

HYPERALGESIC SHOULDER RECOVERY FOR THE HANDBALL PLAYERS

Mircea OLTEANU¹

Abstract: *By identifying a number of specific means of recovery and implementing this through a suitable physiotherapy program, combined with the patient's cooperation, we can positively enhance the quality of life and observe considerable results regarding the hyperalgesic shoulder recovery for the handball players. We propose to show if the operational model helps the patients suffering from scapulohumeral periarthritis to recover. In this research I used specific physiotherapy recovery means such as: electrotherapy, ultrasounds, laser, massage, physical exercises, observing notable results. As assessment methods I used the articular and muscular balance and the Harvard test. The efficiency of the implemented program determined a 60 degrees improvement in shoulder flexion, a 2-step improvement of the muscular balance and a 25 % increase in regards of the Harvard test.*

Key words: *recovery, handball players, hyperalgesic.*

1. Introduction

Kinesiology is the science that studies the movement of the living organisms. It is a part of the physical medicine, studying the articular and neuromuscular mechanisms. These mechanisms assure the normal motor activities and correction of the deficitary mechanisms.

Kinesiology has a considerable age. Five thousand years, it is said that it took birth when the human beings first appeared. The first references can be found in Chinese writings, in Cong Fu's system. It was a system of pain and other symptoms

relief. The first book about physical exercise was written by Hippocrates' teacher Herodicus. In his opinion, physical exercise was the remedy that cured him of a disease. Afterwards Hippocrates became the first doctor who guessed and applied the term of physical recovery, noticing the relationship between movement-muscles and immobilization-atrophy. The first book about gymnastics appears in 1556, written by the medic Christobal Medez. This book wasn't that well received, instead Hyeronimus Mercurialis' book had a few ideas that changed everything written afterwards:

¹ PhD, Faculty of Physical Education and Mountain Sports Braşov, *Transilvania* University of Braşov.

- “every healthy individual must execute regularly physical exercises” and ‘for sedentary people the exercises are mandatory’ these statements having a great contribution in creating the term prophylaxis;
- the statement ‘for the suffering the chosen exercises must not worsen the condition’ led to a careful selection of the exercises; the format of the bulletin will be -the statement which introduced the functional recovery was: ‘the exercises are particularly useful during the convalescence period of the condition’;
- the exercises will be prescribed to each individual in particular’. This idea managed to introduce the term ‘individual gymnastics.

The history of physiotherapy is important, but the role and behavior of the physiotherapist must not be forgotten. The physiotherapist has to know his obligations. He has to create and apply the prophylactic, therapeutic and recovery methodology regarding the completion of physiotherapy’s purpose: regaining as fast as possible the professional, social and family life.

Another very important purpose is maintaining and strengthening health.

The sternoclavicular is an ‘S’ joint, joining the sternum end of the collarbone with the sternum and the first costal cartilage.

The acromioclavicular joint is part of the flat joints group. On the acromial extremity of the collarbone there is a slightly convex articular surface, while at the end of the acromion extremity there is another slightly concave face.

The coracoclavicular joint is represented by the clavicle that is joined to the coracoid process by a coracoclavicular

ligament composed of the trapezoid ligament and the conoid ligament.

Shoulder discomforts are: the painful shoulder, the hyperalgetic shoulder, the mixed shoulder, the blocked shoulder, the pseudoparalytic shoulder.

Hyperalgetic shoulder treatment is generally performed by: medical treatment, physiotherapy, massage, kinetotherapy, occupational therapy, hydrokinetotherapy.

2. Recovery Objectives:

1. Pain relief;
2. Reduction of inflammation and tendency to fibrosis;
3. Recovery of articular mobility;
4. Restoring tissue trophicity;
5. Reduced affected muscles;
6. Maintaining the force and kinetics of the superior member.

Methods of recovery

Electrotherapy applied for the purpose of prophylactic, curative and recovery of various forms of electric current. Ultrasound providing an analgesic and myorelaxant effect.

The laser that helps eliminate muscle spasms, relaxes muscles, strengthens local blood circulation. Massage is a gentle, local massage and has the following benefits:

- pain relief;
 - local hyperemia;
 - acceleration of local circulation;
 - Acceleration of resorption processes;
 - improving the mental state;
- Hyperalgetic shoulder recovery
- removing muscular fatigue;

Exercise that uses two types of functional recovery applied by pain intensity:

- recovery with splint;
- retrieval without plating is achieved from the low arm position, in four stages:

Stage I: 10-14 days does not strain affected scapulohumeral joint.

