

ICF Case Studies

Translating Interventions into Real-life Gains – a Rehab-Cycle Approach

# Motivation And Rehabilitation

Case Study 17



## Imprint

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## Preface

Functioning is a central dimension in persons experiencing or likely to experience disability. Accordingly, concepts, classifications and measurements of functioning and health are key to clinical practice, research and teaching. Within this context, the approval of the **International Classification of Functioning, Disability and Health (ICF)** by the World Health Assembly in May 2001 is considered a landmark event.

To illustrate the use of the ICF in rehabilitation practice **Swiss Paraplegic Research (SPF)** together with **Swiss Paraplegic Centre (SPZ)**, one of Europe's leading (acute and rehabilitation) centres for paraplegia and spinal cord injury (SCI), performed a series of case studies. Conducting ICF-based case studies was one approach to address SPF's aim to contribute to optimal functioning, social integration, health and quality of life for persons with SCI through clinical and community-oriented research. The ICF-based case studies project began in October 2006.

In this project, persons of different age groups and gender and who are living with SCI of varying etiology and levels of severity, were accompanied during their rehabilitation at SPZ. The rehabilitation process is then described using the Rehab-Cycle® and the corresponding ICF-based documentation tools. Since persons with SCI are faced with a number of physical, psychological and social challenges, the case studies aimed to cover a broad spectrum of these challenges. With this in mind, each case study highlighted a specific theme of SCI rehabilitation.

A booklet is published for each case study conducted. To better understand the case studies described in these booklets, find below some basic information about SCI, the ICF, ICF Core Sets, the Rehab-Cycle® and the ICF-based documentation tools.

### Spinal Cord Injury (SCI)

Spinal cord injury (SCI) is an injury of the spinal cord that results in a temporary or permanent change in motor, sensory, or autonomic functions of the injured person's body. The spinal cord is divided into four sections which can be further subdivided into individual segments:

- 8 cervical segments (C1 to C8)
- 12 thoracic segments (T1 to T12)
- 5 lumbar segments (L1 to L5)
- 5 sacral segments (S1 to S5)

The damage of the spinal cord is called lesion. Important functions such as mobility (motor functions) or sensation (sensory functions) fail below the lesion. To help determine future rehabilitation and recovery needs, the extent of a SCI in terms of sensory and motor functions is described using the American Spinal Injury Association (ASIA) impairment scale.

### International Classification of Functioning, Disability and Health (ICF)

The ICF is a classification of the **World Health Organization (WHO)** based on the integrative bio-psycho-social model of functioning, disability and health. Functioning and disability reflect the human experience related to the body functions, body structures, and activities and participation. It is viewed in terms of its dynamic interaction with a health condition, personal and environmental factors.

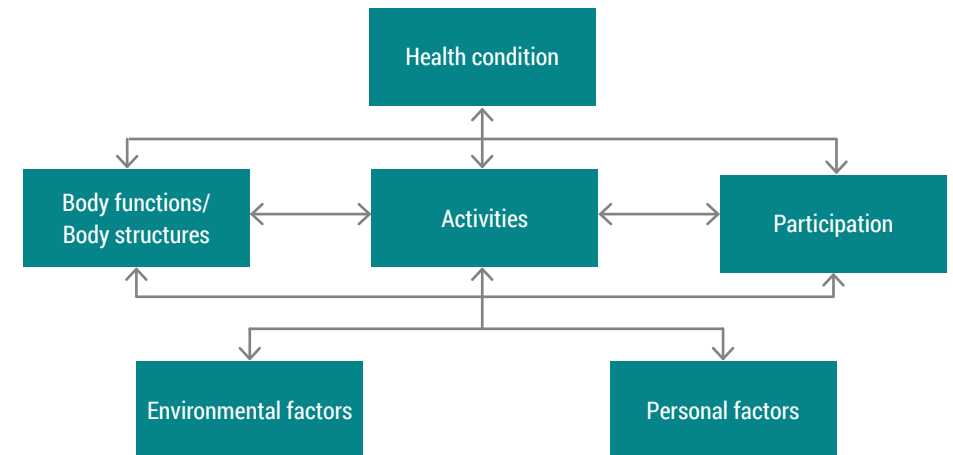


Figure 1: Bio-psycho-social model of functioning, disability and health

The ICF classification corresponds to the components of the model. Within each component, there is an exhaustive list of categories that serve as the units of the classification. ICF categories are denoted by unique alphanumeric codes and are hierarchically organised in chapter, second, third and fourth levels. When going from the chapter level to the fourth level, the category's definition becomes more detailed.

The classification also comprises so-called ICF qualifiers, which quantify the extent of a problem experienced by a person in a specific ICF category. Since environmental factors can also be facilitators, the ICF qualifier for facilitators are indicated with a plus sign.

Generic Scale of ICF Qualifiers	
0	NO problem (none, absent, negligible,...) 0-4%
1	MILD problem (slight, low,...) 5-24%
2	MODERATE problem (medium, fair,...) 25-49%
3	SEVERE problem (high, extreme,...) 50-95%
4	COMPLETE problem (total,...) 96-100%
8	not specified (used when there is insufficient information to quantify the extent of the problem)
9	not applicable (used to indicate when a category does not apply to a particular person)

## ICF Core Sets

To facilitate the use of the ICF in clinical practice, it is essential to have ICF-based tools that could be integrated into the existing processes. The first step toward providing ICF-based tools for clinical practice was the development of ICF Core Sets. ICF Core Sets are shortlists of ICF categories that are considered to be most relevant for describing persons with a specific health condition or in a particular setting. In a rehabilitation setting an ICF Core Set can help guide the rehabilitation management process. ICF Core Sets have been developed for several health conditions e.g. for spinal cord injury, health condition groups e.g. for neurological conditions and for various settings. ICF Core Sets can serve as a basis when using the **ICF-based documentation tools** that follow the **Rehab-Cycle®**.

## Rehab-Cycle® and Corresponding ICF-based Documentation Tools

The Rehab-Cycle® is one approach that reflects the structured processes inherent in multidisciplinary rehabilitation management. The Rehab-Cycle® consists of an assessment phase, assignment phase, intervention phase and evaluation phase. An ICF-based documentation tool has been developed to guide each of the Rehab-Cycle® phases: the ICF Assessment Sheet, the ICF Categorical Profile, ICF Intervention Table and ICF Evaluation Display. These tools can help a multidisciplinary rehabilitation team to better understand the role of functioning within the rehabilitation process and to more comprehensively describe a person's functioning - hence support ICF-based rehabilitation management.

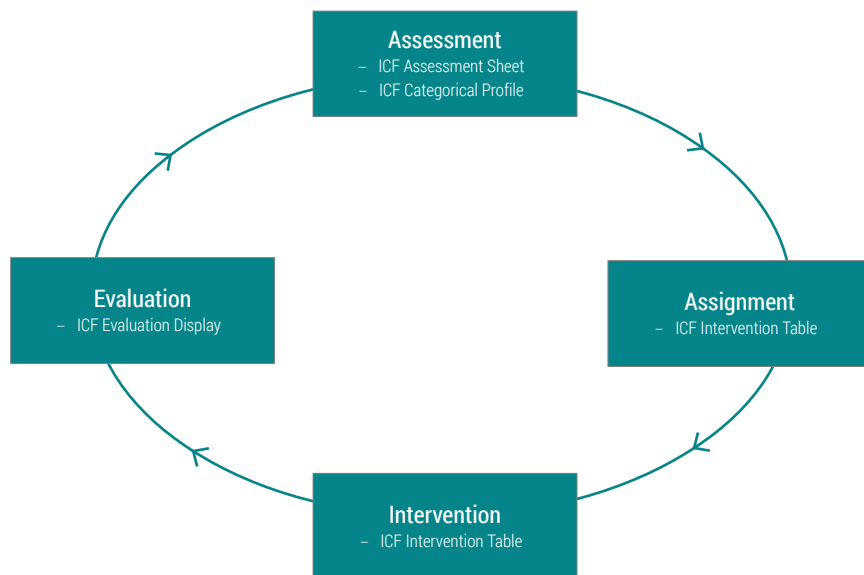


Figure 2: Rehab-Cycle®

You can find more detailed information about SCI, the ICF, ICF Core Sets, the Rehab-Cycle® and the ICF-based documentation tools on the website [www.icf-casestudies.org](http://www.icf-casestudies.org).

