

International Encyclopedia of Rehabilitation

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Multidisciplinary Aspects of Rehabilitation

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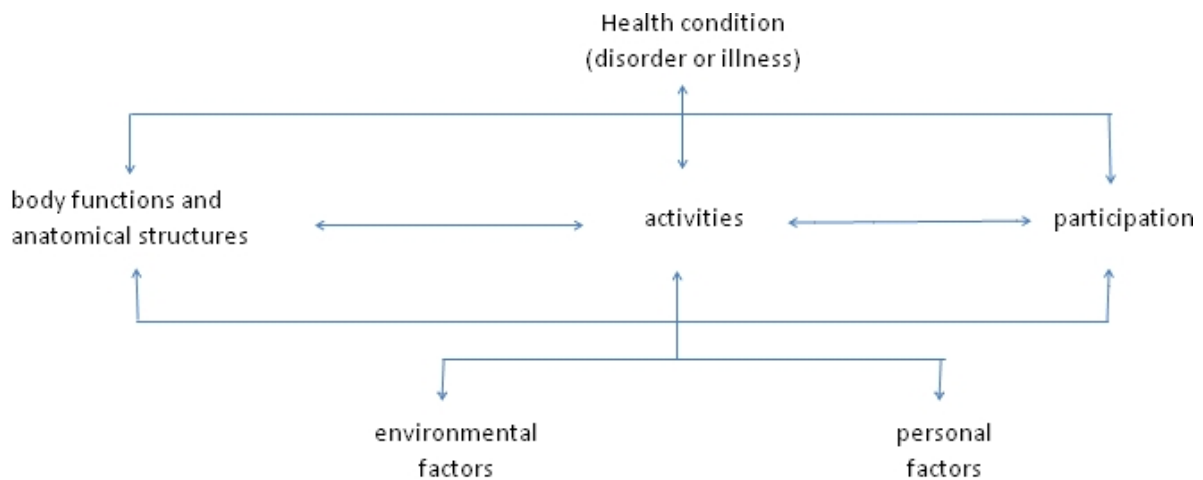
Any individual experiencing illness or injury generally recovers without sequelae.

However, the course of things may be entirely different due to the persistent symptoms, whether physical (persistent joint limitations, loss of strength, etc.), psychic (memory and concentration disorders, adynamia, etc.), or social (loss of personal integration, of work, etc.). These symptoms should be carefully considered and appropriate rehabilitation implemented in every situation for which it is expected to be useful, whether for physical, psychic or socio-vocational purposes.

It is thus recognized that the biomedical paradigm and its linear causality should be abandoned and that rehabilitation should resolutely shift towards the analysis of all the bio-psycho-social features of the patient. Pluri- and multidisciplinary rehabilitation medicine will essentially engage a significant number of diversified actors into the process. However, how original is this approach practiced by many medical disciplines such as healthcare networks when applied in rehabilitation? The goal of this article is to answer this question.

Rehabilitation medicine is a medical specialty that deals with human functioning, as opposed to medical specialties that deals with organs or systems (cardiology, neurology, orthopedic surgery). Its goal is to improve participation, which can be defined as the involvement of the patient in a real-life situation (familial, vocational, sportive, etc.). Following illness or injury, patients may experience restrictions in participation solely due to medical reasons. However, in a number of situations, other factors should be taken into consideration. For that reason, the model on which is increasingly based the organization of therapeutic interventions in rehabilitation medicine is the International Classification of Functioning, Disability, and Health (ICF) established by the World Health Organization in 2001 (WHO 2001) (cf. figure 1). Compared with the traditional biomedical model promoting the improvement of health through the treatment of body functions and/or anatomical structures, the bio-psycho-social model suggests that contextual factors that most likely cause restrictions of participation in patients (personal and environmental) should also be taken into consideration. Figure 1 fosters understanding about the different treatment goals in rehabilitation. This model includes not only body functions and anatomical structures, but also personal and environmental factors, which are most likely to be modified. During treatment, various actors, whether medical (different specialties) or paramedical (physical therapists, occupational therapists, nurses, psychologists, neuropsychologists, orthopedic technicians, socio-professional counselors, social workers, vocational counselors, case managers, etc.), will thus be invited to fulfill their function according to the patient's needs. Pluridisciplinarity and multidisciplinarity are thus

inherent in rehabilitation medicine when the bio-psycho-social model is followed. The process through which this concept is applied is defined below.



