Swiss Paraplegic Research

Swiss Paraplegic Centre

ICF Case Studies

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

Return-to-Work

Case Study 07

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Content

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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.

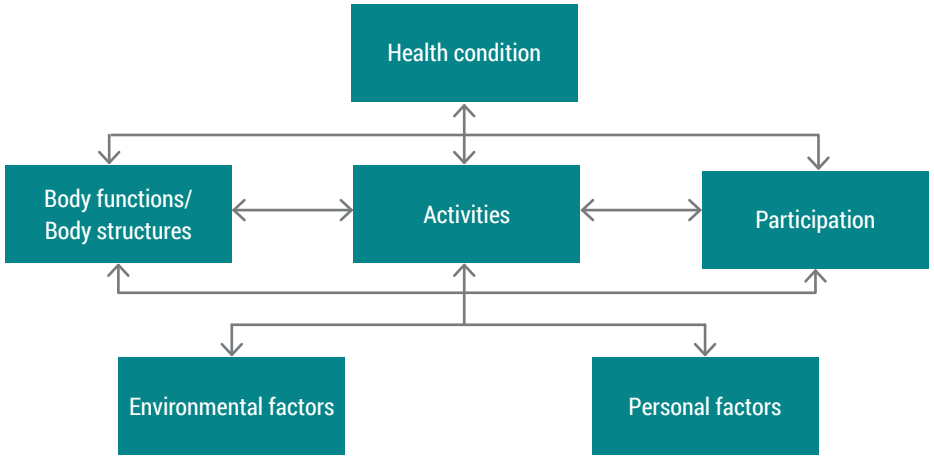

Figure 1: *Bio-psycho-social model of functioning, disability and health*

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 organized 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.

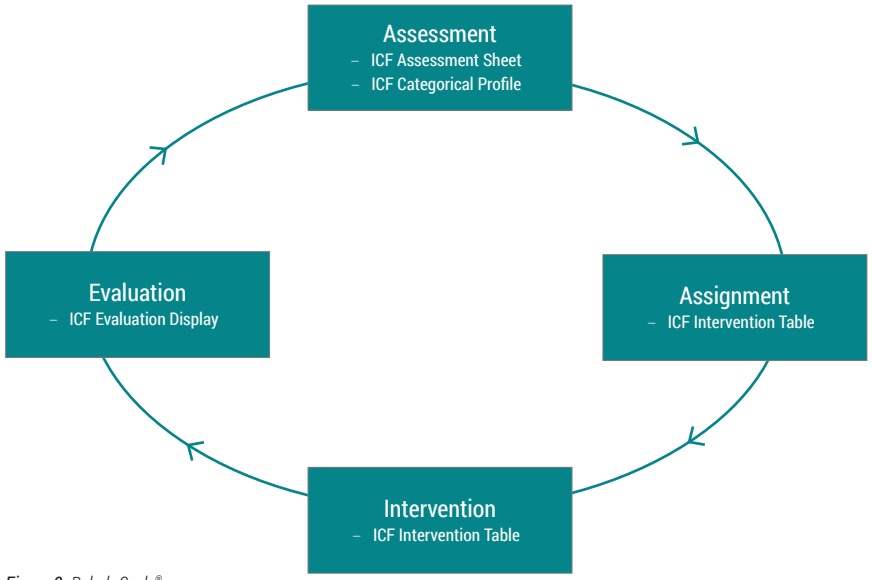

Figure 2: *Rehab-Cycle®*

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.

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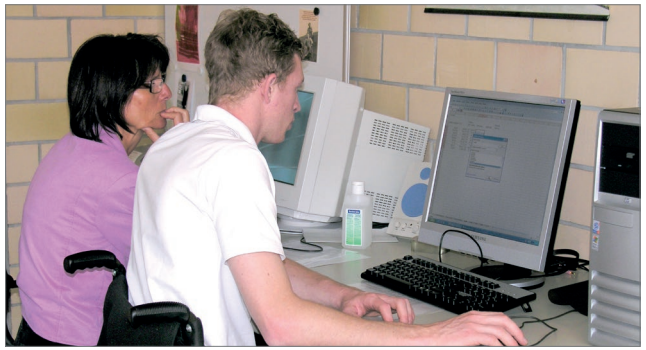
General Introduction



Rehabilitation following spinal cord injury (SCI) recognizes the importance of returning to work and the essential role employment plays in participation within a community.

