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# New Approaches in Social and Humanistic Sciences

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## Contribution of Aquatic Therapy to Anchylosant Spondylite

Amelia Elena STAN<sup>1</sup>

### *Abstract*

*Through this paper I wanted to highlight a way of improving the symptoms of ankylosing spondylitis by hydrotherapeutic interventions. The role of aquatic physical activity in this type of condition is to reduce the intensity of the pain and thus prevent the appearance of new symptoms and more pain. Thus, the goal is to have a dynamic life that will change the degree of activity and not lead to unwanted consequences. The purpose of the paper was to show how aquatic rehabilitation techniques can show an improvement in the immobility status of spinal disorders. Recovery programs that use aquatic exercise as a therapeutic tool in vertebral pathology in the elderly are effective and contribute to the improvement of specific symptomatology. Arthritis is the main cause of long-term physical disability and its prevalence increases with age. Therefore, muscular strengthening is required, which can be achieved by using isometric contractions of stabilization in water. Relaxation can be achieved by floating, using the buoyancy effect. Techniques of holding positions and relaxation methods are predominantly used in the treatment of ankylosing spondylitis and can be used to improve the movement of a joint where muscle spasm is the limiting factor.*

**Keywords:** *ankylosing spondylitis, hydrotherapy, consolidation, relaxation.*

### 1. Introduction

Arthritis is the main cause of long-term physical disability and its prevalence increases with age. The problems identified include pain, inability

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to perform daily activities and manage the illness condition. Is recommended „combining means prophylactic and therapeutic in some complex treatments we can associate to public health, hygiene, diets, physical agents natural (air, water, sun) and artificial means and methods of therapeutic and other factors that strengthen and increase their specific means of action” [3], an approach involving physiotherapy, occupational therapy, medication, nutrition and social assistance.

The objectives of the hydrotherapeutic program to alleviate the symptoms of the disease are:

- pain relief,
- increased muscle strength,
- improving balance,
- improving resistance,
- promoting relaxation,
- awareness in that aquatic exercise is a pleasant activity that diminishes the symptoms.

Arthritis is the main cause of disability in the elderly. And is a mistake of responding to stiffness and pain caused by arthritis with stopping the movement. Moderate exercise on a regular basis is extremely important in the treatment of arthritis. The same importance is keeping a healthy body weight to limit the load on the weight-bearing joints (knees and hips). Exercise in water can be particularly beneficial in order to maintain the mobility of arthritic joints and achieve adequate body weight through low impact exercises.

The purpose of water activity is to increase mobility and motor movement in the water and then transfer this developed mobility on land. Water is also an ideal environment for people affected by arthritis to exercise more comfortably than on land. Hot water (between 28 and 30<sup>o</sup> C) can be particularly comfortable. By practicing hydrotherapeutic exercises, over time, it can help relieve pain and inflammation in the joints. It can restore some of the area of motion as well as the development of cardiovascular capacity and strengt.

„To obtain prophylactic and therapeutic effects develops complex shapes and special methods of medical gymnastics, determined by the characteristics of disease groups or individual clinical needs” [4].

## 2. Problem Statement

The role of aquatic physical activity in ankylosing spondylitis is to reduce the intensity of the pain and more mobility at the level of the spine

and thus to prevent new symptoms. Thus, the goal is to have a dynamic life that will change the degree of activity and not lead to unwanted consequences. „The sporting activity, (...) adds to the motor learning some special qualitative parameters, determined by the existence of the acute competitive situation, by the fact the individual acts in „limit” conditions of physical and psychical stress” [5].

The mental adjustment of the patient to water and maintaining balance will help overcome any anxiety. Exercise can begin with relaxing movements, using mild active movements, within a range of motion without pain, with limiting motions and breathing exercises until the patient is feeling relaxed and confident in water.

The Bad Ragaz maintenance and relaxation techniques are predominantly used in the treatment of ankylosing spondylitis and can be used to improve the motion of a joint where muscle spasm is the limiting factor.