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## General Introduction



For many persons living with spinal cord injury (SCI), motivation is an important and at times challenging aspect of the rehabilitation process. In general, motivation is a complex, goal-oriented process that involves many factors. Although most everyone has some sort of understanding what motivation is, it is difficult to clearly define, measure and shape motivation.

According to Richard Gerrig's book *Psychology and Life*, **motivation is broadly defined as "the process of starting, directing, and maintaining physical and psychological activities; includes mechanisms involved in preferences for one activity over another and the vigour and**

**persistence of responses"**.<sup>1</sup> Another more recent definition offered by Cook and Artino addresses the role that goals play in the motivation process i.e. motivation drives the initiation and continuation of an activity in order to meet set goals.<sup>2</sup>

### Box 1 | Motivation

There are numerous theories and conceptualisations related to the topic of motivation;<sup>2,3</sup> outlining them all would go beyond the scope of this document. Nevertheless, to better understand motivation (of human beings), it would be important to consider some important elements, such as the possible sources of motivation.

In simple terms, possible sources of motivation can be ordered under the following concepts:<sup>1,4</sup>

- **Drive**: an internal state that is activated in response to basic physiological needs, specifically to reduce stress or deprivation and restore physiological balance
- **Incentives**: external factors that are perceived by the person as a reward or something profitable irrespective of physiological needs
- **Learning/Reinforcement**: conditioning of a particular behaviour as a result of repeated association between a stimuli in the environment (could be an incentive) and drive, and the person's response
- **Expectations**: a person's anticipation that an outcome will occur as a result of his or her behaviour

While these possible sources of motivation help to describe elements that influence specific behaviour, they all fall under two general forms of motivation:<sup>1,2,3,5,6</sup>

- **Intrinsic motivation**: the driving force of a specific behaviour is inherent to the person e.g. curiosity, personal interest, experience of enjoyment, desire for self-determination

- **Extrinsic motivation**: the driving force of a specific behaviour is external to a person, and is seen as leading to a reward or punishment e.g. financial gain, academic success, or avoidance of a negative consequence

Contemporary models of motivation introduce additional elements. For example, according to **attribution theory** a person's perception of internal control over the cause of an outcome and the likelihood that a cause will change can influence subsequent behaviour or actions. Another theory, the **social-cognitive theory**, suggests that a person's decision to initiate a task is influenced by the perception that he or she can perform the task effectively to achieve the goals set. Integrating elements of both the attribution and social-cognitive theories the **self-determination theory** also emphasises the concepts of autonomy (i.e. opportunity to control one's actions), competence (i.e. ability to master tasks and challenges posed by one's environment), and relatedness (i.e. sense of belonging or connectedness with others). Introduced by Richard Ryan and Edward Deci, the self-determination theory also suggests that an extrinsic motivational factor can become intrinsic through **internalisation, i.e. the process by which a person sub-consciously accepts a value or external factor as his or her own**, and that internalisation is fostered by self-determination and autonomy.<sup>2,3,5,7</sup>

Having a theoretical understanding of motivation can help lay the foundation for productive planning and undertaking of rehabilitation interventions.<sup>8</sup>



## Motivation and Rehabilitation

While the concepts and theories mentioned in box 1 promote a better understanding of motivation, integrating these elements into one approach on motivation is difficult.<sup>3</sup> **In the context of rehabilitation, the notion of motivation is seen as important and is embedded in the mind-set of rehabilitation professionals despite the lack of "clinical consensus" on the definition of motivation.**<sup>8,9</sup> Siegert and Taylor add that motivation is "difficult to measure objectively and prone to value judgement". Nevertheless, they see the value of integrating elements of motivation in rehabilitation as **there is a close link between motivation and goal-setting, an essential activity in rehabilitation practice.**<sup>8</sup>

The link between motivation (based on Ryan and Deci's self-determination theory) and goal-setting is illustrated by Siegert and Taylor in an example of a rehabilitation team and a person with paraplegia

*"There is also some scientific evidence for the merits of integrating elements of motivation in healthcare and rehabilitation practice..."*

There is also some scientific evidence for the merits of integrating elements of motivation in healthcare and rehabilitation practice, for example in improving compliance to medication and treatment.<sup>7,8,9</sup> In a study that examined the relationship between motivational patterns and exercise activity of 251 participants of a cardiac rehabilitation programme, Sweet and colleagues found that the study participants with higher and stable levels of motivation elements, including self-determination, were more likely to maintain their exercise levels throughout the 24-month rehabilitation programme.<sup>10</sup> In another study that explored the facilitating factors of return-to-work (RTW), Wilbanks and Ivankova conducted semi-structured interviews with four persons with SCI who were employed at the time of the study.

who are in the process of planning the person's community reintegration. Together they set goals in the self-determination theory concepts of autonomy, competence, and relatedness. The concept of autonomy is already addressed through the involvement of the person in the goal-setting process. Autonomy is also promoted by setting goals that reflect the active engagement of the person throughout the rehabilitation process. The goals related to competence involve improvements in basic aspects of functioning, such as bladder and bowel functions, mobility, self-care and other activities of daily living. As the person increasingly masters these basic aspects of functioning, goals striving for mastery in more challenging aspects of functioning, such as driving, can be set. Lastly, the goals that address the concept of relatedness focus on developing and strengthening social supports.<sup>8</sup>

The results indicated that intrinsic and extrinsic motivation were the most important factors in influencing RTW, highlighting that family and rehabilitation professionals were the most important extrinsic motivating factors.<sup>11</sup> The association between motivating factors and RTW is supported by a recent study by Farholm and colleagues who found an association between a self-determination theory-oriented vocational rehabilitation programme (predominately for persons with musculoskeletal conditions) and increased physical activity and RTW at six weeks post-rehabilitation.<sup>12</sup>

The results of these studies have implications for rehabilitation, specifically for planning and conducting rehabilitation interventions.

