

# Effect of physical fitness program for Postoperative Rehabilitation after Rotator Cuff Repair (40-50) year.

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## Abstract

**Purpose:** To provide an overview of the characteristics and timing of rotator cuff healing and provide an update on treatments used in rehabilitation of rotator cuff repairs.

**Methods:** A review of currently available literature on rehabilitation after arthroscopic rotator cuff tear repair on PUBMED / MEDLINE and EMBASE databases was performed to illustrate the available evidence behind various postoperative treatment modalities.

**Objective:** Study the effect of the proposed therapeutic program on the decline and disappearance of the pain caused by the syndrome of the shoulder muscle Restores elasticity improves motor range, and recovers the angle of arm rotation inside and out.

**Hypothesis:** will exist a high degree of variability among rehabilitation protocols. We also predict that surgeons will be prescribing accelerated rehabilitation

**RESULTS:** The proposed treatment program has a better effect on the patient's return to normal condition Restoring elasticity, improving the motor range and restoring the angle of shoulder rotation inside and outside.

**Conclusion:** Little scientific evidence is available to guide the timing of postsurgical rotator cuff rehabilitation. To this end, expert opinion and clinical experience remains a large facet of rehabilitation protocols. This review describes a rotator cuff rehabilitation protocol that incorporates currently available scientific literature guiding rehabilitation.

**Key Words:** rotator cuff repair, rehabilitation, scientific rationale

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<p><b>Introduction</b></p> <p>Rotator cuff (RC) disease is a frequent cause of shoulder pain and can result in weakness, alterations in glenohumeral kinematics, and shoulder instability in some circumstances.<sup>1</sup> Symptomatic rotator cuff tears are thought to affect between 4% and 32% of the population and appear to be more prevalent with increasing age.<sup>2</sup> Although patient age, activity level and tear size influence surgical decision-making, non-surgical management is frequently the preferred method of initial treatment after a rotator cuff tear. When non-surgical management of a symptomatic rotator cuff tear is not successful, operative repair is frequently necessary. Both open and arthroscopic repair of full or high-grade partial thickness rotator cuff tears have historically depression of the humeral head in the glenoid cavity. This provides dynamic stability to the glenohumeral joint and prevents impingement of the humeral head with the acromion during deltoid activation. They also function to prevent superior translation of the humeral head after rotator cuff tear.<sup>15</sup> Contrary to the rotator cuff tendons' ability to tolerate</p>	<p>also lead to pain inhibition of the rotator cuff.<sup>19</sup></p> <p><b>ROTATOR CUFF REHABILITATION</b></p> <p>The conservative protocol is characterized by either a delay in the initiation of and/or restriction of passive range of motion (PROM). It is common for PROM restrictions to last for 2–4 weeks. The aim is to minimize stress placed on the repaired tissues to facilitate early tissue healing. The moderate protocol is characterized by initiating PROM on postoperative day 1 while maintaining tolerable pain levels. A home exercise program (HEP) should be incorporated into each phase of rehabilitation taking into account the post-operative restrictions that may apply. Initial HEP may include cervical, elbow, wrist, and hand AROM. A HEP should be provided regularly and individualized to address the observed impairments during periodic assessments throughout the phases</p> <p><b>Morris (1994)</b> confirms the most common injuries in the field of sports in general injury shoulder joint where there is multiple</p> <p><b>Cherlever 2001</b>, Ahmed Mohamed Abdel Gawad 2006 study that the treatment of the</p>
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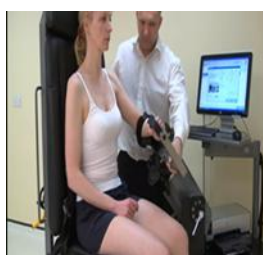
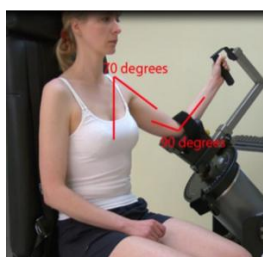
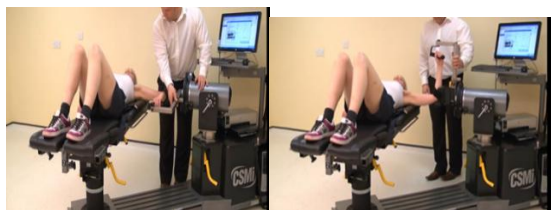
<p>up to 100 N/mm of tensile strength, the tendons' endurance of compressive and shear forces is much less.<sup>16</sup></p> <p>The scapula also plays an important role in glenohumeral function by providing a stable base for muscle activation and load transfer within the kinetic chain. Alteration in normal scapular position or kinematics has been termed scapular dyskinesis and can affect rotator cuff function.<sup>17</sup> Scapular dyskinesia has also been described following rotator cuff tears and is thought to represent a compensatory mechanism for glenohumeral motion deficits.<sup>18</sup> Irritation and inflammation of the subacromial bursa, which is rich in nerve fibers, can</p> <p>5 - Analysis of the dynamics of sports activities practiced (the presence of the processor during performance).</p> <p>6 - Performance in such a way as to allow processor assistance.</p> <p>7 - Individual or collective daily activities must be established through a therapeutic protocol.</p> <p>8 - The performance level will be increased judiciously and as required by the patient's condition.</p> <p>Rest reduces pain and inflammation. 9 -</p> <p>10 - Central and central contraction training.</p>	<p>shoulder joint rehabilitation goal to restore the functional range and make the prevention of new injuries. sports medicine not only includes functional performance, but includes sports activities that reach the highest levels of sports and therefore the most important duties of the the therapist to stimulate the patient's motivation for the speed of treatment and recovery to resume sports activities to return to normal life before the injury and include for these</p> <p><b>some procedure:-</b></p> <ul style="list-style-type: none"> <li>. 1 - Get rid of pain</li> <li>. 2 - Restore the full motor range</li> <li>. 3 - Regain control of the muscles through the nerves and the element of strength</li> <li>. 4 - Analysis of the activity practiced by the specialist therapist</li> </ul> <p>b- Measurement of internal, External rotation of arm</p> <p>provided satisfactory pain relief and improvement in functional outcome scores.</p> <p><b>ANATOMY AND BIOMECHANICS</b></p> <p>The consists of the tendons of the subscapularis, supraspinatus, infraspinatus, and teres minor muscles. It functions to initiate glenohumeral joint abduction, provide internal and external rotation, and contributes to dynamic glenohumeral stability.<sup>2</sup> It has been established that the rotator cuff is arranged histologically into five interlocking layers with distinct</p>
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11 - Restore workouts. (4) (25)