Adapted from ICF, International Classification of Functioning, Handicap, and Health. WHO Library. Geneva. 2001.

Indeed, if rehabilitation medicine is a medical specialty dealing with human functioning and concerned with all the bio-psycho-social features, its interventions would be progressively implemented according to the level of medical case complexity of the required care for a given case. In 'simple' and early medical situations for instance, functional rehabilitation would be initially performed in order to reduce the impairments resulting from illness, injury or surgery. Rehabilitation following anterior cruciate ligament surgery is an example of this approach. In the absence of complications, the treatment is performed by a physical therapist. The goal is to reintegrate the patient in a sport activity or restrictive occupation (participation). The role of rehabilitation medicine is thus essentially performed through the establishment and monitoring of rehabilitation protocols, in collaboration with care providers and surgeons. The assessment of rehabilitation outcomes through the development and control of various functional tests is another area of expertise of rehabilitation (Barat and Franchignoni 2004). In 'simple' cases, pluridisciplinarity is also implemented progressively, based on a traditional medical assessment. On the other hand, in initially 'complex' medical cases (patient with spinal injury or multiple traumas for instance), or when the case was initially deemed as 'simple' is far from the expected result (persistent pain, inability to resume former job), pluridisciplinarity and interdisciplinarity are immediate and functional rehabilitation is combined to an actual phase of rehabilitation. This phase will not only engage care providers, but also the other professional usually involved in the patient's reintegration in regular activities (participation). During this phase, functional capacity is measured (activities); the needs for home adaptation, transportation and workstation are assessed and controlled (environmental factors). Help is also provided to patients to get them to mobilize their psychological resources in order to overcome their new case (personal factors). In doing so, it is important to coordinate the action of each team, transform the traditional juxtaposition of professionals of various disciplines into a multidisciplinary team, define and control the treatment goals, as well as ensure consistency in the information that carers provide to patients. This requires the contribution of a coordinator, the role of whom is usually assigned to the physician specialized in rehabilitation medicine.

As soon as the patient is taken into charge, this coordination of the pluri- and interdisciplinary team should be based on the recommendation and performance of a specific assessment

allowing the scaling of impairments and disabilities in terms of severity. Traditionally, this practice is performed through the usual techniques of history taking and concepts of clinical examination: for instance, measurement of range of motion in which the reference point is 0 (Brühlmann and Michel 1997) or muscle strength assessed using the Daniels and Worthingham muscle testing scale (1973). Instrumental measurements are also traditionally used: isometric, isotonic or isokinetic strength measurement. Various batteries of functional tests, such as the Constant-Murley shoulder score (Constant and Murley 1987; Constant et al. 2008; Richards et al. 1994), hand dexterity tests (Konzelmann 2005), gait tests (Terrier et al. 2009), can be performed. They measure the capacity of patients to follow the progression of treatment in various basic activities. Contextual factors are assessed through history taken on admission.

Rehabilitation centers also increasingly use self-report questionnaires in order to increase their knowledge of the patient's perceptions, especially in relation with disability. These questionnaires are not only discriminative (quantifying impairments, disabilities and restrictions of participation), but also evaluative in nature, that is, they help in establishing treatment goals, monitoring the patient's progress and identifying changes being perceived as progress by the patient. These questionnaires can also foster dialogue with the patient through the sharing of information that is more complete and the promotion of interdisciplinarity by disseminating consistent concepts in the team. They are integrated in the patient's file and can be consulted by all carers. Ultimately—and this is not the least role of these questionnaires—they help to clarify the consistency of the clinical case by combining and comparing objective and subjective data (clinical examination, tests).