## Implications for Rehabilitation Interventions

Given their study results, Wilbanks and Ivankova concluded that rehabilitation professionals have the potential to positively influence RTW. As an extrinsic motivating factor, rehabilitation professionals generally serve as a major support for the person engaged in rehabilitation (patient) during the period of recovery and regaining of independence, often building relationships with patients as a result of extensive time spent with each other during rehabilitation.<sup>11</sup> Similarly, the treatment team in the Farholm et. al. study aimed to develop **health professional-patient relationships based on mutual trust and respect – reflecting the**

**"relatedness" element of the self-determination theory of motivation.**<sup>12</sup>

**The potential of rehabilitation professionals to positively influence rehabilitation outcome, such as RTW, goes beyond their role as a motivating factor. Recognising the influence of various other motivating factors could assist rehabilitation professionals to adapt and refine their intervention approach.** Rehabilitation professionals can integrate certain practices in their intervention approach that foster motivation.<sup>9,10</sup>

### Box 2 | Practices that Foster Motivation in Rehabilitation

Maclean and Pound<sup>9</sup> suggest that integrating the following practices in rehabilitation can foster motivation of persons engaged in rehabilitation:

- Set clear and modifiable goals, including long-term goals beyond the clinical/rehabilitation setting
- Ensure that the person feels that his or her ideas and opinions regarding the rehabilitation process count and are welcome
- Accept the diverse characteristics of the person
- Pursue alignment with the person's value system
- Interact with the person in a way that promotes the rehabilitation professional as "warm, approachable and competent"

- Minimise "mixed messages" among the rehabilitation team members
- Promote a non-moralising approach to rehabilitation i.e. that the person is not solely responsible for his or her recovery
- Avoid over-protective behaviours toward the person

Complementary to these practices Sweet and colleagues suggest collecting motivation-related information about the person throughout the rehabilitation process in order to identify the persons who may benefit from motivation-facilitating practices and strategies like "collaborative problem-solving, self-monitoring and enjoyment-enhancing strategies".<sup>10</sup>

This case of Jason illustrates the importance of motivation in the rehabilitation process, as well as the relationship between motivation and goal-setting, and the outcome of rehabilitation. It also

highlights the challenges the rehabilitation team may face with regard to motivation in planning and conducting rehabilitation interventions.

## Jason's story



Jason, 17 years old at the time, was on track to complete an apprenticeship as a technician. His life was suddenly interrupted after falling 50 metres into a quarry, suffering multiple injuries, including a spinal cord injury (SCI).

Before the accident, Jason had been living with his parents and a younger brother in a rural hill-side home. He had a large circle of friends, and socialised often. When not working, Jason played competitive handball enthusiastically, training four times a week and playing matches each weekend. He also performed quite well.

The accident at the quarry occurred three months prior to the start of this case study. Jason was admitted to a regional trauma centre and initially diagnosed with a torn nerve root at the first vertebrae of the lumbar spine (L1), and various fractures (sacrum, lower right leg, left foot), including a fracture to the lumbar vertebrae that resulted in an incomplete paraplegia with an American Spinal Injury Association (ASIA) Impairment Scale grade C below the level of L1. This meant that **Jason had motor functioning at the level of the hip/pelvis and below, with active movement and full**

**range of motion without gravity in more than half of the key muscles. The SCI also resulted in decreased sensitivity in his legs.** Furthermore, Jason incurred a pneumothorax, an abnormal collection of air or gas in the space separating the lung from the chest wall.<sup>13</sup>

After receiving emergency care and surgery to stabilise the spine at a hospital close to the accident site, Jason was transferred to the intensive care unit of a rehabilitation centre specialising in SCI. At the time of admission, Jason suffered from significant post-operative pain, and he required immobilisation to promote healing of the fractures. Consequently, he was prescribed bed-rest.

In the first month following admission to the rehabilitation centre, Jason received rehabilitation interventions that consisted of passive movement of the lower extremities and muscle power

training using weights for the upper extremities. Subsequently, he was gradually allowed to sit in a chair for short periods of time. The duration of sitting in the chair was limited due to pain in his legs and back as well as circulation problems. Nevertheless, Jason's neurological recovery showed improvement throughout the course of this initial phase of rehabilitation.

One month following the injury, Jason underwent a second surgery to further stabilise his spine. Following the surgery he was not allowed to bend nor turn his body beyond a certain degree in order for the stabilising spine implants to heal. Consequently, Jason was again prescribed bed-rest.

*“...waiting for improvement for Jason was associated with impairment and being dependent.”*

Two months after the second injury Jason began with standing training in load-relief shoes i.e. orthopaedic shoes that reduce weight bearing pressure on parts of the foot to promote faster healing after surgery, trauma or in the presence of a wound on the foot. However, he grew impatient with the restrictions to his movements, and craved to test his limits with “real exercises”. The

slow pace of these initial interventions was difficult for Jason to accept, especially since waiting for improvement for Jason was associated with impairment and being dependent. It wasn't until about ten weeks post-injury that Jason was able to sit in a wheelchair, initially for 45 minutes with gradually increasing duration day after day.

*“Increasingly, gains in Jason's functioning began to show in assessment results.”*

Increasingly, gains in Jason's functioning began to show in assessment results. For example, Jason's Spinal Cord Independence Measure (SCIM)<sup>14</sup> score increased from 40 (out of 100) at the start of rehabilitation to 65 two months later. The increased score reflected Jason's improvement in self-care (specifically dressing the upper half of the body), mobility (specifically in bed and pressure sore prevention), respiration, and sphincter bowel management (specifically for controlling defecation).

**Despite the improvements made in these areas, Jason often complained of fatigue during physical exercise. The therapist questioned whether Jason's report of fatigue was due to reduced exercise tolerance or rather to a lack of motivation to perform physical exercise.** Besides the possible lack of motivation, there may have been other drivers of the fatigue and the other problems Jason was experiencing, such as his emotional functioning. He showed signs of emotional instability and phases of depressive mood. To counter the development of depression Jason was prescribed an anti-depressant.

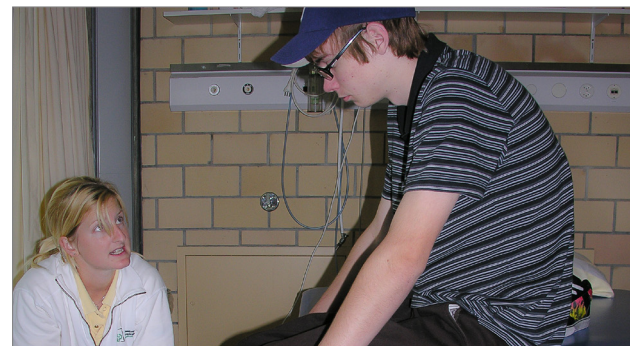


*“Besides the possible lack of motivation, there may have been other drivers of the ... problems Jason was experiencing...”*

Three months post-injury, Jason and his rehabilitation team initiated a Rehab-Cycle® that focused on increasing Jason's exercise tolerance, improving the full range of movement and load-bearing of Jason's lower extremities, and learning to walk again. The Rehab-Cycle® is a rehabilitation

management approach that encompasses an assessment phase, assignment phase, intervention phase, and evaluation phase. For each of these phases, a documentation tool based on the International Classification of Functioning, Disability and Health (ICF) has been developed.<sup>15,16</sup>

## Assessment



At the start of the Rehab-Cycle® i.e. the assessment phase, Jason's rehabilitation team conducted a comprehensive assessment that involved a battery of discipline-specific evaluations (health professional perspective) and an interview with Jason to capture his perspective about his functioning (patient perspective).

The results of the comprehensive assessment, including the relevant statements Jason made during the face-to-face interview, were documented using the **ICF Assessment Sheet**, an overview of the assessment results structured

according to the components of the International Classification of Functioning, Disability and Health (ICF).<sup>16</sup> See *“Table 1: ICF Assessment Sheet” on page 30 at the end of this booklet.*

### A Picture of Jason's Functioning According to ICF Components

**As a consequence of post-surgery immobilisation in the first few months prior to the start of the Rehab-Cycle®, Jason was unable to be physically active, and he became dependent on others for many aspects of mobility and self-care.** The immobilisation limited his ability to change body positions, transfer to and from the wheelchair, as well as care for parts of his lower body and dress independently. The rehabilitation team also found

that Jason did not look after his health properly; specifically he did not maintain hospital routines, especially those related to meals. However, Jason was able to care for parts of his upper body, perform toileting activities, and manoeuvre his wheelchair. Furthermore, he was able to stand between the parallel bars and take first steps with some assistance from the therapist.