Stage II: Starts with progressive exercises for the next 4 weeks without stressing the area injured.

Stage III: It will start when the strain is removed, this being possible when the patient can lift 1 kg worth of weight

Stage IV: is the functional recovery of the shoulder.

3. Material and Methods

Tests were performed to obtain data on joint mobility of the shoulder, muscle force, exercise capacity and mental state with a questionnaire by a psychologist.

Interpretation of the results was based on the initial, intermediate and final evaluation, highlighting all the positive changes following the application of the recovery program. These data are represented in the following tables and graphs:

4. Results and Discussions

Shoulder Joint Balance

Table 1

CASE I	Initial testing	Intermediate testing	Final testing
Flexion	110°	158°	170°
Extension	40°	47°	55°
Abduction	80°	157°	172°
Adduction	145°	160°	172°

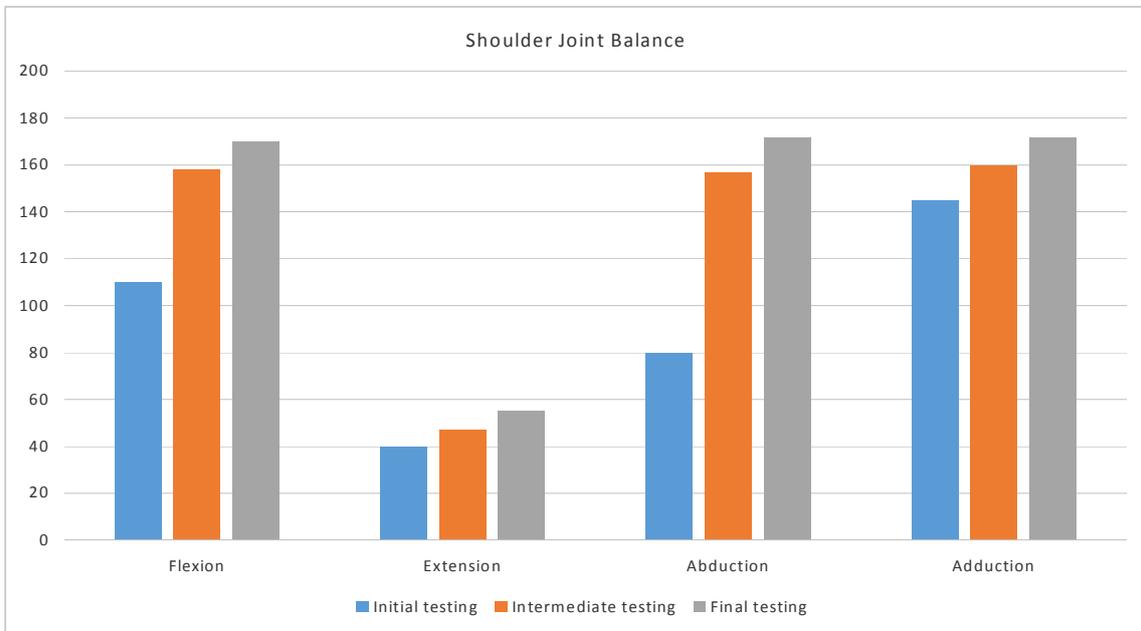


Fig. 1. *Shoulder Joint Balance*

From the graph above, one can notice the lack of flexion, extension, abduction and adduction on which the patient presents at the level of the affected upper limb. Following recovery programs, we have seen a very good evolution of

mobility at the level of the shoulder joint. Concerning the muscle balance, the following table shows the differences between the initial, intermediate and final values.

Muscular balance

Table 2

	Initial case I assessment	Interimate case assessment I	Final case assessment I
Flexors arm muscles	F3	F4	F5
Extension arm muscles	F2	F3	F4
Abductor muscles of the arm	F3	F4	F5
Adductor muscles of the arm	F1	F2	F3
Lifter muscles of the scapula	F2	F3	F4
Descender muscles of the scapula	F3	F4	F5
Abductor muscles of the scapula	F2	F3	F4
Adductor muscles of the scapula	F2	F3	F4

