

Hydrokinetotherapy combined with facilitation techniques in the recovery of osteoarthritis

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Abstract

Motor recovery realized by using facilitation techniques has to practical indications, such as locomotor, rheumatologic, neurological and orthopedic trauma disorders. These use of these techniques has increased more and more, especially in the neurological illnesses, but unfortunately, they are neglected in the other diseases (rheumatologic and orthopedic trauma). In this paper, I aimed at merging two methods, namely: hydrokinetotherapy and facilitation techniques in the diagnosis of osteoarthritis.

Due to the fact that in the recovery of this disorder is not usually indicated the use of exercises involving the load or the joint, we considered that the combination of these two methods, hydrokinetotherapy along with facilitation techniques might speed up the recovery process.

Key words: *Osteoarthritis, facilitation techniques, the amplitude of movement, muscle strength, pain, coxofemoral, hydrokinetotherapy,*

I. Introduction

The proprioceptive neuromuscular facilitation techniques represents a treatment concept realized by Herman Kabat in 1940-1950. At first these techniques have been used in the treatment of poliomyelitis, but with time they have used in other branches of medical recovery, namely: rheumatology, orthopedics, neurology, etc. The proprioceptive neuromuscular facilitation represents acceleration or the deceleration of the voluntary motor response by stimulating the proprioceptors in the muscles, tendons, joints, but also to stimulate the extero- and telereceptors. After the involvement of physiotherapists Knott M. and Voss. D, involvement that led to the use of the facilitation techniques in physical therapy, but also in sports training. By combining the facilitation techniques with hydrokinetotherapy, therapy with innumerable benefits to the human body, could result in a better recovery for the patients diagnosed with osteoarthritis

II. Material and method

We assume that if we use hydrokinetotherapy, combined with facilitation techniques in the treatment of osteoarthritis, we will obtain an improvement in muscular strength, an increase in joint mobility and stability, but most importantly, a reduction in pain and restoration of functionality of the coxo-femoral articulation.

After setting this goal, we have developed the following tasks:

- Selecting subjects;
- Initial Testing (pain felt in the knee joint, the amplitude of movement, muscle strength);
- Design and implementation of the programme of treatment;
- Program Completion of the treatment;
- Final testing (pain felt in the knee joint, the amplitude of movement, muscle strength);

The pain felt in the hinge (VAS - visual analog scale) is measured by means of a template from 1-10 addressed to the patient (1 being the lowest pain felt in the hinge from the upright position and 10 being the maximum pain felt in the hinge from the upright position).

The selection of subjects was made according to age, sex, weight, condition, mode of occurrence of this disorder (the cause of this disease), associated disorders. So, to be as concrete as possible, I decided that the subjects should be aged between 40-60, weight, occupation, functional diagnostics and cause.

III. Description of the study

This study began by performing the initial testing. Tests and measurements have been performed in order to determine the amplitude of the coxo-femoral articulation movement, muscle balance sheet, the pain felt by the patient while standing.

All these tests are compared with the possibility of executing the motion in physiological conditions and after comparing them, we will see if there is a malfunction. The next step is to draw up its objectives and recovery program.

	Flexion	Extension	Abduction	Adduction	Internal spin	External spin
Amplitude of movement	Stretch ed knee 90° Flexed knee 150°	Stretched knee 15-20° Flexed knee >10°	45°	30°	35-45°	45°
Muscle balance sheet	5+	5+	5+	5+	5+	5+
Pain felt in the articulation while standing	0					

Table 2.1. Muscular and articular balance sheet - physiological.

*Amplitude of movement values are taken in the case of active physiological movement and not passive physiological concentration.

	Flexion	Extension	Abduction	Adduction	Internal spin	External spin
Subject 1	100°	10°	25°	20°	25°	30°
Subject 2	120°	15°	20°	15°	25°	35°
Subject 3	110°	15°	30°	20°	30°	30°
Subject 4	90°	10°	15°	20°	20°	20°

Table 2.2. Articular balance sheet - initial testing.