**The limitations Jason experienced in self-care and mobility, including the inability to perform any sports, left him frustrated. Being able to perform sports was important to him.**

*“Sports – handball mostly – was my life up until the accident. I trained intensively, playing matches every week. I don’t care if I’m in a wheelchair; I have to play sports again.”*

Jason

Jason’s statements and the results of the rehabilitation team’s assessment related to playing sports, mobility and self-care were documented in the section of the ICF Assessment Sheet that reflected the ICF component of activities and participation. In addition to aspects of mobility, sports, and self-care, Jason’s ICF Assessment Sheet also identified vocational training as an aspect of activities and participation that was relevant to Jason’s rehabilitation.

With respect to the ICF components of body functions and structures, Jason stated that the sensory functions in his legs were unevenly distributed, with hypersensitivity in the right leg compared to the left leg. The physical therapist also observed that Jason was unable to flex his right foot and toes – an important action for walking. Impaired muscle power and endurance, joint mobility, exercise tolerance, control of movement and involuntary movement reactions, as well as sporadic pain in Jason’s legs, back and thorax were also revealed after conducting the battery of examinations, tests and observations. Moreover, he often felt tired and unenergetic. Jason attributed the fatigue and lack of energy to the persistent weight loss he was experiencing. He had lost 12 kilograms since his spinal cord injury.

**The fatigue Jason experienced, in addition to the slow progress made in regaining functioning, and the continuous comparisons Jason made regarding his functioning level at the time of assessment to his pre-injury functioning, contributed to Jason’s feeling of frustration. This in turn led him to disengage from activities that tested his limits.**

**Factors that may have impacted his functioning (or lack thereof) at the body level and in activities and participation include environmental and personal factors.**

Regarding the ICF component of environmental factors, Jason reported both barriers and facilitators. For example, a barrier he faced was his wheelchair inaccessible home. His parental home was located on a hillside and consisted of three stories. An example of a facilitating environmental factor was the support provided by his friends. His friends often and regularly visited him, and assisted him when and where possible. In contrast, Jason’s parents were less supportive. His father was at times overly demanding and his mother overprotective. He also felt “patronised” by some members of the rehabilitation team. Moreover, he was sensitive to what he perceived as attitudes of the general public; he sometimes felt observed and judged in public places.

*“I feel really supported by my friends...I think everybody helps where they can...I’m the youngest person in the clinic. I feel like I’m constantly being mothered, and this really bothers me...”*

Jason

With respect to the ICF component of personal factors, Jason seemed to be accepting of his situation while also hoping to be able to walk and perhaps play sports again. The prospect of regaining the ability to walk and play sports was seen as a personal motive (or a factor of intrinsic motivation). While these personal factors were

### Role of Motivation in Jason’s Rehabilitation

During the assessment phase, the aspect of motivation, as a body function (b1301) as well as a personal factor (personal motives), was assessed as a moderate problem. The psychologist also voiced concerns about Jason’s emotional functioning, given his introverted behaviour and the bouts of depressive mood Jason experienced prior to the start of the Rehab-Cycle®. However at that timepoint, the rehabilitation team expected that Jason’s psychological reaction to his situation and surroundings, i.e. depressive mood, ambivalence, frustration, and possible unrealistic desire to fully return to pre-injury status, would gradually evolve to a more active coping process. Although not explicit, Jason’s psychological reactions and emotional functioning were seen as related to motivation.

fundamentally facilitative, it initially seemed that they did not translate into concrete short-term personal goals for Jason, as evident by the discrepancy between Jason’s voiced intended goals and his actual performance during therapy sessions.

**Despite recognising motivation as an underlying aspect to consider in goal-setting, only the personal factor representation of motivation, i.e. as a personal motive, was associated with a rehabilitation goal and defined as a target for intervention in this Rehab-Cycle®. Rather than putting emphasis on motivation as a target for intervention, the rehabilitation team decided to set goals that focused on mobility, participation in sports, and health maintenance, whereby indirectly addressing motivational issues.**

## Goal-setting/Determination of Intervention Targets

Based on the rehabilitation team's assessment results and Jason's own statements about his functioning and overall situation, intervention targets and concrete goals to achieve during Jason's Rehab-Cycle® were identified.

In addition to the results of the initial comprehensive assessment, the goal-setting in Jason's Rehab-Cycle® took into account his improvement in functioning since the onset of his spinal cord injury (SCI). Consequently, five goals were set. The three cycle goals of 're-gaining walking ability', 'participation in sports', and 'health maintenance' were set as the most immediate goals to achieve. These specific cycle goals were the "stepping stones" toward achieving Jason's service-program goal of 'increased independence in daily living', i.e. the goal to achieve at the end of this Rehab-Cycle®, and ultimately Jason's global goal of 'community reintegration'.

These five goals were documented on Jason's **ICF Categorical Profile**, a visual depiction (bar graph) of his functioning status at the time of the initial assessment. In addition to the goals, the ICF Categorical Profile lists the corresponding categories of the International Classification of Functioning, Disability and Health (ICF)<sup>16</sup> that corresponded to the aspects of functioning identified during the initial assessment.

In order to compare Jason's functioning at the initial assessment with his functioning at the end of the Rehab-Cycle®, ICF qualifiers were used to indicate the goal value i.e. the rating that was intended to be reached at the end of the Rehab-Cycle®. The ICF categories (and personal factors) that corresponded to any of the goals set and were associated with a goal value were considered intervention targets. **Intervention targets**

were those categories intended to be addressed with specific interventions. For example, for cycle goal 2 'participation in sports' Jason and his rehabilitation team defined the following intervention targets:

- b28013 Pain in back
- b455 Exercise tolerance functions
- b710 Mobility of joint functions
- b715 Stability of joint functions
- b7303 Power of muscles in the lower half of the body
- b7304 Power of muscles of all limbs
- b7305 Power of muscles of the trunk
- b740 Muscle endurance functions
- b755 Involuntary movement reaction functions
- b7600 Control of simple voluntary movements
- d410 Changing basic body positions
- d420 Transferring oneself
- d455 Moving around

The intervention targets for the other goals can be seen on table 2 (see "Table 2: ICF Categorical Profile" on page 32 at the end of this booklet).

Many of the environmental factors that were assessed during the assessment phase of the Rehab-Cycle® may have served as a facilitator (e.g. e1201 Assistive products and technology for personal indoor and outdoor mobility and transportation; wheelchair) or as a barrier (e.g. e155 Design, construction and building products and technology of buildings for private use; inaccessible home) for Jason's global goal of 'community

reintegration'. However, the rehabilitation team decided not to address these as intervention targets in that particular Rehab-Cycle®.

Although the body function category of b1301 Motivation was not defined as an intervention target, the personal factor that was labelled 'personal motives' was. A possible factor of

intrinsic motivation, the intervention target of 'personal motives' was addressed by the psychologist during the intervention phase of the Rehab-Cycle®. Even though the other members of the rehabilitation team did not perform any interventions that directly addressed motivation, they still kept an eye on Jason's motivation and its influence on the interventions.

## Assignment and Intervention



Every intervention target that was determined during the assessment phase was assigned to corresponding member(s) of Jason's rehabilitation team during the assignment phase of the Rehab-Cycle®. The respective team member was then responsible for addressing the targets with specific interventions during the intervention phase.