However, there is a plethora of questionnaires. The choice depends on both their applicability to the types of patients treated and on the quality of the measurement tool's construction, which are called psychometric properties. Without going into detail, a test or questionnaire should be reliable, validated, and consistent, allowing the measurement of clinically significant changes. In the case of the musculoskeletal system, the most structured and reviewed questionnaires should be mentioned, although not exhaustively: the Disabilities of Arm Shoulder and Hand (DASH) (Hudak et al. 1996; Beaton et al. 2001); the Oswestry low back pain questionnaire (Fairbank and Pynsent 2000) and the Quebec Back Pain Disability scale (Kopec et al. 1996); the Harris or Lequesne score for the hip (Harris 1969) (Lequesne et al. 1987); the Western Ontario and McMaster Universities Arthritis Index (WOMAC) for the knee (Bellamy et al. 1988; McConnell 2001), the Knee injury and Osteoarthritis Outcome Score (KOOS) (Roos et al. 1998), and the International Knee Documentation Committee (IKDC) Subjective Knee Form (Hefti et al. 1993); the Foot and Ankle Ability Measure (FAAM) (Martin et al. 2005). In neurological rehabilitation, the traditional neurological examination protocol for an injury such as a traumatic brain injury is performed using the following well-known and used scales: Barthel Index (Mahoney and Barthel 1965), Rankin scale (Rankin 1957; Huybrechts and Caro 2007), Functional Independence Measure (Brosseau et al. 1996; Kwon et al. 2004; Sangha et al. 2005), NIH stroke scale (Brott et al. 1989), Rivermead head injury follow-up questionnaire (Crawford et al. 1996), Kurtzke scale (Kurtzke 1983), American Spinal Injury Association (ASIA) Impairment Scale (El Masry et al. 1996), Spinal Cord Independence Measure (SCIM) (Itzkovitch et al.). A comprehensive analysis of the psychological abilities is also required (memory, reasoning, etc.). Such scales are also used in other fields of rehabilitation (cardiovascular, pulmonary, etc.). However, their discussion goes beyond the scope of this article.

Various scales or questionnaires are most often said to be specific, which means that they address a given clinical case in the musculoskeletal (arthritis, low back pain) or neurological system (traumatic brain injury, spinal cord injury, hemiplegia). In clinics, most frequently in research, they are sometimes associated with generic scales providing a better understanding of the impact of the injury on health, regardless of the type of diagnosis. Among the most used are the SF-36 (Ware and Sherbourne 1992; Mc Horney et al. 1994), and the EQ-5 D (Hurst et al. 1997). These scales are used to assess the patient's point of view about the psychological and social consequences of his/her illness or injury. However, their clinical applicability is often limited, for they are more complicated to administer and interpret. Finally, some other questionnaires are specifically designed to assess psychological symptoms, such as the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Sneath 1983), or to quantify and describe pain, as the simplest and most compatible way to do this in the current practice is with the visual analogue scale (VAS).

These various tools show multiple applications, both in clinical and research settings, and require the contribution of many actors. In our view, they have the benefit of placing the patient at the center of care management, promoting the access to the information of the health care team, and as a result, promoting pluri- and interdisciplinarity in the current practice in a tangible way. However, there are currently a number of questionnaires that are available in English only. Translation and cross-cultural adaptation efforts following specific standards should be promoted. Some studies are currently underway to correlate these various measurement tools with the ICF components (WHO 2001). Their goal is to classify and measure patients' functioning in order to provide a better adjustment of rehabilitation outcomes.

The use of these questionnaires in order to promote multidisciplinary interactions is limited. They are not always understood by patients who are not native speakers of the language in which they are written (immigrants for instance) or who only have a basic level of education (Burrus et al. 2009). On the other hand, many questionnaires should be administered in order to address the overall bio-psycho-social case complexity. This practice is certainly the most difficult to carry in clinical settings as time and resources are often limited. To detect complex cases and thus ensuring a better distribution of the available resources, it is important to perform both a comprehensive and early assessment on patient's admission. If some cases are complex because of the nature of the injury (spinal cord injury for instance), some others are complex because of the unfortunate combination of bio-psycho-social factors. Selander and his team are among the authors who reviewed this aspect in the most successful way (Selander et al. 2002). The chronic low back pain issue in industrialized countries is the best-known example. It is thus interesting to be able to use multidimensional screening tools that are easy to implement within the clinical practice. Among these are INTERMED (Huyse et al. 1999; Stiefel et al. 1999), a tool successfully used for this purpose in multiple medical cases, such as in low back pain (Stiefel et al. 1999; Scerri et al. 2006). This scale assessing bio-psycho-social case complexity has been widely used in this field since several years. It is a generic questionnaire of 20 items carried out in the form of a semi-standardized interview in order to review not only biological, psychological and social aspects, but also the patient's relationship with the health care system. INTERMED is administered by a nurse and only takes about twenty minutes to complete for each patient. At the conclusion of the interview, a prognosis of progression is suggested for each of the various aspects that were reviewed. The score ranges between 0 and 60 points, reaching a complexity threshold at 21. Administered on admission, this INTERMED score provides a quick 'picture' of the complexity of the patient's case and clarifies the aspects that are the most complex in a standardized manner. As

this is an interview, INTERMED is not sensitive to written language proficiency or educational issues (Burrus et al. 2009). It can be administered with the help of an interpreter. The results are then integrated to the patient's medical file and can be consulted and/or discussed during multidisciplinary workshops. INTERMED is also a good predictor of the future of the patients 1 or 2 years after their rehabilitation, especially in terms of return to work and excessive health care consumption.

