

Physical Therapy in Pediatric Rheumatic Diseases

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Abstract

Rehabilitation in children's systemic and joint diseases requires a good understanding of the evolution of the inflammatory process, as well as of treatment-related complications. The aim of physical therapy is to keep or restore joint function and alignment as much as possible and to achieve a normal pattern of mobility. Early rehabilitation is one of the ways of preserving the child's functional future, and the actions taken are preventive, curative and palliative. Rehabilitative care requires a trusting relationship between each member of the therapeutic team, the child and his or her family. Treatment is long, difficult and painful, particularly during inflammatory flare-ups. Rehabilitation must be carried out by experienced professionals with a well-defined program.

Keywords: *Pediatric Rheumatic Diseases (PRDs); Physical Therapy; Rehabilitation*

Introduction

Pediatric rheumatic diseases (PRDs) are a group of chronic inflammatory conditions characterized by periods of disease flare-ups and often accompanied by pain [1]. In patients with PRDs we can have a major impact on functioning and social participation [2]. Recommended physiotherapy activity programs are essential for controlling the diseases' complications such as stiffness, deformity, muscle contractures, and cramps [3]. This rehabilitation calls on a variety of techniques and a variety of professionals. The basics of physiotherapy techniques are very similar to those used for adults. The important difference lies in the adaptation to the chronological and physical age of the patient; play and fun facilitate evaluation and often contribute to the benefits of the various physiotherapy techniques [4]. Physical therapy in children with arthritis should be performed by a therapist specifically knowledgeable in pediatrics and experienced in the treatment of these diseases [5]. It is usually carried out at home, particularly during remission phases, or in a specialized center by physiotherapists specialized in pediatric care.

What is the aim of physical therapy in pediatric rheumatology?

Pain, stiffness and immobility, which are common in locomotor pathologies, will lead to changes in the characteristics of the joints, muscles and motor performance, which will be dealt with in rehabilitation (Figure 1). The aim is to preserve functional potential, which is all the more difficult when the disease is early and extensive [5]. It's about maintaining joint and muscle activity and maintaining respiratory capacity.

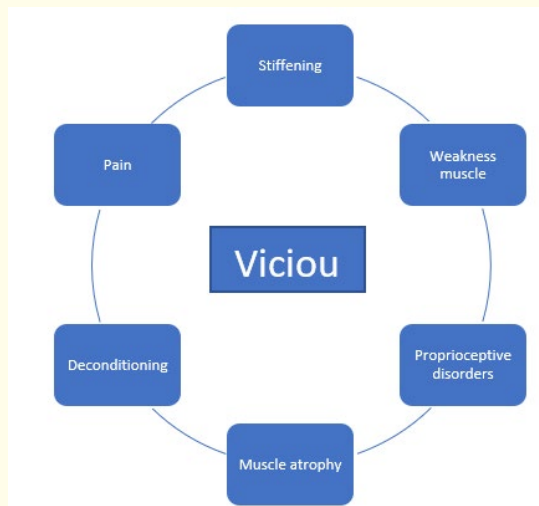


Figure 1: Consequences of locomotor disorders in children with rheumatic problems.

What is the physiotherapeutic assessment in pediatric rheumatology?

When a physiotherapist starts to work with a patient, it is necessary for him, after having taken note of the diagnosis and the medical indications, to carry out a clinical examination of the patient, which will enable him to establish contact with the patient to gain a better understanding of his illness, then to monitor and compare the patient's progress and transmit the data to the doctor [6].

The examination ideally carried out each time by the same person and under the same psychological and environmental conditions. The physiotherapist first of all takes a look at the patient's medical file, which tells him how long the disorders have been present and how they started, the nature of the disorders and the treatment and its results.

It then looks for various data useful for a better understanding of the child's case: age, hobbies, sport, intensity and time of onset of straightness, site of pain and factors aggravating this pain, as well as the child's psychological state.

The clinical examination itself includes a pain assessment, a skin examination, a morph static assessment, a joint and muscle assessment and a functional assessment, a sensitivity assessment and a circulatory assessment [7].

What physical therapy techniques are used in pediatric rheumatology?