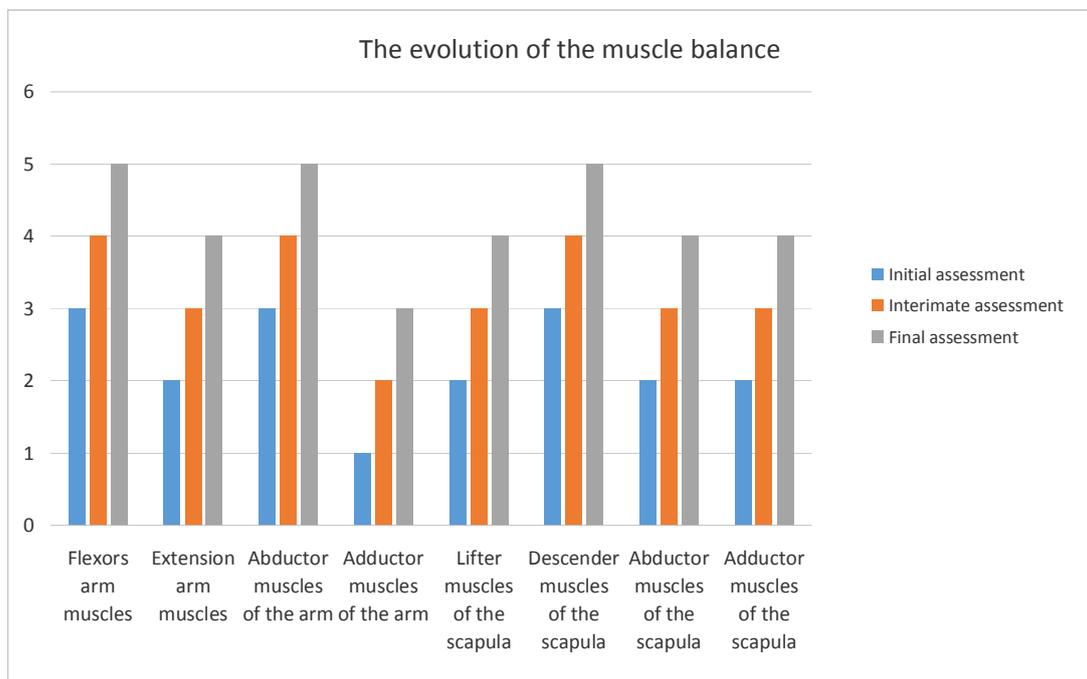


Fig. 2. *The evolution of the muscle balance during the recovery program*

It can be seen from the table above a good evolution in muscle strength especially on flexor muscles, arm

abductors and scapula descenders, which shows that exercises for increased muscle strength were carefully selected and

correctly executed. Also, the force of the whole upper limb increased; this being highlighted by the perimeters that became equal to those of the unaffected limb. As a result of the comparison between the initial and final testing, one can observe increased strength with two muscle stages.

Heart rate in the post effort recovery period Table 3

Pulse 1 minute after effort	Pulse 2 minute after effort	Pulse 3 minute after effort
100 b/min	85 b/min	75 b/min

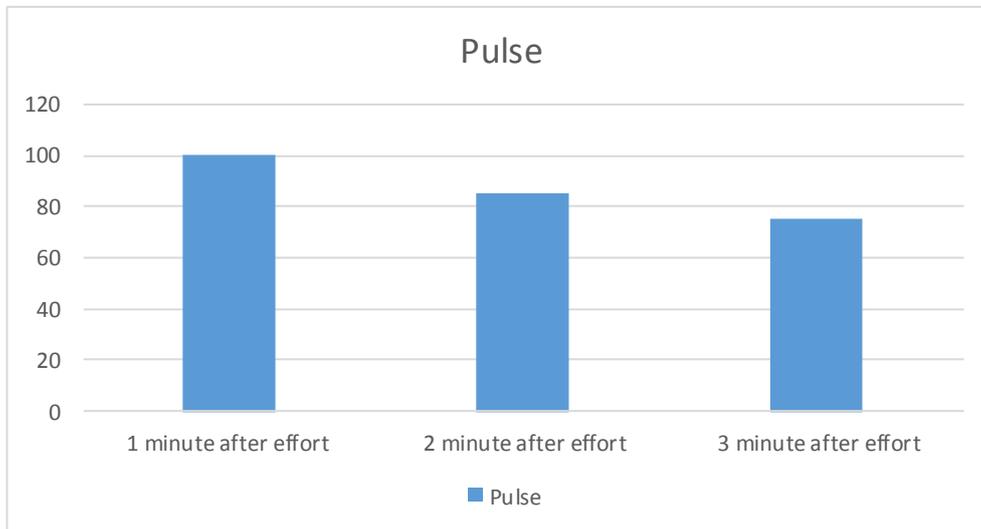


Fig. 3. *Pulse returns after effort*

Recovery program calendar

OCTOBER						
M	T	W	TH	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER						
M	T	W	TH	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER						
M	T	W	TH	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

JANUARY						
M	T	W	TH	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY						
M	T	W	TH	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

Caption
Initial testing
Phase I
Second Phase
Intermediate testing
Phase III
Phase IV
Final testing

The recovery program began on the 1st of October 2018, the evaluation of the patient to collect informative data for initial testing began on the same day.