Combined use of a few selected questionnaires, INTERMED interviews, various history takings and functional tests thus help in gathering all the items necessary to fulfill the bio-psycho-social vision of the patient as early as the first pluridisciplinary workshop. Goal setting with the patient and various members of the health care team then becomes easier. The dissemination of information, which is the foundation of teamwork, is also improved, since the information is integrated in the medical file and encompasses all the bio-psycho-social aspects.

Compared with traditional care networks, rehabilitation medicine with its pluri- and interdisciplinarity is original. The care management strategy is bio-psycho-social, which means that experts in this field are enabled to go beyond, if necessary, the traditional linear biomedical model. They are trained to practice, supervise and coordinate teamwork. Increased use of batteries of functional tests, validated self-questionnaires and screening tools for complexity of care improves information consistency and promotes transmission shared by all members of the team. If medical or health insurance assessment conditions may vary greatly from one country to another, most industrialized countries share a similar operating system for rehabilitation medicine.

For working age patients whose medical status is stabilized and who are left with persistent impairments or required to change occupation, there are still other more specific steps of rehabilitation/reintegration to accomplish that may vary greatly from one country to another, especially in terms of accessibility to occupational interventions. It is interesting to present the two important sides of this rehabilitation phase dedicated to preparing the terminal phase of reintegration: Functional Capacity Evaluation (FCE) and assessment in professional training workshop settings.

These two types of assessment are performed to complete the medical assessment and show once again the pluridisciplinary aspect of rehabilitation is reflected through the intervention of seasoned socio-professional counselors and care providers in assessment in the process of case management.

The *Académie européenne de médecine de réadaptation* (vocational rehabilitation) made an exhaustive analysis of the field of Functional Capacity Evaluation (FCE) (Oliveri 2006).

FCE comprises a battery of functional tests reproducing the activities frequently performed by manual workers. These tests were designed based on the American directory of occupations, the *Dictionary of Occupational Titles* (DOT). Operating conditions and methods used are standardized in order to enhance the reproducibility of the results. A FCE thus measures capacity as defined by the ICF.

The FCE method is used in our clinic as recommended by the Swiss Working Group for Rehabilitation, which is based on the IWS[®] (Isernhagen Work System). The overall method is kinetic-physical as it assesses the amount of physical effort deployed. The tester is the one

deciding when the effort should stop based on security principles, not the patient. Heart rate is one of the features that are controlled. Unspecified pain does not stand for a warning signal. Self-limitation is defined by default as the premature termination of the task by the subject himself. The level of motivation and consistency in performances are reported.

Experience and research have shown that the level of activity of a tested patient is not always proportional to the severity of his/her somatic injury. Indeed, the direct and proportional correlation between the severity of the somatic injury and the perceived intensity of pain and level of daily activity is hard to establish. This is due to the influence of contextual factors that the ICF calls personal and environmental factors. While pluridisciplinary medical assessments help in identifying and quantifying impairments, self-questionnaires and functional capacity assessments help to quantify the level of activity based on various approaches.

Thus, they are used during the rehabilitation phase. There is no gold standard in the field of functional capacity assessment. Therefore, the latter remains an expert advice in the sense of evidence-based medicine.

This feature of assessment may be surprising. In fact, under completion of a comprehensive medical examination, a specific diagnosis should be delivered as limitations and skills are self-revealed.

Actually, both medical practice and research made over the last two decades revoke the above-mentioned reasoning model. There is no proportional correlation between the severity of the patient's somatic injury, his or her pain intensity and level of activity or participation. This correlation varies greatly from one subject to another. In order to manage and understand the complexity of those correlations, a bio-psycho-social model of understanding illness should be used, including the weighting difficulties of the various parameters of such a model. In that sense, the International Classification of Functioning, Handicap, and Health proposed by the WHO in 2001 provides a conceptual framework, as well as helpful and complementary definitions for the field of assessment.