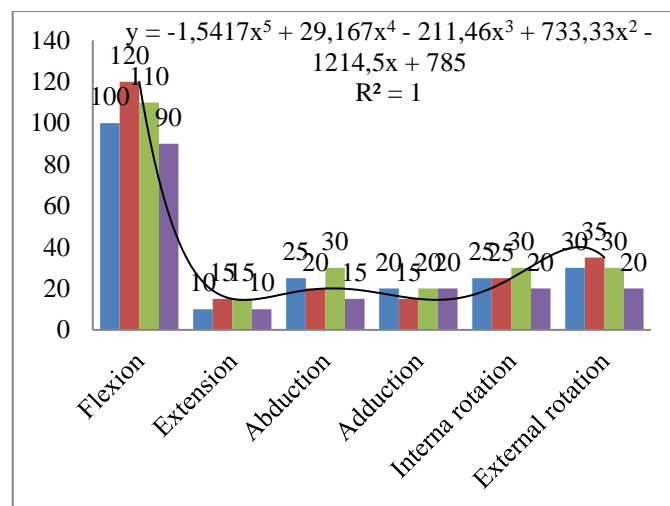


Fig. 3.1. Articular balance - initial testing for all 4 subjects.

	Flexion	Extension	Abduction	Adduction	Internal spin	External spin	Pain felt in the articulation while standing (VAS)
Subject 1	4	3+	4-	4	3+	3+	4
Subject 2	4+	4+	4-	4	4	4	6
Subject 3	4+	4	4-	4+	4	4	5
Subject 4	4-	3+	3+	4-	3+	3+	8

Table 2.3. Muscular balance sheet and the pain felt in the articulation while standing - initial testing.

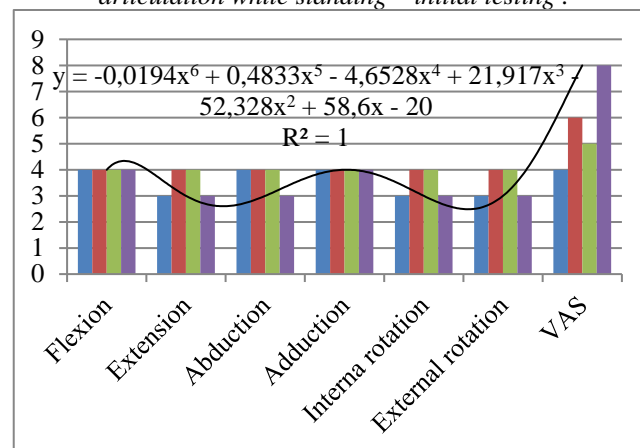


Fig. 3.2 Muscular balance and the pain felt in the articulation while standing - initial testing for all 4 subjects.

The rehabilitation treatment consisted in performing the facilitating techniques, when the patient was in partial immersion (dipping one or more segments). The use of hydrokinotherapy favors the recovery by producing the following effects:

- Hot water produces muscle relaxation and reduction of pain;
- Different temperatures of the water (alternating cold baths 18° C, warm baths 38° C) increase vasomotricity;

- Environmental density reduces the pressure exerted by the body weight on the coxofemoral joint;

- Due to the density of the environment any movement from top to the bottom, bottom to the top or sides, there is water resistance and thus movement is hindered, causing the increase of force and muscle strength;

- If the water in the pool is maintained at 35° C-36°C, it produces analgesic effects (peripheral sensitivity is low).

In the rehabilitation program, we used the facilitating techniques in order to grow the muscle force (slow Reversal with no opposition) and the amplitude of movement (relaxation-oppositon). Considering that patients do not suffer from any vascular disorders, we can combine the isometric contraction with isotonic contraction.

The resistance applied by the physical therapist will be dosed according to the capabilities of each patient, but also the environment in which it is located (being in partial immersion), age, gender, profession and capabilities.

The same principle will be applied to the number of repetitions. Due to the particularities, the number of repetitions will vary from case to case.