It is advisable, whenever possible, to carry out the first treatment sessions on an individual basis for a short period of time with a gradual increase in time from five to ten minutes. The focus of treatment should be on relaxation, mild and controlled stretching movements.

The role of the therapist in hydrotherapy is to control the level of stretching during exercise or to ensure movement isolation by the use of appropriate floating materials. The Ragaz Bad model uses limb and trunk movement, isotonic or isometric.

In the water the position of the patient is important because the buoyancy helps to get the movement in the desired direction.

Muscle consolidation is achieved by using isometric contraction stabilization. The therapist puts the joint in a painless position and distal the joint and the patient maintains the position while the therapist moves it in different directions, causing the contraction of different muscle groups.

Muscle consolidation can be done in water by applying gradual exercises using floatability as assistance, support or resistance. Resistance turbulence can be used either by increasing the speed of movement, by modifying the length of the segment or by using floating equipment.

For muscle strengthening, techniques from the Ragaz Bad model can also be used to counteract deformation and movement in the painless joint area.

Relaxation can be achieved by floating, using the buoyancy effect. Support can be given by using buoyancy materials around the neck and the hips and possibly the ankles. In the floating position on the back, it breathes deeply, bends the muscles and relaxes consciously to allow the body to be supported by the buoyancy of the water. To stimulate relaxation, the

therapist can lead the body to the lower limbs and the trunk by moving from one side to the other slowly and rhythmically through the water. The grips should be applied at the center of the body, approximately at the waist, thus providing maximum control for the therapist and a sense of security for the patient.

Hydrotherapeutic program for recovery of people with ankylosing spondylitis.

### ***For the legs***

- exercises can be conducted from standing up, deep in water at the sternum or waist level, depending on the comfort level of each patient,
- if the patient is anxious, a higher degree of gravity that acts on the body, gives a feeling of greater safety,
- all movements of the hip, knee and foot can be used, assisted by buoyancy or resistance, with kickboards, aquatic water noodles or inflatable balls,
- small joints, such as the ankle, perform less water-efficient movements, but movements can be made to develop the flexibility of the legs and ankles,
- higher water temperature, support and buoyancy, relaxing environment, water allows greater mobility without pressure-dominated gravity.

### ***For body posture***

- the body-length of patients suffering from rheumatic diseases is altered,
- the forward tilted position of the trunk will be corrected in deeper water over time, due to buoyancy and pressure relief on the joints that support body weight in the upright position,
- specific exercises involving quadriceps, gluteal, abdominal muscles, shoulder retractors and neck muscles are performed to improve control of the trunk along with trunk muscle exercises. These exercises are usually done on upright position, but they can also be performed sitting on a chair with a sinking shoulder.

### ***For the mobility of the spine***

- for mobility, extension, lateral flexion and trunk rotation - exercises in standing or sitting,

- choosing the depth of water is important because it is not recommended to sink the head into the flexion and lateral extension,
- a broad base in the sitting - with the legs distant and the body inclined forward or standing - in the lateral distance, is important in obtaining balance.

For arms and shoulders

- exercises are performed from sitting or standing, with starting positions with water depth at the shoulders,
- flexion, extension, abduction, adduction, internal and external rotation, initially without and then with dumbbells,
- the movements were performed with balancing, rhythmic actions, with the combination of different components,
- lifting, lowering, retraction and extension movements were performed with the shoulder blades.

### ***For neck***

- throat movements are more effective when applying techniques in individual sessions,
- the body must be sunk as much as possible to take advantage of the heat of the water so a stable position is essential - sitting securely on a chair or backed by a wall, with its hips, knees and ankles flexed and feet on the floor of the swimming pool, in front of the body and apart,
- the movements of flexion, extension, lateral flexion and rotation of the neck and head were performed following the possibility of dizziness or nausea,
- particular attention was paid to cervical spine instability.

### **3. Research Questions/Aims of the research**

The small number of patients we have conducted did not prevent the obtaining of relevant data about the illness being pursued given the steps taken to collect as much information as possible about the subject itself. Due to the fact that we conducted this over a year, I believe that enough information has been obtained and this period is not a limiting factor.