Jason's intervention targets, the rehabilitation team member assigned to address these targets, the ICF qualifier values i.e. rating of Jason's functioning that were determined during the assessment phase (first value and goal value), and the interventions themselves were documented on the **ICF Intervention Table** created for Jason's

Rehab-Cycle®. The final qualifier rating (final value) given for each intervention target based on the re-assessment of Jason's post-intervention functioning was also documented on this table.

See "Table 3: ICF Intervention Table" on page 36 at the end of this booklet.

*"Jason also started to play wheelchair basketball. Despite recommendations from the therapists to refrain from playing wheelchair basketball due to the risk of further injury, Jason continued to play."*

Since the interventions predominately addressed cycle goal 1 're-gaining walking ability' and cycle goal 2 'participation in sports', the majority of the interventions were performed by either

Jason's physical therapist (PT) or sports therapist. Examples of interventions that addressed both cycle goals and were performed by the PT or sports therapist included strength and endurance

training, reaction training, and walking training indoors and outdoors. Moreover, in the beginning of the Rehab-Cycle® Jason began playing a number of sports that were deemed appropriate given his capabilities at that point in time, including archery, swimming, and table tennis. Jason also started to play wheelchair basketball. Despite recommendations from the therapists to refrain from playing wheelchair basketball due to the risk of further injury, Jason continued to play.

Also responsible for addressing cycle goals 1 and 2, the physician on the rehabilitation team prescribed medications to reduce the back pain Jason was experiencing.

To address the intervention targets associated with cycle goal 3 'health maintenance', Jason was supported by the whole rehabilitation team. However, the nurse(s) played a special role in helping Jason to care for his body (b810 Protective functions of the skin and d520 Caring for body parts), especially skincare; the nurse(s) provided instruction and regular feedback. Another intervention target associated with cycle goal 3 was b152 Emotional functions, which was addressed through regular counselling sessions with the psychologist.

### Possible Impact of Motivation on Intervention Outcomes

At the beginning of the intervention phase, some of the rehabilitation team members were surprised by what they perceived as Jason's lack of motivation to actively participate in his rehabilitation, considering that during the assessment phase Jason stated that he wanted to regain functioning and independence as quickly as possible. This perceived lack of motivation was due to Jason's indifferent or disinterested interactions with rehabilitation team members, manifested by passive listening and a lack of eye contact. Furthermore, when participating in group activities, such as swimming, he would quickly lose interest and required constant attention to complete the activity.

*"In working with Jason, I realised early on that I wasn't reaching him. He didn't really listen to me, always responding with "yeah, yeah", a typical teenager response. Motivating him was very difficult."*

Jason's PT

Aimed at improving Jason's motivation the PT tried to highlight Jason's accomplishments where possible and emphasised that the prognosis for improvement in his functioning is good. The PT often pointed out how well Jason was doing compared to other persons with SCI.

In addition, since Jason's passive listening, lack of eye contact, and disinterested responses during interactions with the rehabilitation team were perceived as signs of a lack of motivation, Jason's psychologist implemented techniques to help him improve his communication skills. Moreover, the psychologist provided psychological counselling to explore and strengthen the personal factor that the rehabilitation team defined as Jason's "personal motives".

*“The rehabilitation team felt that only intrinsic motivation... would have a lasting impact on his rehabilitation outcomes.”*

Beyond the interventions from the PT and the psychologist, no other interventions were provided to increase Jason's motivation to actively participate in his rehabilitation. The rehabilitation team felt that only intrinsic motivation, i.e. motivation that comes directly from Jason, would have a lasting impact on his rehabilitation outcomes. At the same time, Jason's rehabilitation team also felt that showing him patience and providing him support would indirectly contribute to increasing his motivation and help him to focus his energies on achieving the goals set.

About three weeks into the Rehab-Cycle®, the rehabilitation team noticed a dramatic shift in Jason's attitude toward physical exercise and training and in his health maintenance behaviour. Namely, he began training on his own. Consequently, this extra training led to considerable improvement in his physical functioning. For example, after being allowed to play wheelchair basketball again, Jason trained intensively, quickly reaching the same performance level as the other players. The improvement in Jason's functioning became visible during the re-evaluation of his functioning at the end of the Rehab-Cycle®.

## Evaluation



Jason's Rehab-Cycle® lasted three months, and at the end of the Rehab-Cycle® a re-evaluation of Jason's functioning took place. This was seven months after Jason incurred a spinal cord injury (SCI).

The results of this re-evaluation, or rather the final assessment of Jason's functioning, were documented using the **ICF Evaluation Display**. The ICF Evaluation Display is an extended version of Jason's ICF Categorical Profile that visually shows (as a bar graph) the ICF qualifier rating given to

each of his intervention targets during the final assessment along with the ratings from the initial assessment three months prior.

See “Table 4: ICF Evaluation Display” on page 38 at the end of this booklet.

*“At the end of the Rehab-Cycle®, Jason had achieved all of his cycle goals.”*

At the end of the Rehab-Cycle®, Jason had achieved all of his cycle goals. In turn, his service-program goal of increased independence in daily living was also achieved. This was evident in the final Spinal Cord Independence Measure (SCIM) score<sup>14</sup> of 90 (out of 100); this was an increase from a score 65 at admission. The higher Jason's

SCIM score was, the higher was his independence in the SCIM domains of self-care, respiration and sphincter management, and mobility.

See “Table 5: Spinal Cord Independence Measure (SCIM)” on page 40 at the end of this booklet.



### Cycle Goal 1: Re-gain Walking Ability

*“Jason was able to walk...”*

At the completion of the Rehab-Cycle®, cycle goal 1 're-gain walking ability' was achieved. Jason was able to walk – and even jog – short distances independently and on a range of surfaces and terrain without the use of assistive devices. Since he became unstable after walking long distances or for more than 30 minutes, he walked with crutches to lower the risk of falling.

Almost all of the intervention targets identified for cycle goal 1 were also achieved. Higher muscle power, better joint mobility and stability, improved

gait patterns and overall mobility contributed to re-gaining Jason's walking ability. He was also able to control simple movements, and the involuntary movement reactions that facilitated, for example body balance while walking, functioned well. Furthermore, many of the affected muscle groups were now able to perform active movement against gravity and resistance with a full range of motion – quite a contrast from the total paralysis measured in the same muscle groups at admission to the rehabilitation centre.

### Cycle Goal 2: Participation in Sports

*“The physician...encouraged Jason to do sports, but advised him not to do it competitively...”*

Jason's enthusiasm for sports gradually returned as the Rehab-Cycle® progressed. In the beginning of the Rehab-Cycle® Jason was unfocused in some of the group activities, such as swimming. Later he fought for the right to engage in other sports activities, such as wheelchair basketball, that seemed to suit him better, even if this also meant that he had to accept potential risk of additional injury.

Towards the end of the Rehab-Cycle®, Jason was able to pass a physical fitness test; consequently, he received a “sports pass” that enabled him to use the sporting facilities whenever he wished. The physician on his rehabilitation team encouraged Jason to do sports, but advised him not to do it competitively, as this may put him at risk of further injury, particularly to the spine.

### Cycle Goal 3: Health Maintenance

*“...Jason had achieved all the goals set for the intervention targets defined for cycle goal 3 'health maintenance'.”*

The final assessment revealed that Jason had achieved all the goals set for the intervention targets defined for cycle goal 3 'health maintenance'. Specifically, he gained weight and became independent in self-care activities, such as caring for body parts, skincare and dressing.