Phase I lasted for 22 days, with 5 sessions a week, with a session of 60 minutes.

Phase II of the recovery program took place over a period of 22 days, adding to the exercises in the first phase, physiotherapy and massage. The number of sessions remained unchanged, but their duration increased to 90 minutes. At the end of this phase, we collected data from the intermediate patient test.

Phase III lasted for 34 days, with improvements in the shoulder joint movement, which led us to adopt a program of exercise with portable objects. The number of sessions and the time spent on recovery remained the same as in the previous phase.

The fourth phase lasted for 15 days, the intensity of the exercise and their dosing increased, thus achieving our objectives at the beginning of the recovery program.

At the end of the recovery program, we evaluated the patient with a final testing through which we achieved significant results in recovering the hyperalgesic shoulder of the handball player.

5. Conclusions and proposals

Following the physiotherapy program, we were able to formulate some conclusions regarding the influence of psycho-social and cultural characteristics. Regarding the prevalence of this disorder, it is well described in the literature, suggesting that these traits are mediators of the individual response to exposure to trigger factors (workload, educational level, mental activity, professional overload).

The recovery program has a positive influence on the results if it is structured and applied in the most effective way. The most important thing is to use the tools and methods that best fit the case and adapt them according to the patient's needs.

Physical therapy is important in the recovery process right after surgery, because as long as we move away from the surgical date, kinesiotherapy becomes unavailable and cannot be applied successfully.

Proposals

1. Find solutions to encourage patients to set personal goals for treatment to help them achieve their physical, mental and moral development.

References

1. Arustei, O., Schender, C.: *Handbal. Conținut, Mijloace (Handball. Content, Means)*. Iași, Editura Demiurg, 2008, p. 15-17.
2. Bondoc-Ionescu, D., Bondoc-Ionescu, C., Martoma, A., Sabău, E.: *Concepte asupra proceselor de refacere și recuperare în sport (Concepts regarding the recovery processes in sports)*. Brașov, Editura Universității din Brașov, 2018, p. 123-125.
3. Cioroiu, S.: *Kinetoprofilaxia și kinetoterapia în afecțiunile traumatice (Kinetoprofilaxy and kinetotherapy in traumatic disorders)*. Brașov, Editura Universității Transilvania din Brașov, 2016, p. 31-35.
4. Cioroiu, S.: *Masaj (Massage)*. Brașov, Editura Universității Transilvania din Brașov, 2010, p. 45-48.
5. Dragoi, M.: *Curs de electroterapie și fototerapie. (Electrotherapy and phototherapy course)*. Timișoara, Editura Universitatea de Medicină și Farmacie Victor Babeș, 2001, p. 45-48.
6. http://reumatologie.medicala.ro/revisite_med/download/reumatologie/2013.4/Reumato_Nr4_Art-4.pd. Accessed: 4.01.2019.
7. <http://ro.scribd.com/doc/226018314/Criterii-Pentru-Sustinerea-Diagnosticului>. Accessed: 31.01.2019.
8. Marcu, V., Dan, M.: *Manual de*

- kinetoterapie (Physiotherapy book)*. Oradea, Editura Universităţii, 2010, p. 67-70.
9. Rădulescu, A.: *Electroterapie. (Electrotherapy)*. Bucureşti, Editura Medicală, 2005, p.241-243, 346-349.
10. S Benghe, T.: *Recuperarea medicală a sechelelor posttraumatice ale membrelor (Medical recovery of the post-traumatic sequelae of the limbs)*. Bucureşti, Editura Medicală, 1981, p. 165-170.
11. S Benghe, T.: *Kinetologie profilactică, terapeutică și de recuperare (Therapeutic and recovery prophylactic kinetology)*. Bucureşti, Editura Medicală, 1987, p. 36-40, 60-62, 80-82, 540-541.
12. Turcu, I.: *Metodologia cercetării în educație fizică și sport (Research methodology in physical education and sports)*. Braşov, Editura Universitatii Transilvania din Braşov, 2007, p. 29-31.