IV. The results of the study

At the end of the recovery program, the initial testing has been performed and compared to the initial one. After the comparison, it was visible a great improvement of the symptomatology, as it appears in the following table:

	Flexion	Extension	Abduction	Adduction	Internal spin	External spin
Subject 1	131°	17°	39°	27°	38°	41°
Subject 2	143°	18°	42°	27°	39°	41°
Subject 3	148°	19°	44°	28°	45°	42°
Subject 4	121°	16°	28°	26°	28°	36°

Table 4.1. Articular balance sheet – final testing

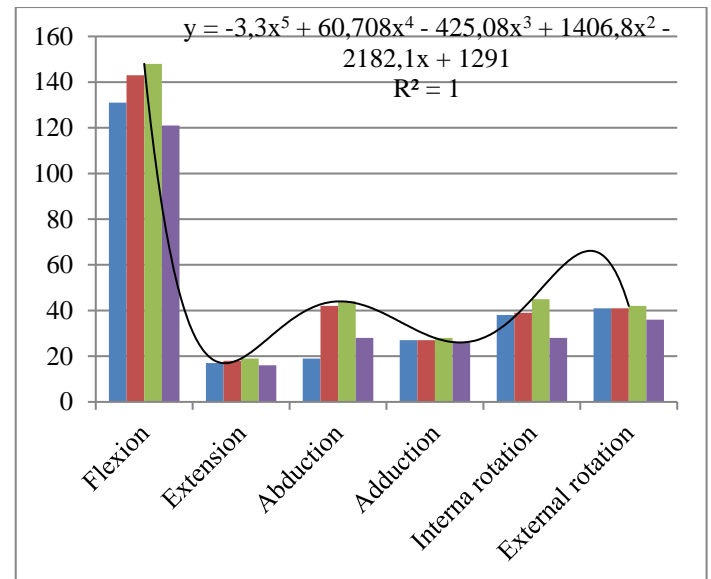


Fig 4.1. Articular balance – final testing for all 4 subjects.

	Flexion	Extension	Abduction	Adduction	Internal spin	External spin	Pain felt in the articulation while standing (VAS)
Subject 1	5	4+	5-	4+	4	4	1
Subject 2	5	5-	5	5-	4+	4+	2
Subject 3	5+	5+	5	5+	5	5+	1
Subject 4	4+	4	4	4+	4+	4	3

Table 4.2. Muscular balance sheet and the pain felt in the articulation while standing – final testing

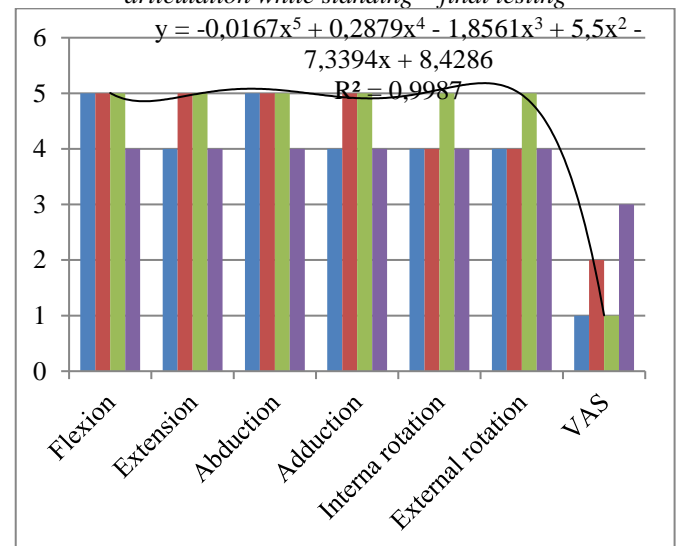


Table 4.2. Muscular balance and the pain felt in the articulation while standing – final testing for all 4 subjects.

V. Conclusions

After comparing the initial results to the final ones, we can say that the hypothesis has been confirmed and that the combination of these two methods, hydrokinetotherapy and facilitation techniques, lead to a quick recovery of the muscular strength, amplitude of movement, but more importantly, to an improvement of the pain felt in the joints of the patients diagnosed with osteoarthritis.

Hydrokinetotherapy has contributed greatly to the success of the recovery plan by the many benefits that this technique has, namely: muscle relaxation and pain reduction, the increase of vasomotricity, pressure reduction inside the coxo-femoral articulation, exerted by the body weight, the appearance of resistance opposed by the water and the effects of pain relievers. Due to the carefully selected facilitating techniques depending on the purpose of each of the subjects, there has been a significant increase in muscle strength and amplitude of movement.

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