In Jason's case, health maintenance was not only about gaining weight or independent self-care, it was also about optimising emotional functioning. At the conclusion of the Rehab-Cycle® Jason's emotional functioning improved considerably; he was no longer taking the anti-depressants. His

renewed enthusiasm and participation in sports had a clear and direct impact on achieving the goal of improving Jason's emotional functioning.

Regarding the global goal of community reintegration, the rehabilitation team felt that Jason had good prospects for a successful community reintegration. The vocational rehabilitation counsellor on the rehabilitation team managed to negotiate a transitional plan with Jason's pre-injury employer that allowed him to return to his apprenticeship programme.

### Goal Achievement and Motivation

*“Initially, I tried to reason with him to motivate him. I explained I was on his side and there to support him, but could only do so if he let me. When that had no effect, I tried to leave him alone – if he didn't want to do an exercise, I would say: 'Fine, don't do it; you can leave the clinic in a wheelchair then'. At some point something inside of him clicked, and he realised that he was responsible for himself. I'm not certain what the real reasons were, but Jason changed his behaviour. I think he just grew up; he is now an adult.”*

Jason's PT

The rehabilitation team suggested that Jason's motivation was one of the factors that facilitated the achievement of all his cycle goals. They believed that had Jason remained unmotivated and uninvolved during his rehabilitation, the outcomes at the end of the Rehab-Cycle® would have not been as successful.

*“Sometimes it was really hard to motivate myself. The daily routines were tiring... Ultimately, what I wanted most was to be able to walk again.”*

Jason commenting on his attitude change

## Discussion



Among persons working in a rehabilitation setting there is a general understanding that motivation has an impact on the achievement of rehabilitation goals and ultimately on long-term outcome. However, evaluating a person's motivation and targeting interventions that address motivation is an inexact science.

This case study of Jason, a young man who sustained a spinal cord injury (SCI) after a 50-metre fall into a quarry and who completed a rehabilitation programme in a specialised SCI centre, illustrated that there are various factors, both internal and external, that seem to affect motivation and how motivation, in turn, influences the rehabilitation process and outcome.

The role of motivation in rehabilitation, as demonstrated in Jason's case, is highlighted in several studies.<sup>8,9,10,11,12</sup> Of particular relevance to Jason's case are the **approaches of motivation that Maclean and Pound** outlined based on a review of 50 rehabilitation-focused studies spanning a period of thirty years.<sup>9</sup> According to Maclean and Pound these studies are characterised by

the following three approaches of motivation in clinical settings:

- **Individualistic approach:** Motivation is a personality trait of the person receiving clinical interventions, that is unaffected nor explainable by social factors.
- **Social approach:** Motivation is affected by the extent the person and rehabilitation professional(s) share values in the therapeutic encounter, by the way clinicians communicate with and behave toward the person, and the person's social networks.
- **Combined individualistic-social approach:** Motivation is influenced by both internal traits of the person as well as by diverse social factors, include those mentioned in the description of the social model.

According to the individualistic approach, motivation in the context of rehabilitation is linked with expectations of participation in the rehabilitation process. A low level or lack of motivation, characterised in one study as involving “apathy, dependency, and the refusal to accept responsibility for recovery” is considered a personality defect. Behaviours stemming from this low level or lack of motivation is even labelled by some supporters of the individualistic model as “Abnormal Illness Behaviour (AIB)”. Interestingly, the same researchers who established the term AIB later acknowledged that AIB may be provoked if the person and the rehabilitation professional(s) do not share the same rehabilitation goals. In other words, some external factors – in this case rehabilitation professionals – may play a role in prompting negative behaviours. **The individualistic approach has been criticised by many as promoting a moralising attitude by**

**placing the sole responsibility of rehabilitation success on the person, i.e. this attitude may consequently manifest itself in moralising behaviours toward the person.<sup>9</sup>**

**Jason's case seems to reflect the combined individualistic-social approaches, exemplified by the change in Jason's involvement in the rehabilitation process.** After three weeks of what the rehabilitation team considered a lack of motivation, Jason became more actively involved in his rehabilitation, including doing extra physical exercises and intensifying the training of his wheelchair basketball skills. **While the reasons for Jason's shift in behaviour were unclear, the rehabilitation team suspected that the following factors may have played a role in increasing Jason's motivation and consequently the change in his behaviour:**

- **Psychological and emotional factors:** Jason gradually overcame the psychological shock caused by the trauma of incurring a SCI. This psychological shock not only impaired his emotional functioning, impacting on how he perceived his life situation post-SCI compared with his life before his SCI, it also stunted his motivation. The passing of time, as well as improvements in functioning and the prospects for regaining a “normal life” all contributed to increasing Jason's awareness and acceptance of his life situation post-SCI.
- **Social factors:** Before the injury, Jason had been an accomplished and disciplined athlete. After the injury and early in the rehabilitation process, Jason often felt “mothered” and that he was being treated like a child – this was demotivating for him. As rehabilitation progressed, the communication between Jason and his rehabilitation team improved, possibly due to the interventions of the psychologist and the patience and support provided by the other rehabilitation team members. Jason also benefited from the strong social support provided by his friends. In addition, the other patients in the rehabilitation centre, who improved in functioning and were discharged home, served as role models; they helped Jason to imagine a life beyond the rehabilitation centre.
- **Factors related to goal-setting:** Having to give up his goal of playing competitive sports the way he did prior to his injury produced a demotivating effect on his participation in rehabilitation. However, being able to play wheelchair basketball compensated for the inability to reach his pre-SCI goals in sports. This, in turn, helped Jason to accept his limitations and adapt accordingly. Subsequently, he redefined his personal goal from participating in competitive sports to maximising his walking ability. This showed that Jason had internalised the cycle goal of re-gaining walking ability, that he may have initially perceived as imposed by his rehabilitation team. Better communication between Jason and the rehabilitation team additionally facilitated the clarification of conflicting goals.

The fact that the rehabilitation team connected Jason's introversion and passive communication during interventions with a possible lack of motivation could be seen as reflective of the individualistic approach. However, the rehabilitation team did recognise their (social) role in facilitating Jason's motivation, consequently adjusting their communication approach toward Jason. The efforts of the rehabilitation team to improve their communications with Jason echoes the "relatedness" element (connectedness with others) of the self-determination theory of motivation,<sup>2,3,5,7</sup> specifically, the importance of developing trusting and mutually respectful health professional-patient relationships.<sup>12</sup>

**While Jason's case illustrated the importance of motivation in the rehabilitation process, it also showed the difficulty in clearly defining the scope of motivation, and that integrating the aspect of motivation in rehabilitation interventions is not clear-cut.** This was evident in the decision of the rehabilitation team to define only the personal factor of 'personal motives' as an intervention target instead of also including the body function category b1301 Motivation. In addition, beyond psychological counselling to address Jason's emotional functioning and communication issues, and 'personal motives', the rehabilitation team decided to address Jason's motivation issues predominately through indirect means, such as by showing patience and encouragement, rather than providing additional concrete interventions.

