AQUATIC RECOVERY PROCEDURES FOR NEUROMUSCULAR RE-EDUCATION OF LOWER EXTREMITIES USING THE BAD RAGAZ METHOD

Proceduri de recuperare acvatică pentru re-educarea neuromusculară a extremităților inferioare prin folosirea metodei Bad Ragaz

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Abstract.

The Bad Ragaz method is a method of stabilizing and consolidating exercises; is used to treat strengths or locomotor deficiencies, aided by the technique of devices like floating rings for neck, pelvis and ankles. Patient maneuvering by the therapist and hand-held resistance with passive, active and resistive active movements each model can be modified and adapted to a wide variety of orthopedic or neurological diagnoses.

Through this paper, we aimed to underline the importance of the Bad-Ragaz therapeutic-aquatic programs for lower limb recovery, given their effectiveness in reeducating associated physical disabilities. Stabilization and consolidation-oriented method, the Bad Ragaz method is used to treat resistance or locomotor deficiencies, aided by the technique of floating rings, neck, pelvis and ankles. Taking into account the results obtained, we consider that hydrokinetotherapy can be recommended as an effective alternative for recovery of deficiencies associated with inferior limbs.

Keywords: aquatic therapy, spinal cord injuries, swimming.

Introduction

The Bad Ragaz method is focused on stabilization and consolidation exercises; the method integrates the concept of proprioceptive neuromuscular facilitation. "Proprioceptive neuromuscular facilitation is defined as a method of promoting or hurrying the response of the neuromuscular mechanism by stimulating proprioceptors (Knott, M., Voss, D., 1978) with help in normalizing movement patterns of those with neurological deficiencies" (Becker, B., Cole A., 2004). The method is a collection of techniques that promote a response from the neuromuscular system by stimulating proprioceptors. The patient always uses the therapist's strength as a fixed base of support so the balance is guaranteed more or less continuously. The therapist's resistance is continuous throughout the movement. An important role in the recovery process is the "general acceptance of the physical limits imposed by accident and appropriate treatment" (Howley, E. T., Franks B.D., 2007).

This method is used to treat strengths or locomotor deficiencies, aided by the technique of floating rings, neck, pelvis and ankles. Exercise patterns can be modified to a wide range of orthopedic and neurological diagnoses. Patient displacement by the therapist and hand-held resistance with passive, active and resistive active movements each model can be modified and adapted to a wide variety of orthopedic or neurological diagnoses.

The applicability of the therapeutic method allows the approach of the lower extremity, trunk and upper extremity ,,during the implementation of original concepts, the most commonly used Bad Ragaz models allow for better control and the hands of the therapist, emphasizing the ability to facilitate or inhibit a response" (Vargas, L.G., 2004).

The patient always uses the therapist's strength as a fixed base of support so the balance is guaranteed more or less continuously. The therapist's resistance is continuous throughout the movement.

The Bad Ragaz method is a model of resilient strength and mobilization exercises that possess a variety of excellent recovery features:

- in rheumatologic, orthopedic and neurological disorders such as rheumatoid arthritis, osteoarthritis, inflammatory and chronic spinal problems or in postoperative deficiencies.

The Bad Ragaz method is not just a consolidation technique, but a complete physiotherapy treatment concept that can be focused on modulation of pain and muscle relaxation. Specific techniques are used to achieve this goal.

All the objectives of the Bad Ragaz method can be found at the structure and functioning of the body and can be addressed separately or in combinations:

~ improving the force,

~ amplified coordination,

~ increased joint stability,

~ increased area of movement,

~ increased local resistance,

~ the lower extremity capability of wearing body weight,

~ reducing the pain level.

The objectives are used for patients with neurological, orthopedic and rheumatologic disorders and serve as preparation for therapy at the levels of activity or participation.

"When the lens is focused on neuromuscular reeducation, the principle applied to the stretch reflex can be integrated to improve contractile properties and strength in one muscle or muscle groups." (Vargas, L.G., 2004).

The Bad Ragaz method is a model of resilient strength and mobilization exercises that possess a variety of excellent recovery features:

- has a specific therapeutic regimen,

- is not used for general aquatic fitness,

- is an ideal part of the concept of complex treatment in aquatic therapy,

- the functional therapeutic objectives and functional limitations of the patient are analyzed and then the most suitable models are chosen,

- is a support for improving the strength, mobility, stability or functions of the body,

- in rheumatologic, orthopedic and neurological disorders such as rheumatoid arthritis, osteoarthritis, inflammatory and chronic spinal problems or in postoperative deficiencies,

- generally, the therapeutic models concentrate directly on the functional problem area, being used at a later stage, initially effects are created indirectly as a reaction effect (e.g. bilateral reciprocal foot stimulation models).

Activities are economic, effective, and maximize patient abilities.