The purpose of the paper was to show how aquatic rehabilitation techniques can show an improvement in the immobility status of the spinal disorders.

### ***Working hypothesis***

In recovery programs for vertebral pathology, aquatic exercises used for elderly people are very effective and contribute to the improvement of specific symptomatology.

The objectives are:

1. identifying the most suitable methods and techniques of hydrotherapy applied in the recovery of spinal disorders in the persons of the third age;
2. building a rehabilitation hydrotherapeutic program in accordance with the specific pathology confirmed by diagnosis;
3. highlighting the therapeutic effect of the proposed hydrotherapeutic program.

The tasks are:

- to show the possibilities of hydrotherapy intervention adapted to the particularities of the subjects and the diagnosis of the identified disease;
- to establish the objectives of the hydrotherapeutic program in relation to the identified functional deficit;
- to establish the therapeutic steps, the duration and content of the hydrotherapeutic program, and the number of series and repetitions proposed;
- to establish the assessment methods applicable to the initial, intermediate and final testing scheduled during the study;
- to collect, record, analyze and interpret the results obtained from the application of the proposed hydrotherapeutic program;
- to establish the general and specific conclusions drawn from the study.

## **4. Research Methods**

Methods. The aquatic exercise program recommended for this type of condition is interval training.

The training can be prolonged and allows extending the period up to 50 - 60 minutes.

In order for this paper to be achieved, extensive documentation was required, combining the information from the literature and adding the information acquired in 1 year.

I followed the information on the anatomy and biomechanics of the spine, together with the characteristics specific to the elderly and their specific disorders.

#### 1. Observation method.

The observation involves both sensory processes of knowledge and logical thinking. Most of the time, observation is visual, in the case of physical therapy by inspection.

The observation - as one of the methods of direct investigation of reality - was the starting point for obtaining the concrete materials which were then the basis of the analysis, associating with the recommendation of the specialist.

In the present paper, the observation method contributed to the knowing of the patients, the setting of the objectives, the working methods.

The observation was used throughout the treatment, observing the changes in the initial, intermediate and final phase.

#### 2. Anamnesis method

- is the method by which the examiner obtains data from the patient about the state of health, which is why the individual is addressing us, the history of his illness, his or her history, regarding the setting of the objectives, the methods, the means for diagnosis and following the establishment of the recovery program.

Case history is a very important process in elderly care.

#### 3. Graphic method

It has been used to show as clearly as possible the level at which the patient has started and the evolution.

#### 4. Test method

By testing, we searched to obtain accurate data on changes in the spine affections in the elderly.

The test used for functional evaluation was standardized:

The Schober test is done as follows:

-the spinoid apophysis of the S1 vertebra is determined,

- measuring proximally 10 cm,

- then execute the trunk flexion, by which normally the distance between the two markers increases by 5cm. Note Schober = 10 / 15cm.

The subjects were chosen on the basis of common symptoms common to this condition - inflammation of the vertebral joints that caused their stiffening.

The cause that established the disease of the spine is unknown, it is assumed that the aging process associated with the genetic predisposition.

The research was conducted between July 2015 and June 2016.



This study followed functional recovery based on the proposed objectives.

The study was conducted over a period of one year in a small swimming pool with a depth of 0.80-1.20 m and a 25 m in length.

The material basis consisted of the materials needed for testing, evaluation and recovery of patients.

### ***Patients***

1.) Name: M. M.

Age: 60 years

Gender: female

Radiological investigations and computed tomography have made the diagnosis of ankylosing spondylitis.

Signs:

- lower back pain;
- stiffness of the back;
- general condition: fatigue and anxiety.

2.) Name: C. L.

Age: 61 years

Gender: male

Following the clinical examination, was established the diagnosis of ankylosing spondylitis.

Signs:

- low lumbar pain;
- limiting movement of the lumbar spine;
- thorax slightly lowered, slightly forward shoulders;
- loss of balance on walking;
- difficulty breathing.