A range of techniques are available to reduce musculoskeletal deficiencies in children during the three periods of rheumatic disease: acute, sub-acute and remission. Techniques remain classic, but are adapted to the child's algic threshold, the inflammatory state of muscles and joints, the form of the disease and localizations [5].

Preventive gestures require the use of resting or assistive devices, as well as activity limitation. Curative therapeutic gestures are aimed at the recovery of deficient articular and muscular sectors. Palliative care develops a strategy of joint economy, gesture education, the need for suppleness, and adaptation of the child's environment and activity level.

In the inflammatory phase, the aim is to prevent vicious attitudes and maintain muscles and joints. Immobilization with morning mobilizations is recommended. Pain management is a priority.

The child's pain needs to be taken into consideration and assessed. Pain-relieving massage, combined with gentle, progressive tension-relieving techniques, provides effective relief. Edema, as a factor limiting venous return and joint mobility, is treated by manual lymphatic drainage and decline posture.

Physiotherapy is using physical agents for therapeutic purposes; the properties of these different agents are dominated by trophic and analgesic actions. Some actions are specific to the agents used; others can be related more generally to thermal effects. The thermotherapy has an analgesic effect, increases tissue elasticity and combats stiffness. Sources include infrared lamps, parafango, clay and laser; it's used mainly in spinal pathologies. Cryotherapy has an analgesic effect, particularly in cases of anti-edema inflammation. The sources are ice, cold room, gas for 15 minutes. Scottish baths are alternating hot and cold. Ultrasound analgesic is used especially for tendon pathology. Electrotherapy is a valuable adjuvant with continuous current (uses ionization, the principle of which is to penetrate skin tissue with an active product), alternating current (used as a low-frequency analgesic), and exito-motor current (used to energize muscles).

Passive physiotherapy aims to modify tissue properties (elasticity and suppleness) in order to achieve indolence and joint amplitude. As massages, we have superficial, pinch-and-roll, and deep transverse massage. As mobilization, we have stretching and relaxation. We use postures for amplitude gain.



Figure 2: Functional knee-flexion posture (personal series).

Active physiotherapy is grouping together all techniques and involving the patient (voluntary participation of the child). Analytical work concerns a muscle group. Global work concerns a function or a gesture. Analytical muscle strengthening: isometric, isotonic and isokinetic. The most commonly used in rheumatology is isometric strengthening.

Sensory-motor rehabilitation is muscular strengthening techniques which call for automatic or reflex motor control based on sensitive or sensory stimulation. For the overall muscle strengthening, the functional purpose is to perform a gesture useful in everyday life and sporting activities.



Figure 3: Active work: triple flexion (personal series).

Occupational therapy is the practice of play and craft activities with the aim of functional optimization and comfort, safety (joint economy) and gesture efficiency are taught and researched.

Fitting with orthotics and technical aids are external devices manufactured in series or to measure; small fittings are medical devices manufactured in series according to standardized sizes; large fittings are made to measure or molded in durable materials. Orthotics are used for immobilization or spinal function (support belt, corset). The role of orthotics is analgesic, immobilization, and limitation of movement. Technical aids are used to maintain specific activities (canes, walkers....)

Balneotherapy (hydrotherapy) encompasses sand, mud, air and artificial light baths, including the application of IR and UV rays. It can be thermal (crenotherapy) or Marine (thalassotherapy). The aim is to facilitate functional recovery, muscle strength and joint mobility, using Archimedes' principle, hydrostatic pressure and water's resistance to movement. Balneotherapy has a vasodilatory, relaxing and analgesic effect on the child's psychology, with the action of certain chemical components of the water on the organism [8,9].

The physiotherapist must know how to talk to his patient (the child's parents), explain why things are the way they are, motivate him, in a word, and support him psychologically throughout his rehabilitation of his illness.

The physiotherapist's role is also that of an educator, providing advice on healthy living and knowledge that he or she can pass on to the parents [10].

Conclusion

The approach to rehabilitation management of childhood rheumatic disease differs in many ways from that of adult disease. Among the special considerations are the effects of chronic musculoskeletal inflammation in a growing and developing individual. Medical interventions focus on causation and disease processes, while rehabilitation, including most elements of physical therapy, is concerned with the consequences of disease. Its goals are to reduce symptoms, improve function and minimize disability.

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