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# Introductory Chapter: Physiotherapy and Rehabilitation

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## 1. Introduction

Physiotherapy and rehabilitation have recently seen many practical innovations, evidences and major developments for specific interventions, not only in practical but also conceptual [1]. The approach to patients has moved from a predominantly medical biopsychosocial aspect and the need for organized specialist rehabilitation services has become equally important [2].

Physiotherapy is directed towards the movement necessities and potential of individuals, providing therapy and rehabilitation to enhance, maintain and restore maximum movement and functional skills throughout the lifespan [3]. Recent studies including systematic reviews and randomized controlled studies have emphasized proof for the clinical activity of physiotherapy interventions and rehabilitation for individuals with large different conditions range as orthopedic, neurologic, pulmonary, pediatric, rheumatologic or geriatric conditions [4].

The World Health Organization (WHO) describes rehabilitation as a process that supports individuals, experience or are under risk of functional limitation, to provide, enhance and maintain functionality in interaction with their environments' [5] and rehabilitation is based on way of thinking on problem-solving and fundamental decision-making in clinical interventions and apply learning. The problem-solving approach is based on description of symptoms in relation to structural and functional impairment and activity and participation limitation rather than only a specific description of different conditions related to physiotherapy.

"Physiotherapy and rehabilitation" are therapy process that are aimed to optimize functional and independence level and individual function limitations caused by pathologies which result in impairments. Rehabilitation is mainly focused the results of pathology rather than pathology itself. Physiotherapy and rehabilitation focus particularly on limitations which may affect physical functionality and activity and utilize a set of different interventions based on non-invasive and physical nature to assist progress toward functional objectives and aims [6]. Physiotherapy and rehabilitation are mostly focused on impairments related to mobility and functional or activity limitations as well as pain which are associated with musculoskeletal and neurological pathologies, injuries such as fractures and traumas, or cardio-pulmonary problems and treating them with exercises planned in line a target and manual mobilization approaches [7].

## **2. International classification of functioning, disability and health (ICF) framework and physiotherapy and rehabilitation**

Disablement models are a way of thinking about the results, impacts or sequelae of disease on functionality. Different classification schemes have been aimed to classify these sequelae. Recently, the WHO revised their scheme to produce ICF [6].

Disablement models are intended to show and create changes in perceptions of individuals with disabilities and meet their necessities to differentiate disease and pathology from the limitations they produced and these models were developed primarily for use by rehabilitation professionals. The expanded models try to have a more positive perspective on the changes caused by pathologies or disease and more intended for use by a wide range of people, including community, national and global institutions. The ICF has tried to change the perspective of disability from the native focus of outcomes of disease [6].

Within the ICF, physiotherapy and rehabilitation team can rely first on a worldwide accepted model providing a common language to describe and classify functionality, and the ICF is a framework for describing functioning and disability in relation to a health condition. It provides a common language and framework for documenting information on the functional changes after physiotherapy interventions [8].

## **3. ICF framework physiotherapy and rehabilitation interventions based on ICF**

According to the ICF framework physiotherapy and rehabilitation approaches can be used according to these applications.

### **3.1 Approaches targeting impairments**

The underlying assumption of these approaches is to prevent activity limitations by improving body functions and structures and different applications are described according to these aims.

Conventional methods for treatment of neuromusculoskeletal disorders primarily focus on the functioning of body structures, assuming that if joint play is restored and if stiff or contract muscles are relaxed and weak muscles strengthened, the ability to perform activities is automatically recovered [9].

### **3.2 Activity-oriented interventions**

Activity-oriented movement strategies depend on activities rather than only impairments and aimed functionality with cognitive aspects, experience and intention that are fundamental for learning. An activity-oriented therapy program has a larger and much more prolonged positive effect than impairment-based structurally oriented therapy [10].

### **3.3 Environmental modification and assistive devices**

Environmental adaptations can be used for different purposes. These objectives include increasing the functional independence of the child and reducing caregiver assistance [11]. Basic physiotherapy and rehabilitation interventions are listed in **Table 1**.

| Physiotherapy and rehabilitation interventions  |   |
|---|---|
| Activity-based interventions                    | Motor learning strategies                 |
| Task-targeted training:                         | Strategy development                      |
| • Functional mobility skills                    | Feedback                                  |
| • Daily living activities                       | Practice                                  |
| Environmental context                           | Transfer of learning                      |
| Impairment oriented and augmented interventions |   |
| Impairment interventions                        | Augmented intervention                    |
| Strength, power and endurance                   | Neuromuscular facilitations               |
| Flexibility, range of motion and mobility       | Proprioceptive neuromuscular facilitation |
| Coordination, agility and balance               | Neurodevelopmental approaches             |
| Gait and locomotion                             | Hands on mobilization techniques          |
| Aerobic capacity/endurance                      | Neuromuscular electrical stimulation      |
| Relaxation                                      | Sensory stimulation                       |
| Compensatory interventions                      |   |
| Substitution training                           |   |
| • Alternate movement strategies                 |   |
| • Less involved body segments                   |   |
| Assistive/supportive devices                    |   |
| Environmental modification                      |   |
| Alternative daily life activities modification  |   |

**Table 1.**  
*Physiotherapy and rehabilitation interventions [12].*

#### 4. Innovations in physiotherapy

Physiotherapy and rehabilitation are developed by using new approaches, activities and different new therapy models for different conditions, injuries, impairments and activity and participation limitations and assist people recover scope of mobility, and function as well as to maintain health condition in healthy individuals. It is important to think innovatively, and follow innovations to determine the best intervention for patient treatment. Innovations are mostly based on technological supported rehabilitation such as virtual reality games, rehabilitation robot or telerehabilitation [13].

#### 5. Evidence-based physiotherapy

Evidence-based physiotherapy is an important and increasing issue in rehabilitation and physiotherapy. Although it is increasingly used worldwide, it is important to spread over among clinicians and researchers. Evidence-based practice has a significant movement of basic importance in delivery of healthcare worldwide [14].

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