## **5. Findings**

Based on the applied test, we analyzed and interpreted through initial, intermediate and final testing, the obtained data.

Patient # 1. M. M.

In the Schober test, the initial test results in a 1 cm value, at the 2.4 cm intermediate test, finally reaching 3 cm.

The Schober lumbar index reversed the initial test was 2 cm, the intermediate test of 3 cm and the final test of 3.6 cm.

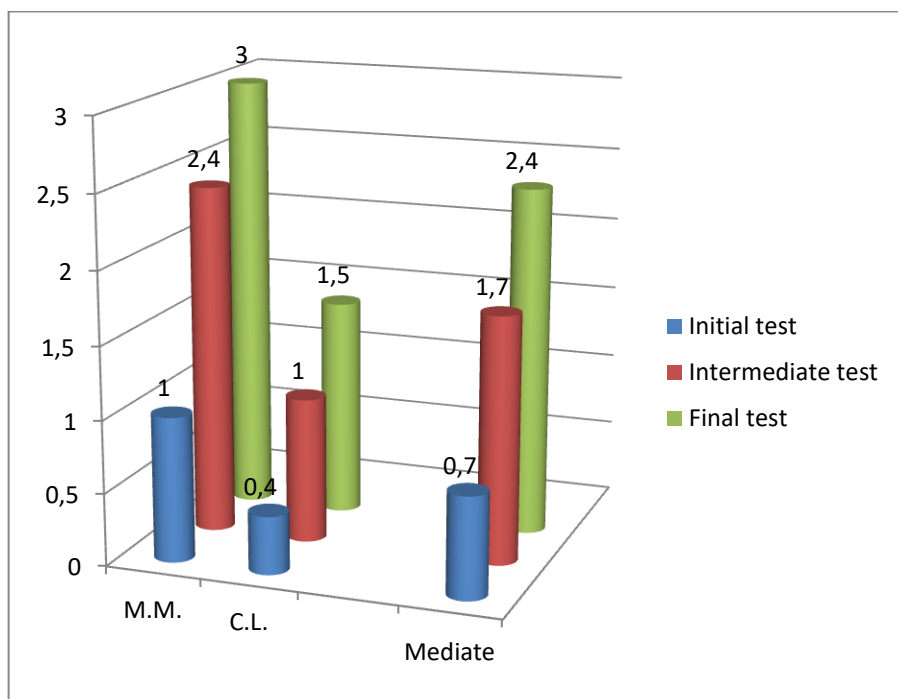
Patient # 2: C. L.

In the Schober test the initial test results in a 0.4 cm value, at the 1 cm intermediate test, finally reaching 1.5 cm.

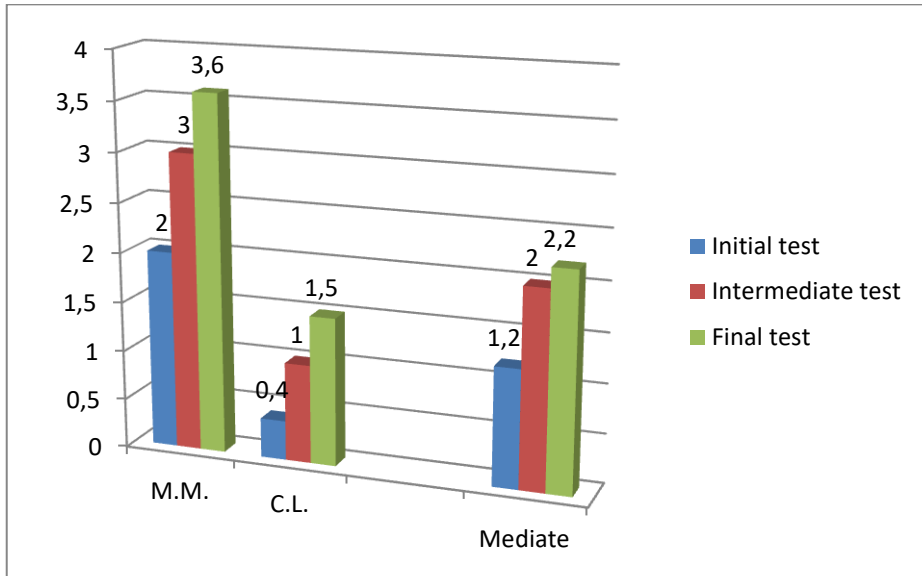
The reversed lumbar Schober test recorded a value of 0.4 cm in the initial test, at the 1 cm intermediate test, and at 1.5 cm.