Rehabilitation protocol: This protocol used to determine the principles of use, which are based on the gradation, follow-up and supervision of the physician.

The performance of the early motor movement of the brachial joint considered to prevent the adhesion of the capsule.

Preparation of the device in advance time with the presence of the competent doctor to operate the device.



- Pain Scale: Visual Analogous Scale (v.a.s)
- 2-Isokintic device to measure
  - a- Measurement of the movement of the integration of arm from the body.

articular and bursal sides.<sup>11</sup> The humeral insertion of the rotator cuff represents a confluence of the articular capsule, glenohumeral and coracohumeral ligaments, and the rotator cuff muscles.<sup>12-</sup>

The coupled force vectors of the subscapularis and teres minor muscles contribute to

between the injury of ligaments and tendons of the muscles working on the joint and roughness of the shoulder joint as well as the symptoms of shoulder instability, where the shoulder joint from the joints that depend on all activities Which depends on raising the farmers to a higher level of the horizontal shoulder such as throwing where the injury is more serious than others. (23)

Douglas (1993) points out the causes of shoulder exposure to multiple injuries. It is a very wide joint. Therefore, it is subjected to the motor pressure resulting from the high performance of the technical sports movements. The highest horizontal level of the shoulder, especially the movements of throwing and receiving. Four separate joints must work together at the same time as the Glenohumeral joint, the Acromioclavicular joint, the Sternoclavicular joint, the Scapulothoracic joint, and the lack of