Remunerative (paid) employment is a vital aspect of human functioning, a concept that reflects the dynamic interaction between the body functions, body structures, and activities and participation of an individual within a social and environmental context.[1,2,3,4] In the International Classification of Functioning, Disability and Health (ICF), work and employment make up an important element of the major life areas that include apprenticeships, acquiring, keeping and terminating a job, and both remunerative employment and non-paid/volunteer work.[5]

For persons living with the consequences of SCI, physical challenges are just one of many obstacles that they are confronted with as they work to rebuild their lives. Finding and securing employment presents a further challenge. In many countries, there is societal pressure to work; the expectation to work also applies to those with SCI. Among adults, one of the most important indicators for reintegration into the community is participation in productive work. Considering this, it would be important to identify the factors that facilitate work participation.[2,3,6,7]

Studies have shown that employment rates among persons with SCI varies, partly due to varying study methodologies. In general the employment rate among persons with SCI is relatively low, approximately 30-50%.[2,6,7]

"...the employment rate among persons with SCI is relatively low, approximately 30-50%."

Facilitators and Barriers to Work Participation

A number of facilitators and barriers to work participation among persons with SCI have been elaborated in several studies.[2,3,8,9,10,11,12,13] The **facilitating factors** that are associated with a higher rate of employment after SCI include:

- a higher level of education
- younger age at SCI onset
- being male and Caucasian
- longer time since SCI onset
- being employed at the time of SCI onset
- returning to pre-injury job
- less physically demanding job (both pre- and post-injury job)
- greater functional independence and mobility in the community e.g. independent driving
- access to assistive devices and possibility of job accommodation e.g. shorter working hours

Barriers to work participation that have been most frequently reported include severe injury level and health complications, problems with transportation, architectural barriers, perceived discrimination at the workplace, financial disincentives such as fear of losing benefits, lack of work experience, and insufficient education or training.[2,8,11]

In addition to identifying facilitators and barriers to work participation, one study found that persons with SCI need sufficient time to explore their employment potential and to undertake steps for acquiring sustainable work.[11] In this study, persons with SCI required on average 4.8 years to return to work and 6.3 years before engaging in full-time employment. This time interval from SCI onset to employment depends on the factors previously mentioned, especially on the possibility of returning to the pre-injury job.

"...persons with SCI need sufficient time to explore their employment potential and to undertake steps for acquiring sustainable work."

While returning to the pre-injury job has been found to be a key factor in successful work participation following an SCI, one study found that only 17% actually return to their pre-injury job.[11] This finding, however, does not have to be disheartening. Another study, despite a small sample size, found that those who had no option to return to the pre-injury job received more vocational training, took more time for vocational exploration and seemed more satisfied at work than those who quickly returned to the pre-injury job. The study team offered the explanation that the job with a new employer tended to be less physically demanding and more suitable in light of the person's functioning status.[6,14]

An understanding of the association between facilitators and barriers and a specific person's work participation can be a valuable tool for rehabilitation and vocational professionals in preparing this person for community integration, specifically in optimizing the person's vocational potential.[3,8,9,11,15] Ideally, vocational rehabilitation (VR), that includes a comprehensive assessment of functioning, should be available early in the rehabilitation of a person with SCI. The VR program offered should be person-oriented, allowing the person to steer the direction and focus of the VR activities.

Supported Employment – One Approach of Vocational Rehabilitation

One approach of VR is supported employment. **Supported employment** is one model that can help "enable those with disabilities to achieve sustainable, long-term employment and businesses to employ valuable workers."[16] Supported employment involves evaluating and profiling a person's skills, work experience and interests, vocational counselling, job-matching, on-the-job vocational interventions e.g. support through a job coach, possible workplace adaptations and accommodations, and long-term support even after the person has been on the job of a period of time. Supported employment advocates the utilization of the person's existing skills and further developing them on the job rather than undergoing extensive training before starting a job. Supported employment also emphasizes the importance of engaging the employer in the VR activities.[16,17,18]

The work of Ottomanelli and colleagues[18,19] has shown that supported employment is effective in improving employment outcomes (i.e. finding and keeping a paid job) of persons with SCI, even 2 years after entering the supported employment program. The results of their research also confirms the value of individualized, person-centred and evidence-based VR services that is conducted within a multi-disciplinary team (including vocational specialists) and in close partnership with employers in the community. Along with supported employment, there are other VR interventions that can be employed to enhance a person's vocational potential and possibly help increase satisfaction at the workplace.[2,17,18,19,20]

"Ideally, vocational rehabilitation, that includes a comprehensive assessment of functioning, should be available early in the rehabilitation of a person with SCI."