The Bad Ragaz method is not just a consolidation technique, but a complete physiotherapy treatment concept that can be focused on modulation of pain and muscle relaxation. Specific techniques are used to achieve this goal. "Bad Ragaz techniques are extremely effective to increase the isometric resistance of the trunk." (Stan, E. A., 2013).

To achieve this goal, specific techniques are used:

- a stabilization and consolidation-oriented method is used to address various disorders by hand resisting with active, active and resistive active movements;

- the neuromuscular proprioceptive facilitating technique (Knott, M., Voss, D., 1978), used by therapists in Europe also included three-dimensional movements in which each model can be modified and adapted to a wide variety of orthopedic or neurological diagnoses;

- "during the implementation of original concepts, the most commonly used Bad Ragaz models allow better control and the hands of the therapist, emphasizing the ability to facilitate or inhibit a response" (Vargas, L.G., 2004);

- there is a wide range of models based on the direct approach between the therapist and the patient; the models presented in the Bad Ragaz method are grouped into three categories: the lower end, the trunk and the upper extremity;

- applied techniques consist of passive models that require no active and imposed patient involvement requiring the patient to have intact cognitive skills in order to adequately fulfill the prescribed patterns.

It is important in building the recovery program that the Bad Ragaz method can be divided into models that work legs, trunk and arms separately. Models can also be classified as unilateral or bilateral models. Bilateral models have symmetrical and asymmetric options. All motion models are applied in the floating position on the back.

Applying the techniques of this method implies an appropriate qualification, and therefore the therapist must have the exact knowledge of the concept and a fine manipulation technique. "The motion patterns allow natural anatomical and physiological actions involving the joints and muscles involved." (Stan, E.A., 2013).

The program implies the existence of floating aids that provide patient safety and water stabilization. These flotation devices also slow down the rotation of the body. The neck and hips are supported by air-filled rings and, depending on the exercise, a third ring can support one or both ankles. "Equipment designed to assist with patient positioning by providing buoyancy assistance can be applied to the neck, extremities, or trunk. Inflatable cervical collars are used for the supine patient to support the neck and maintain the head out of the water." (Kisner, C., Colby, L.A., 2007). "A flotation collar can also be used for buoyancy support when the body is in a prone or supine position. When used for support rather than assistance to motion, flotation collars are frequently used in combination with a flotation belt or buoy bar". (Koury, J.M., 1996).

The positioning and inflation rate of flotation aids are quite specific, they must be placed so that the movement is not restricted. The rings around the ankles should have an extremely limited amount of air. When they are too swollen, the body becomes unstable and stays too high on the water.

The Bad Ragaz Method uses both active and passive active counterfeits. From a physiological point of view, only active contractions are important. The knowledge and proper activation of these counterfeits are of the utmost importance in the proper use of the Bad Ragaz models. For example, when a unilateral reciprocal pattern is used, the center of gravity moves toward the median line, causing the body to roll. To prevent this, the contractions must be followed precisely. Movements that appear as a passive active counterfeit have a high therapeutic value because these are automatic, reactive movements that the patient may be aware of. These automatic movements appear with a low level of force, appear slowly and can be easily controlled by the therapist.

"The advantages of hydrotherapy for injuries with primary muscle damage are:

- decreased stress on joints, especially weight-bearing
- reduction of pain and muscle spasm
- improved circulation leading to the dispersal of hematoma and edema
- decreased swelling.

All techniques would progress to the advanced stages as the condition improves. Conventional exercises would become buoyancy resisted, performed with increasing speed and range. Further resistance may be provided manually or by increasing the size and number of floats. Bad Ragaz patterns to strengthen muscles and increase the range of movement would be employed and the changes in shape in hydrodynamic exercise would be larger, demanding greater muscle work, balance and coordination." (Campion, M.R., 2000).

Conclusions

Activities are economic, effective, and maximize patient skills in applying this method.

"The Bad Ragaz ring method concept is used for aquatic rehabilitation of patients in the early stage. The treatment goals in the method are always at the level of body functions." (Brody, L.T., Geigle, P.R., 2009).

In the Bad Ragaz method, the patient is allowed to determine the strength value, depending on the speed of movement and resulting from water rubbing. This method increases the difficulty of activity by placing distal stabilization. Such strategies increase the complexity of activity because the patient has to control larger body segments during the movement.

The Bad Ragaz method is used to improve the body segment movement by increasing the central nervous system efficiency with sensory input.

In anterior poliomyelitis "the Bad Ragaz techniques may be of interest to the older child who can understand what is required and become intrigued by the patterns of movement. For the younger child, these techniques are of little value and the physio-therapist's ingenuity will be taxed to encourage similar movements in another form. As respiratory function may have been affected by the disease, the importance of breathing control and the need to improve respiration are evident." (Campion, M.R., 2000).

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