<p>the glenoid cavity in the lower direction. (16: 294)</p> <p>Hossam Eddin Sharara 1996 asserts that the shoulder joint of the synovial joints is free of movement in the human body of the type of ball and the right, which consists of separating the surface of the head bone of the humerus with the pit care for the bone of the board. Shoulder joint, the most flexible joint between the joints of the human body, and also the joint with a wide range of movement, allowing the greatest possible degree of movement in the human body has acquired shoulder separation this flexibility of its unique form, which resembles the shape of a ball moving On a dish but this flexibility is at the expense of the stability of the joint. (6)</p> <p>Lars Patterson Many studies and references indicate that 75% of joint joint pain occurs in the rotary muscles and usually in the tendon of the muscle above the fork, and that the injury of these muscles, which are not treated early and are not properly rated, it is difficult to. (18: 187))</p> <p>Several studies and references indicate that 75% of shoulder joint pain occurs in the rotary muscles and usually in the tendon of the muscle above the fork, and that the injury of these muscles, which are not treated early and are not treated properly, it is difficult to. (18: 187)</p>	<p>joint for any muscle support. Below which facilitates the removal of the head of the humerus from</p> <ul style="list-style-type: none"><li>- Use ice to cool injured shoulder 3-5 times (15 minutes each time) daily to control tumor and inflammation.</li><li>- The shoulder pad is used for 4 weeks after the operation. It can be worn during sleep and depends on comfort.</li></ul> <p>Keep the shoulder strap upright at all times, especially when using the pad--</p> <p>Follow the doctor at intervals separated after the second day, and then after 14 days, then three months month and then every year 1 after the operation (25)</p> <p><b>Testing Procedure</b></p> <p>Each subject's shoulder was evaluated using a Biodex Multi-joint System for shoulder abduction/adduction in the seated position</p> <p>The testing apparatus was set up and subjects were positioned and stabilized as described by Wilk and Arrigo in the standardized testing</p> <p>Subjects were tested in the seated position utilizing the Biodex accessory chair. The back support of the chair was reclined 15" for c o n fort. In addition, the dynamometer was also tilted 15" in the same plane</p>
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<p>The early motor range of the effect on muscles works with - avoiding the proximity of the body to the body and external circulation.</p> <ul style="list-style-type: none"> <li>• During the planning of the rehabilitation program the injured arm is not raised above 70 degrees during the first four weeks after the operation</li> </ul> <p>Do not lift any objects above the weight (5 lbs) with the injured arm during the first six weeks.</p> <p>isokinetic data of the dominant throwing shoulder abductors/adductors included (5) of the patients at the center of rehabilitation and sport medicine</p> <ul style="list-style-type: none"> <li>- Avoid excessive access to the rotation of farmers and external / internal for the first 6 weeks.</li> </ul>	<p>to align the subject with the dynamometer (See Figure 8). The axis of rotation of the dynamometer was aligned with the subject at 1 cm lateral to the acromioclavicular joint injury , subject to other treatment, been treated surgically</p> <p>measures) and adopt a comfortable sitting position that felt natural to them</p> <p>On completion of the sitting measurements isokinetic station were asked to make Internal , External rotation and Measure the Range of Motion at the shoulder</p> <p>Sample</p> <p>The sample was selected in a deliberate manner according to the specifications determined for the safety of the procedures. The sample of the study are presented in Table 2. A paired t-test demonstrated a statistically significant difference (<math>p &lt; 0.01</math>) between the windowed and unwindowed mean peak torque values produced at both test speeds. Results indicated</p>
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**RESULTS**

**Table (2)**

**Variance Analysis of the (pre - middle – post) measurements**

		Total squares	degree of freedom	Average squares	f	Statistical analysis
Forward rom	Between group	3792.53	2	1896.27	224.85	0.00
	Enter group	101.2	12	8.43		
	total	3893.73	14			
Back rom	Between group	781.2	2	390.6	77.6	0.00
	Enter group	60.4	12	5.03		
	total	841.6	14			
Side rom	Between group	17157.73	2	8578.87	7798.97	0.00
	Enter group	13.2	12	1.1		
	total	17170.93	14			

It is clear from Table (3) that the calculated values are greater than the values in the scale at a significant level of 0.05 indicating that there are statistically significant differences between the three measurements of the kinetic scale (pre - middle - post) of the injured shoulder.