Box 1 | Targets of Vocational Rehabilitation Interventions

VR interventions provided to persons with SCI aim to optimize work participation, support them to secure employment and promote life satisfaction through work participation. Strategies for meeting these aims are multi-faceted, and address an interrelated range of targets.[2,7,8,17,20] This includes:

Identification of facilitators and barriers, and personal goals that may impact a person's work participation – This can be achieved through individual VR counselling that also involves setting a plan for the exploration of vocational possibilities, including education and training, and assessing realistic and feasible job options based on the person's skills, past experiences, health situation, facilitators and barriers, and personal goals.

Addressing personal care issues – Assistance can be provided by family, a personal assistant or job coach for example to help the person get ready for work and on time, or to manage toileting issues at the workplace.

Improvement of mobility – This includes ensuring adequate transportation to and from the workplace as well as independent personal mobility within the workplace e.g. wheelchair accessibility.

Modification of employer perceptions – Open and regular communication with employers can minimize possible discrimination, promote realistic expectations, facilitate the employer's receptiveness to possible workplace accommodations, and help ensure a "win-win situation" for both the employee with SCI and employer.

Exploration of necessary accommodations – Possible accommodations include physical accessibility at the workplace e.g. providing ramps, availability of elevators, office desk is wheelchair accessible, flexible work hours, availability and/or possibility to modify work tools and equipment, and providing on-the-job personal assistance.

Contact with peers – The possibility of exchanging ideas and experiences with peers who are in the workforce can facilitate the job search and maintenance of work participation.

Reduction of financial disincentives to working – Disincentives to working can be present when financial assistance is greater than the remuneration for employment. A disincentive could also simply be the perception that benefits e.g. disability benefits or funding for assistive devices and equipment or services would be taken away.

Identifying the factors that could influence a person's work participation, as indicated in box 1, is the first step in the VR process. This case study of Martin, a 26-year old man with SCI engaged in the VR process at an inpatient rehabilitation centre, will show the importance of integrating VR counselling and training early in the rehabilitative process.

Martin's Story

Martin had been a motorcycle enthusiast for most of his young adult life. Despite the risks, he had been both skillful and fortunate in avoiding accidents...until one mid-summer day when Martin was involved in a motorcycle collision. It was a devastating accident that he luckily survived.

Introducing Martin – Accident Survivor and Career-Seeker

This single crash left him with a serious traumatic spinal cord injury (SCI), classified as **ASIA A at T7**. This meant that Martin had **paraplegia with a complete lack of motor and sensory function below the 7th thoracic vertebrae**. On the same day of admission to the acute hospital, emergency surgery was performed to stabilise his spine and prevent further damage. Two days later, Martin was discharged to a rehabilitation centre specialising in SCI.

Prior to the accident, Martin had been content with his livelihood and vocational path, having recently completed an apprenticeship as a salesperson for home electronics. However, he soon realized that working as a salesman was not his calling. After finishing the apprenticeship Martin looked for work that was more physical, eventually settling into a **job as a mover**, an occupation that requires significant strength and endurance.

> *"I finished an apprenticeship to become a salesperson in consumer electronics, but I got bored with it. I needed something different, and found work as a mover. I really enjoyed this…working with different people, the flexibility of the job."*
>
> *Martin*

Outside of work, Martin spent his leisure time riding his motorcycle, playing golf and socializing with friends and family. Needless to say, life and livelihood after the injury presented some daunting challenges.

During the initial phase of Martin's rehabilitation that preceded the start of the current Rehab-Cycle®, the surgical team imposed limitations on Martin's movement, specifically he was not allowed to rotate nor bend his spine for the first three months following the surgery. These limitations constrained his activities, and consequently his overall rehabilitation progress. Shortly after admission to the rehabilitation centre, Martin's functioning was evaluated using the spinal cord independence measure (SCIM)[21] with a low score of 8 out of 100, meaning that Martin had major difficulties in self-care, respiration, toileting, and mobility.

See "Table 1: Spinal Cord Independence Measure (SCIM)" on page 26 at the end of this booklet.

Despite these limitations, Martin and his rehabilitation team **tackled the issue of his vocational future early on in the rehabilitation process**.

