with the feet and then pulls the tape with the arms to the side and the arms are fully extended.
16- The name of the exercise: pull the rubber band back from standing
The goal of the exercise: to improve the muscle strength of the shoulders
Method of performance: The player from a standing position installs the rubber bands with the feet and then pulls the tape with the arms back and the arms are fully extended
17- Name of the exercise: Pulling a stick back from a lying position on the back
Objective of the exercise: to improve the kinematic flexibility of the shoulders
How to perform: Lie on your back holding a stick, slowly raise the stick upwards. Use the healthy arm to help with movement.
18- The name of the exercise: inclination of the stick to the sides
Objective of the exercise: to improve the kinematic flexibility of the shoulders
How to perform: From a standing position, the player holds the stick with both arms, provided that it is fully extended, holding it at the width of the shoulders and swinging the stick once to the right and once to the left.
19- Name of the exercise: Pulling the rubber band up with the help of the colleague
The goal of the exercise: to improve the muscle strength of the shoulders
Method of performance: The player rises from a standing position and Another colleague standing in front of him helps him by pulling the tape up with both arms to ensure that the arms are extended.
20- Name of the exercise: Pull the rubber band up
The goal of the exercise: to improve the muscle strength of the shoulders
Method of performance: The player from the front position and assisted by another colleague standing in front of him pull the tape up with one arm with the torso twisting.
21- The name of the exercise: lying on the stomach over the Swedish ball
Objective of the exercise: to improve the flexibility of the shoulders
How to perform: Lie facedown on a Swedish ball with your elbows and arms straight in front of your body as shown. Your shoulder and arms should be spread about 120 degrees. Slowly raise your arms up and back to the original position. Your thumb should be pointing up all the time.
22- The name of the exercise: sliding the towel on the wall up and down
The goal of the exercise: to improve the muscle strength of the shoulders
How to perform: Place a folded towel on the wall or door with a smooth surface. Stand on the side with the arm straight and move the towel up and down

Appendix (2) Some qualifying units used

unit number	the exercise	exercise time	Repetition	Comforts	groups	Comforts	Total exercise time
First	•Quadruple shoulder circles	30 S	4	30 S	2	60 S	240 S
	• Raise the arms high to the side	30 S	4	30 S	2	60 S	240 S
	• shaped arm extension L	30 S	4	30 S	2	60 S	240 S
	• Extension of the chest and bent arm	30 S	4	30 S	2	60 S	240 S
	• Raise the arms high while outstretched from the position of the						

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	thrusters						
total unit							**20 M**
unit number	**the exercise**	**exercise time**	**Repetition**	**Comforts**	**groups**	**Comforts**	**Total exercise time**
the fourth	**• Exercise using dumbbells** **• Rubber rope pull from standing exercise** **• Raising the dumbbells from standing forward** **• Pull the rubber rope from the stand to the side** **• Raising the dumbbells from standing to the side**	**20 S** **20 S** **20 S** **20 S** **20 S**	**5** **5** **5** **5** **5**	**20 S** **20 S** **20 S** **20 S** **20 S**	**3** **3** **3** **3** **3**	**40 S** **40 S** **40 S** **40 S** **40 S**	**300 S** **300 S** **300 S** **300 S** **300 S**
total unit							**25 M**
unit number	**the exercise**	**exercise time**	**Repetition**	**Comforts**	**groups**	**Comforts**	**Total exercise time**
Seventh	**• Pull the rubber rope up** **• Sliding the ball on the wall up and down** **• Quadruple shoulder circles** **• Pull the rubber rope up with the help of the colleague** **• Extension of the arm in the shape of the letter L**	**20 S** **20 S** **20 S** **30 S** **30 S**	**5** **5** **5** **5** **5**	**20 S** **20 S** **20 S** **30 S** **30 S**	**3** **3** **3** **3** **3**	**40 S** **40 S** **40 S** **60 S** **60 S**	**300 S** **300 S** **300 S** **450 S** **450 S**
total unit							**30 M**