*"...there is value in integrating practices in rehabilitation that optimises a person's motivation..."*

The lessons learned from Jason's case has some implications for rehabilitation of persons with SCI – there is value in integrating practices in rehabilitation that optimises a person's motivation, especially practices that are person-centred,

foster shared goal-setting and decision-making, enhance clear communication between the person and rehabilitation team, and promote a mutual understanding of needs, processes and goals.<sup>8,9,10,12</sup>

## Annex

- Table 1: ICF Assessment Sheet
- Table 2: ICF Categorical Profile
- Table 3: ICF Intervention Table
- Table 4: ICF Evaluation Display
- Table 5: Spinal Cord Independence Measure (SCIM)
- Literature
- Questions

Table 1: ICF Assessment Sheet

ICF Assessment Sheet		
<p><b>Patient Perspective</b></p> <ul style="list-style-type: none"> <li>- Sensitivity, touch and muscle strength in my legs are not evenly distributed</li> <li>- I can feel everything in my left leg</li> <li>- The sensitivity in my right leg is there, but it is somehow strange, it is more sensitive than normal</li> <li>- At the moment, it is my right leg that is causing me problems</li> <li>- In order to walk, I need to lift up the toes of my right foot, but this not working at the moment. If this doesn't work, then I will have to wear a splint</li> <li>- I don't have as much energy as in the beginning. I think this is also because I have lost so much weight – 12 kilos since my injury</li> </ul>	<p><b>Body Functions &amp; Structures</b></p> <ul style="list-style-type: none"> <li>- Moderate problem in motivation (driving force to act)</li> <li>- Severely impaired emotional functions</li> <li>- Severe pain in the back</li> <li>- Moderate pain in lower limb</li> <li>- Severely impaired exercise tolerance functions</li> <li>- Mildly impaired weight maintenance functions</li> <li>- Mildly impaired mobility of joint functions</li> <li>- Moderately impaired stability of joint functions</li> <li>- Moderately reduced power of muscles in the lower half of the body</li> <li>- Slightly reduced power of all limbs</li> <li>- Slightly reduced power of the muscles of the trunk</li> <li>- Moderately impaired muscle endurance functions</li> <li>- Mildly impaired involuntary movement reaction functions</li> <li>- Moderately impaired control of simple voluntary movements</li> <li>- Severely impaired gait pattern functions</li> <li>- Mildly impaired protective functions of the skin</li> </ul>	<p><b>Activities &amp; Participation</b></p> <ul style="list-style-type: none"> <li>- I miss being able to move around</li> <li>- Then there is the problem with sleeping. I have to sleep on the back, but I'm used to sleeping on my stomach</li> <li>- Every day, I do a half an hour of walking between the parallel bars</li> <li>- I still have the hope of getting up on my feet again, and at least being able to walk short distances</li> <li>- I can't just quickly go onto the balcony; someone first has to fetch my wheelchair and then help me with transferring</li> <li>- Sports, handball mostly, was my life up until the accident. I trained intensively, playing matches every week</li> <li>- I miss exercising and doing sports; I still have a real problem with not being able to do what I did before</li> <li>- I don't care if I am in a wheelchair, I definitely want to do sports again</li> </ul>
<p><b>Health Professional Perspective</b></p>	<ul style="list-style-type: none"> <li>- Severe difficulty in changing basic body positions</li> <li>- Moderate difficulty in transferring himself</li> <li>- Severe difficulty in walking</li> <li>- Complete difficulty in moving around and moving around in different locations</li> <li>- Moderate difficulty in caring for body parts</li> <li>- Moderate difficulty in dressing</li> <li>- Severe difficulty in looking after his health</li> <li>- Moderate limitations in continuing his vocational training</li> <li>- Complete limitations in doing sports</li> </ul>	<p><b>Personal Factors</b></p> <ul style="list-style-type: none"> <li>- 17 year-old male</li> <li>- Living with family</li> <li>- Was completing an apprenticeship to become a Technician before the accident</li> <li>- Sometimes feels patronised by health professionals</li> <li>- Coping well in general</li> <li>- Is optimistic in a practical sense</li> <li>- Seems to accept his situation</li> <li>- Personal motives (goals) need to be clarified, but doing this seems to be problematic</li> </ul>
	<p><b>Environmental Factors</b></p> <ul style="list-style-type: none"> <li>- Pain medication and anti-depressant are extremely helpful</li> <li>- Home is not wheelchair accessible, since it consists of three stories</li> <li>- Friends are totally supportive</li> <li>- Parents are not always helpful – father is sometimes demanding and mother is sometimes overprotective</li> <li>- Attitude of strangers sometimes bothers him</li> <li>- Decision on insurance coverage is pending</li> </ul>	

Table 2: ICF Categorical Profile

ICF Categorical Profile									
Assessment									
ICF categories	ICF Qualifier	problem				Goal Relation	Goal value		
		0	1	2	3			4	
Global Goal: Community Reintegration									0
Service-Program Goal: Independence in daily routine									0
Cycle Goal 1: Re-gaining walking ability									1
Cycle Goal 2: Participation in sports									2
Cycle Goal 3: Health maintenance									0
<b>b1301</b>	Motivation								
<b>b134</b>	Sleep functions								
<b>b152</b>	Emotional functions								3
<b>b265</b>	Touch functions								-
<b>b270</b>	Sensory functions related to temperature and other stimuli								-
<b>b28013</b>	Pain in back								1,2
<b>b28015</b>	Pain in lower limb								1
<b>b455</b>	Exercise tolerance functions								1,2
<b>b525</b>	Defecation functions								-
<b>b530</b>	Weight maintenance functions								3
<b>b620</b>	Urination functions								-
<b>b710</b>	Mobility of joint functions								1,2
<b>b715</b>	Stability of joint functions								1,2
<b>b7303</b>	Power of muscles in lower half of the body								1,2
<b>b7304</b>	Power of muscles of all limbs								1,2
<b>b7305</b>	Power of muscles of the trunk								1,2
<b>b735</b>	Muscle tone functions								-
<b>b740</b>	Muscle endurance functions								1,2
<b>b750</b>	Muscle reflex functions								-
<b>b755</b>	Involuntary movement reaction functions								1,2
<b>b7600</b>	Control of simple voluntary movements								1,2
<b>b770</b>	Gait pattern functions								1
<b>b810</b>	Protective functions of the skin								3
<b>d410</b>	Changing basic body positions								1,2
<b>d420</b>	Transferring oneself								1,2
<b>d435</b>	Moving objects with lower extremities								-
<b>d450</b>	Walking								1
<b>d455</b>	Moving around								2
<b>d460</b>	Moving around in different locations								1
<b>d465</b>	Moving around using equipment								-
<b>d510</b>	Washing oneself								-
<b>d520</b>	Caring for body parts								3
<b>d530</b>	Toileting								-
<b>d540</b>	Dressing								SP
<b>d570</b>	Looking after one's health								3
<b>d825</b>	Vocational training								G



**Table 2: ICF Categorical Profile continued**

d9201	Sports	ICF categories										Goal Relation	Goal value
		facilitator					barrier						
		4+	3+	2+	1+	0	1	2	3	4			
e1101	Drugs (Products or substances for personal consumption)												
e1201	Assistive products—for personal...mobility ...												
e155	Design, construction...of buildings for private use												
e310	Immediate family												
e320	Friends												
e355	Health professionals												
e445	Individual attitudes of strangers												
e580	Health services, systems and policies												
pf	Personal motives												
pf	Coping strategies												
pf	Acceptance of situation												
pf	Knowledge of spinal cord injury												

**Table 2: ICF Categorical Profile; ICF Qualifier: rate the extent of problems (0 = no problem to 4 = complete problem) in the components of body functions (b), body structures (s), activities and participation (d) and the extent of positive (+) or negative impact of environmental (e) and personal factors (pf); Goal Relation: 1,2,3 refer to Cycle goal 1,2,3; SP refers to Service-Program Goal; G refers to the Global Goal. Goal value refers to the ICF qualifier to achieve after an intervention.**