> *"Martin is young and energetic, and will need to work at some point. But he's going to have to find a new occupation. Before, he defined his job by its physical demands. Now we've got to look toward what is possible, what is realistic."*
>
> *Martin's vocational rehabilitation counsellor*

> *"I now have to find a new profession. I really see this as a great opportunity. Before the accident, I knew I wouldn't be working as a mover when I am 65 years old. So I'm going to jump at this opportunity and discover something new."*
>
> *Martin during one of his vocational rehabilitation counselling sessions*

Integrating vocational rehabilitation (VR) at the start of Martin's inpatient rehabilitation helped to motivate him to be active in the rehabilitation process and to look toward the future.

A Three-phase Model of VR

As an important element of the reintegration process, VR provides a person with SCI guidance and a supportive framework for exploring his or her vocational potential and ultimately for finding employment. In Martin's case a three-phase goal-oriented VR approach was utilised; this approach was developed specifically for the rehabilitation centre in which Martin was a patient. The VR approach comprises of:

The activation phase aims to build and strengthen a person's self-confidence and decision-making skills, taking advantage of both extrinsic motivation (i.e. doing something to get an external reward or avoid punishment) and intrinsic motivation (i.e. doing something because it is personally rewarding). This phase generally begins at about three weeks post-injury with regular VR counselling and an exploration of interests and wishes. Conscious efforts are made to motivate and empower the person to initiate and engage in activities that would lead to work participation, such as participating in a course that draws upon a person's interests e.g. language or computer course.

The clarification and decision phase can begin when the person is open to discussing his or her vocational future. It is divided into three parts: 1) analysis of the person's resources, knowledge and skills in different areas and capacity to learn, 2) defining of potential vocational direction and options, and 3) Transfer of knowledge into a plan for the integration phase that defines the career path that the person has chosen to take. The clarification and decision phase sets the stage for the integration phase.

The integration phase begins when a potential job is found or there is a vacancy in a desired educational program. In this phase the VR counsellor serves as a professional mediator, who not only considers the profile and the needs of the person with SCI, but also has an understanding of the demands of the labour market. By establishing a concrete plan with goals in this phase, the person with SCI, together with the VR counsellor, would be able to further elaborate on his or her career path with consideration of the clarifications and decisions made during the previous phase.

See "Table 2: A Three-phase Model of Vocational Rehabilitation (VR)" on page 28 at the end of this booklet.

Shortly after Martin's admission to the rehabilitation centre, a VR counsellor initiated VR based on the three-phase approach, slowly introducing Martin to the aims of VR. Although VR in Martin's case began one month post-injury, VR may start even earlier depending upon the person's situation, available time and resources.

For Martin, **the activation phase was aimed at strengthening Martin's self-confidence and building trust between Martin and the VR counsellor**. During this phase it was critical to maintain a balance between the responsibilities of the VR counsellor and that of Martin in the return-to-work process. It was essential that Martin kept a sense of self-responsibility and independence. The activation phase involved Martin's participation in a number of continuing education courses offered by the rehabilitation centre. Although Martin was determined to move forward with his VR, he was initially unsure about the direction to take. Martin was advised to take a general computer course. After some discussion Martin and his VR counsellor decided that, given Martin's limited typing skills, he should first take a typing course. The process of **deciding on the specific courses helped to enhance Martin's decision-making skills**.

One challenge that Martin faced in participating in the typing course was his difficulty in maintaining a sitting position for an extended length of time. This resulted in a slow start. However, over the course of one month, he gradually and steadily improved. In the end, Martin was able, albeit slowly, to type with ten fingers.

Two months post-injury and after starting VR, the assessment phase of the current Rehab-Cycle® began.

Assessment

As with every Rehab-Cycle®, an assessment that took into account the perspectives of both Martin (the patient perspective) and his rehabilitation team (the health professional perspective) was performed. For a clearer picture, the assessment also took into consideration the outcome and experience of the vocational rehabilitation (VR) process in the prior weeks.

The results of the assessment were documented in the **ICF Assessment Sheet**, a comprehensive overview of Martin's functioning state according to the ICF components of body functions and structures, activities and participation, environmental and personal factors. Martin's perceived problems and needs in these components were nearly all confirmed by the results of the assessment performed by the health professionals in Martin's rehabilitation team.