In the continuation we represented, through the graphic method, the values we obtained in the initial, intermediate and final testing. Then analyzing the data was made by comparing the three tests.

**Schober Test:**



Based on this graph we can conclude that after application of the hydrotherapeutic program, the amplitude of the dorsal column increased, the average being of 2.4 cm.

***The reversed Schober lumbar test:***

As we can see in this graph, there is a difference between the patient's tests due to the conditions they suffer, but during the deployment of the hydrotherapeutic program, there was an increase in the lumbar segment amplitude.

## 6. Discussions

Results. The techniques of holding position and relaxation techniques are predominantly used in the treatment of ankylosing spondylitis and can be used to improve the movement of a joint where muscle spasm is the limiting factor.

Conclusions. The techniques used to mobilize spinal segments in aquatic therapeutic programs are those in the Ragaz Bad model that uses limb and trunk movement, isotonic or isometric.

„Respecting the persons with disabilities, helping them care and represent important signs of progress of society and civilization. Should further promote the humanist spirit, to protect the rights and interests of persons with disabilities continue to ensure equal involvement of these persons in social life, enabling them to enjoy with us the results of economic and social development”. [7].

„Health manifests itself throughout life and it is important to know and appreciate, from a young age, the factors that result in good health.

Well-being is a component of health and is a result of a balance between personal and professional life. Regular exercise improves wellbeing and energy levels every day. Physical inactivity is a major risk factor associated with a large number of lifestyle diseases” [10].

## 7. Conclusions

1. Arthrosis occupies by frequency one of the first places among diseases with medical-social implications in the elderly.

2. Aging is the main factor in the degenerative process. In addition to this factor, we also add repeated trauma, obesity, local bone or cartilage alerts, endocrine and metabolic factors.

3. Hydrotherapy is recommended for the treatment of osteoarthritis. The movement is used methodically in all its forms: active, passive, active-aided and resilient movements. Passive mobilizations are applied to painful arthrosis when active movement is impossible or insufficient to combat stasis, edema and muscle-ligament retractions.

4. Taking into account the age at which the cases were presented and taking into account the diseases, which are characterized as degenerative, the result of the hydrotherapeutic treatment was beneficial.

5. Physical exercise is of great importance for avoiding sedentarism, so aquatic exercises of 20 to 30 minutes, performed 2-3 times a week, are useful in the elderly, helping to maintain bone mass. „Extending the limits, being in the same time a means to free the body and the mind” [1], and with a „good physical training, but in the absence of adequate psychological training has the effect of modest performance” [6], [2] and the results are not to be expected.

6. Hydrotherapy combined with aquatic aerobic gymnastics at the recommendation of a doctor is a recreational, systematically practiced sport for the elderly, appropriate to the state of health and effort of each patient.

„Science and practical experience have shown the importance of practicing physical exercise, movement, sport for disabled people, which leads to the idea that the state, society must give greater importance to the role of sport in its policy and social strategy regarding the protection of disabled people.” [8],[9].

The social impact of this study is reflected in contribution to the clarification of many aspects related to the ability of the aquatic process that intervene in the fight against sedentary disease in people with ankylosing spondylitis.

## 8. Acknowledgement

I declare on my own responsibility that the subjects in this research were informed of their voluntary participation, they understood the information received and the possibility to withdraw from the research at any time without any negative consequences on them. Research complies with the ethical standards, and the research participants gave their consent to participate in this project.

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