There is still a reference to how the method of assessing functional capacity in rehabilitation is not necessarily similar to the one promoted in insurance medicine.

There is no place in this chapter to describe the ICF in detail. The reader will find comments and descriptions in the book published by WHO. Specifically, in relation to activities and participation, they can be evaluated through a professional workshop observation (EAP) (Buchard 2009).

The EAP, conducted by a master socio-professional, is to assess, through observation of a subject performing predefined tasks, membership in a rehabilitation project and the quality and performance of its work. It helps to understand its capacity for autonomy, employability and participation in the project without prejudice or awareness of the factors leading to limitations.

The EAP is built on a psychophysical method in the sense that the subject decides to terminate the activity as a function of the experienced symptoms.

The results of an EAP should be reviewed by a doctor and put in perspective of other data. The methodology is simple, requiring the production of a series of tasks ranging from simple to complicated, normalized in time and workmanship.

This rehabilitation phase is the result of pluridisciplinary activities, involving namely physicians, psychologists, physical therapists, occupational therapists, speech therapists, socio-professional counselors, vocational counsellors, social workers, and insurance case managers.

Physicians are once again coordinating all the processes that will eventually lead, given a successful progress, to the recovery or improvement of loss of functions or to the elimination or reduction of impairments.

In order to ensure the smooth functioning of this process, not only should these interventions be planned, which is relatively simple, but also coordinated so that each action occurs in a timely manner to motivate the patient and make him aware of his or her newly recovered functions.

However, the result sometimes differs from what was expected and some patients will remain with significant functional limitations. In these times, one must know how to limit intervention and find a life environment where the patient can express himself or herself to the fullest despite sequelae.

Once this specific rehabilitation phase completed, patients should be reintegrated in their respective socio-cultural and vocational environments.

For patients of retiring age, this reintegration goal (previously mentioned) will focus on the return home and the achievement of the best possible quality of life. This socio-cultural reintegration task will be achieved by institutional social workers in close collaboration with the patient's family and social assistance networks of their entourage. After that, this phase depends upon the political, social, and cultural system in which the patient lives and the architectural barriers that should be reduced, if not eliminated.

When a patient reaches the age of active participation in the labour force, the problem is far more complex. During the specific rehabilitation phase, patients worked either on recovering lost functions, or on compensating their loss by various alternative approaches.

In the reintegration phase, the focus is on assessing whether patients can still perform the duties of their former employment or should be directed towards new alternatives due to their disabilities.

This implies, as mentioned above, the presence of socio-professional structures with the help of vocational counselors, psychologists, socio-professional counselors, and insurance case managers able to apprehend the situation and redirect patients towards occupations in which they will be able to achieve their full potential and set forth their acquired or recovered skills.

The achievement of this phase is thus directly related to the political and social system of the country in which the patient lives.

In the Swiss model (Fournier-Buchs and Gobelet 2006), the rehabilitation institution may undertake this first step under the supervision of the Federal Invalidity Insurance, regulating the entire vocational rehabilitation field. This insurance system is ultimately responsible for determining which compensation benefit the patient will receive: employment assistance, career reorientation, partial or full invalidity pension.

In order to do so, the Federal Invalidity Insurance deals with a medical service responsible for assessing the insured patient's file encompassing medical, psychological, and vocational opinions. A case manager is in charge of the file and an ad hoc committee will make a ruling based on the overall assessment results.

To assist in this assessment task, the Federal Invalidity Insurance will also use the assistance of the IVG occupational (COPAI) or medical (COMAI) observation centers. The Federal Invalidity Insurance or other private organizations are then recruited to find positions on the labor market that are adapted to the status of the concerned person. Some social systems differ and basically leave this task of reintegrating patients in their occupation to governmental agencies.

As such, the Swiss model differs from models use in neighbor countries. A book written under the supervision of C. Gobelet and F. Franchignoni (2006) compared how various vocational rehabilitation systems operate in a number of European countries. Political, cultural and social differences existing between some of these countries can be understood through the reading of those chapters.

Rehabilitation is thus obviously a slow and complex incremental process including phases of functional and specific rehabilitation, as well of reintegration that focuses on placing patients in the best possible position in society in the light of their impairments and disabilities.

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