**Table (3)**

**(L.S.D) test for the three rom (pre - middle – post)**

	measur	mean	sd	pre	middle	post
Forward rom	pre	134	1		*11.6	*38
	middle	145.6	1.14			*26.4
	post	172	4.796			
Back rom	pre	41.6	1.14		*6	*17.4
	middle	47.6	1.14			*11.4

	post	59	3.536			
Side rom	pre	95.6	0.548		*35.8	*82.6
	middle	131.4	1.14			*46.8
	post	178.2	1.304			

Table (7) shows the smallest significant difference between the averages in the three measurements (inter-tribal - post), all of them are statistically significant at 0.05 level

**Table (4)**

**Variance Analysis of the pain measurement in (Between group Enter group) in the scale**

		Total squares	degree of freedom	Average squares	f	Statistical analysis
painometer	Between group	115.73	2	57.87	<b>133.54</b>	<b>0.00</b>
	Enter group	5.2	12	0.43		
	total	120.93	14			

The value of the table (10) at a significant level  $0.005 = 3.88$

It is clear from Table (10) that its calculated values are greater than its values in the table at a significant level of 0.05 indicating that there are statistical differences between the three measurements of the force at 90 ° (pre - post - between) of the injured shoulder

**Table (5)**

**The difference between the two dimensional measurements of the injured and intact shoulder in the force measurements of the shoulder joint**

	healthy		Injured post		f	t	Stat istic
	mean	sd	mean	sd			



								al anal ysis
adduction	60°	135.2	2.864	2.68328	2.68328	0.4	-1.633	0.178
	90°	113.92	1.540	1.304	1.304	0.72	-2.449	0.07
abduction	60°	130.2	6.458	6.26897	6.26897	1.8	-2.449	0.07
	90°	98.3	1.255	1.816	1.816	0.9	-2.449	0.07
Enter rotation	60°	133.334	1.759	0.83666	0.83666	1.134	-2.449	0.07
	90°	115.2	1.483	1.140	1.140	0.6	-2.449	0.07
Exiter rotation	60°	145.6	3.380	2.70185	2.70185	1	-1.633	0.178
	90°	96.4	0.894	0.8367	0.8367	0.6	-2.449	0.07

Table (13) shows that there are no statistically significant differences at a significant level of 0.5 where the calculated values were less than the tabular values and the statistical significance value was greater than 0.05 in the power

<p><b>Disscuption</b></p> <p>Based on the results of the statistical results and within the measurements that were made, and within the framework of the specific sample of the research, will discuss the extent of</p>	<p>Common for restrictions to last for 2–4 weeks .</p> <p>measurement and this is consistent with the American Academy of bones and joints and this is consistent with Michael Kjaer and d</p>
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<p>achievement of the objectives and the validity of the hypotheses. The purpose of the study was to identify the effect of the difference between pre-measurement and distance measurement for the rehabilitation of shoulder joint After the analysis and according to the results of this study, which included the arithmetic mean, standard deviation and torsion coefficient, as well as the difference between measurements in the pre measurement and telemetry, as well as the analysis of variance of the variables of the study where tables (1) (2) (3) (4) (60 ° - 90 °) and pain homogeneity in addition to the variables of height and weight. It is clear that the torsion coefficient is limited to <math>\pm 3</math>, meaning that the data are distributed in a normal distribution indicating homogeneity of the sample. Measurements. 6) (8) (1.) Analysis of variance of (measurements (pre, middle and post) in the tests (range of motor) in favor of telemetry suggest that balanced physical therapy The integrated effect positively affects muscle strength, activation of the restriction of passive range of motion. It is</p>	<p>stone and Michael This fulfills the second hypothesis                  There were also statistically significant differences between the (tribal, inter- and intra-dimensional) measurements                  The study of Ahmad Abdel-Jawad (4) and Muhammad Yunus (10) is also consistent with the study of Marco (19), Michel (22) and Iden (26) 2001                  Thus, the validity of all the research hypotheses is confirmed and the researcher attributes the importance of the proposed physical rehabilitation program.  <b>Conclusions</b>                  1 -There were statistically significant differences at a significant level of 0.05 between the three measurements (pre - middle - post)                  2-Postoperative rehabilitation following repair begins with close communication between the medical staff, the patient, and the physical therapy team. This communication continues throughout the recovery process and is an essential component in ensuring a successful outcome                  3- moderate rehabilitation protocol is selected and customized based on surgical findings. The conservative protocol is characterized by either a delay in the initiation of and/or</p>
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