Table 3: ICF Intervention Table

ICF Intervention Table											
	Intervention target	Intervention	Doc	Nurse	PT	Psych	Others	First value	Goal value	Final value	
Body functions/structures	b152	Emotional functions				x	x	3	0	0	
	b28013	Pain in back		x				3	1	2	
	b28015	Pain in lower limb		x				2	1	1	
	b455	Exercise tolerance functions	Endurance training within a walking group		x			3	1	0	
	b530	Weight maintenance functions	Nutrition counselling				x	1	0	0	
	b710	Mobility of joint functions	Passive and active movement of hip and knees		x			1	0	0	
	b715	Stability of joint functions	Training on mats and at parallel bars		x			2	1	0	
	b7303	Power of muscles in lower half of the body	Strength training, Standing training, Swim training		x			2	1	0	
	b7304	Power of muscles of all limbs	Strength training, Various sports activities		x			1	0	0	
	b7305	Power of muscles of the trunk	Strength training, Archery		x			1	0	0	
	b740	Muscle endurance functions	Muscle endurance training		x			2	1	1	
	b755	Involuntary movement reaction functions	Reaction training, Therapeutic games		x			1	0	0	
	b7600	Control of simple voluntary movements	Repetitive physical exercise		x			2	0	0	
	b770	Gait pattern functions	Indoor and outdoor walking training, Gait training		x			3	1	0	
	b810	Protective functions of the skin	Skincare		x			1	0	0	
	Activities / Participation	d410	Changing basic body positions				x		3	0	0
		d420	Transferring oneself			x			2	0	0
d450		Walking	Indoor and outdoor walking training, Gait training at parallel bars, Vojta therapy		x			3	1	1	
d455		Moving around	Indoor and outdoor walking training		x			4	2	0	
d460		Moving around in different locations	Indoor and outdoor walking training		x			4	2	0	
d520		Caring for body parts	Instruction, consultation, and regular feedback		x			2	0	0	
d540		Dressing	Regular feedback		x	x		2	0	0	
d570		Looking after one's health	Repetitive training on optimal dressing		x			2	0	0	
d825		Vocational training	Self-training plan for circuit training, stretching, and muscle strengthening exercises		x			3	0	0	
d9201		Sports	Contact with former employer (of apprenticeship)				x	2	0	0	
			Archery, Swimming, Table tennis, Wheelchair basketball		x			4	2	0	
pf		Personal motives	Psychological counselling, Training of communication skills				x	2	2+	2+	

**Table 3:** ICF Intervention Table; Doc = Physician; PT: Physical Therapist or Sport Therapist; Psych: Psychologist. The first value refers to the rating at the initial assessment, the goal value refers to the rating that should be achieved after the intervention, and the final value refers to the rating at the second assessment or evaluation. ICF qualifiers were used to determine these ratings (0 = no problem to 4 = complete problem) in the intervention targets. For the intervention targets representing the personal factor, the plus sign next to the value indicates a facilitator. No environmental factor is shown on this table, since none of the environmental factors assessed were defined as an intervention target.

**Table 4: ICF Evaluation Display**

ICF Evaluation Display																		
Assessment						Evaluation												
Global Goal: Community Reintegration																		
Service-Program Goal: Independence in daily routine					0					Not evaluated yet								
Cycle Goal 1: Re-gaining walking ability					0													
Cycle Goal 2: Participation in sports					1													
Cycle Goal 3: Health maintenance					2													
					0													
ICF categories																		
	ICF Qualifier				Goal relation	Goal value	ICF Qualifier				Goal achievement							
	problem						problem											
	0	1	2	3	4		0	1	2	3	4							
b152 Emotional functions					3	0						+						
b28013 Pain in back					1,2	1						-						
b28015 Pain in lower limb					1	1						+						
b455 Exercise tolerance functions					1,2	1						+						
b630 Weight maintenance functions					3	0						+						
b710 Mobility of joint functions					1,2	0						+						
b715 Stability of joint functions					1,2	1						+						
b7303 Power of muscles in lower half of the body					1,2	1						+						
b7304 Power of muscles of all limbs					1,2	0						+						
b7305 Power of muscles of the trunk					1,2	0						+						
b740 Muscle endurance functions					1,2	1						+						
b755 Involuntary movement reaction functions					1,2	0						+						
b7600 Control of simple voluntary movements					1,2	0						+						
b770 Gait pattern functions					1	1						+						
b810 Protective functions of the skin					3	0						+						
d410 Changing basic body positions					1,2	0						+						
d420 Transferring oneself					1,2	0						+						
d450 Walking					1	1						+						
d455 Moving around					2	2						+						
d460 Moving around in different locations					1	2						+						
d520 Caring for body parts					3	0						+						
d540 Dressing					SP	0						+						
d570 Looking after one's health					3	0						+						
d825 Vocational training					G	0						+						
d9201 Sports					3	2						+						
	facilitator				barrier		facilitator				barrier							
	4+	3+	2+	1+	0	1	2	3	4	4+	3+	2+	1+	0	1	2	3	4
pf																		

Table 4: ICF Evaluation Display. ICF Qualifier: rate of the extent of problems (0=no problem to 4=complete problem) in the components of body functions (b), body structures (s), activities and participation (d) and the extent of positive (+) or negative impact of environmental (e) and personal factors (pf). Goal relation: 1, 2, 3 refer to cycle goal 1, 2, 3; SP refers to the Service-Program Goal; G refers to the Global Goal. Goal value refers to the ICF qualifiers to achieve after an intervention. Goal achievement: + means achieved, - means not achieved.

Table 5: Spinal Cord Independence Measure (SCIM)

Spinal Cord Independence Measure (SCIM)					
	3 August	29 August	29 September	3 November	
Self-Care	Feeding	3	3	3	3
	Bathing upper body	3	3	3	3
	Bathing lower body	1	3	3	3
	Dressing upper body	4	4	4	4
	Dressing lower body	0	4	4	4
	Grooming	3	3	3	3
	Sub-score	14	20	20	20
	Respiration and sphincter management	10	10	10	10
Respiration and sphincter management	Sphincter management-bladder	15	15	15	15
	Sphincter management-bowel	10	10	10	10
	Use of toilet	2	5	5	5
	Sub-score	37	40	40	40
	Mobility in room and toilet	6	6	6	6
Mobility indoors and outdoors	Motion in bed and sore prevention	1	2	2	2
	Transfers: bed-wheelchair	1	2	2	2
	Transfers: wheelchair-toilet-tub	1	2	2	2
	Sub-score	8	10	10	10
	Mobility indoors and outdoors	2	2	4	5
Mobility indoors and outdoors	Mobility for moderate distances	2	2	4	5
	Mobility outdoors	1	2	2	5
	Stair management	0	1	1	3
	Transfers: wheelchair-car	1	1	2	2
	Sub-score	6	8	13	20
<b>Total score</b>	<b>65</b>	<b>78</b>	<b>83</b>	<b>90</b>	

Table 5: Spinal Cord Independence Measure (SCIM) scores over the course of Jason's participation in rehabilitation.

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## Questions

- Q1. Describe the contemporary theories of motivation. *(Refer to page 9 for the answer.)*
- Q2. Explain how the concept of motivation can be integrated into rehabilitation practice based on the self-determination theory. *(Refer to page 10 for the answer.)*
- Q3. List the practices that Maclean and Pound have suggested for fostering motivation in rehabilitation. *(Refer to page 11 for the answer.)*
- Q4. What role did the concept of motivation play in Jason's rehabilitation? *(Refer to page 17 for the answer.)*
- Q5. Explain how Jason's case reflects the individualistic-social approach of motivation proposed by Maclean and Pound. *(Refer to page 27 for the answer.)*





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