Many of these problems and needs are common among persons living with complete paraplegia. Given Martin's complete loss of motor and touch functions below the level of injury, he was confronted with bladder problems and difficulties with washing and dressing. At the time of assessment, Martin required the assistance of a nurse to wash and dress as well as with bladder management i.e. catheterization. In addition, specific medical issues needed to be addressed – a fungal skin infection, a urinary tract infection, poor peripheral circulation resulting in problems of blood pressure maintenance, and pain in his back. Moreover, Martin experienced difficulties with body balance, sitting without the supportive use of arms due to his loss of muscle power functions in the trunk, mobility using a wheelchair specifically in moving around obstacles. *See "Table 3: ICF Assessment Sheet" on page 30 at the end of this booklet.*

Interrelated Factors Relevant for Work Participation

With regard to Martin's perspective of his vocational future, he indicated that we would like to work again. However, he made it clear that he would prefer a job that did not require him to work on a computer the whole day. Martin's training as a salesperson and prior work experience as a mover were documented on the ICF Assessment Sheet as personal factors. Another VR-relevant personal factor was Martin's intention to clarify his vocational potential.

During the assessment phase, the rehabilitation team also acknowledged the importance of addressing work participation in Martin's rehabilitation. VR-relevant issues that were documented by the rehabilitation team focused on body functions, mobility, self-care, and in looking after one's health. These issues also impacted on Martin's level of independence. His need for assistance in executing certain activities of daily living presented some challenges to attaining both independence and employment. On the other hand, Martin's enthusiasm, positive outlook on life and optimistic attitude towards the challenges he faced proved to be facilitative of his efforts to return to work.

> *"I feel like I have a very positive attitude towards all of this. Maybe because I see this as temporary, like a disease that will last only a few years. I still believe that I'll walk again… maybe it will take five years, but my will is strong, my family's will as well. This really empowers me to reach beyond my limits and to try to learn as fast as possible."*
>
> *Martin*

The assessment results and the observations made during the assessment phase offered a foundation for deciding on the intervention targets and setting the rehabilitation goals, all of which were documented on the ICF Categorical Profile.

Goal-setting/Determination of Intervention Targets

Having a comprehensive overview of Martin's functioning based on the rehabilitation team's assessment and Martin's own statements about his situation helped the rehabilitation team to identify intervention targets and concrete goals to achieve during the Rehab-Cycle®, including those related to work.

Setting Realistic and Desired Goals

These intervention targets and goals were documented on the ICF Categorical Profile. **Intervention targets** are ICF categories that correspond to specific goals outlined in the **ICF Categorical Profile** and that are to be addressed with specific interventions. In Martin's case, examples of intervention targets include b7305 Power of muscles of the trunk, d465 Moving around using equipment and e1201 Assistive products and technology for personal indoor and outdoor mobility and transportation. These intervention targets corresponded to one of the specific goals that was set by Martin and his rehabilitation team i.e. improvement in mobility.

'Mobility' along with 'self-care' and 'vocational reintegration' were the three so-called **cycle goals** that were considered the most immediate goals to achieve. These specific cycle goals were the "stepping stones" toward achieving Martin's **service-program goal** of 'independence in daily living' and ultimately his **global goal** of 'independent living'.

See "Table 4: ICF Categorical Profile" on page 32 at the end of this booklet.

Clarification of Martin's Vocational Potential

Martin's global goal of being able to live independently also encompassed work participation. Consequently, cycle goal 3 on Martin's ICF Categorical Profile was defined as 'vocational reintegration'. This goal was set as a reflection of clear statements made by Martin that he intended to return to work as soon as possible. Martin believed that he could regain his autonomy when given enough time. In addition, Martin's rehabilitation team documented 'remunerative employment' on the ICF Assessment Sheet; this meant that the team felt that paid work was relevant for Martin's overall rehabilitation. Both Martin and his rehabilitation team considered the ultimate goal of returning to work to be realistic. Martin was not only engaged and enthusiastic, his rehabilitation team also felt that this would be within Martin's physical capacities after completion of rehabilitation.

The vocational rehabilitation (VR) counsellor who had been providing Martin with VR also contributed to the assessment. The activation phase of VR had begun a few weeks prior to the Rehab-Cycle® being reported in this case study. The activation phase of VR concluded with the final evaluation of Martin's functioning at the end of the Rehab-Cycle®. However, until then there was much work done to clarify Martin's vocational potential and optimize his functioning level through interventions.

Assignment and Intervention

Every intervention target that was determined during the assessment phase of the Rehab-Cycle® was addressed by specific interventions allocated to corresponding members of the rehabilitation team during the assignment phase of the Rehab-Cycle®.

A medical doctor, nurse, physical therapist, occupational therapist, psychologist, social worker and vocational rehabilitation (VR) counsellor were assigned to each of the intervention targets documented on Martin's ICF Categorical Profile. Each rehabilitation team member took the responsibility for choosing and providing appropriate interventions to address the specific intervention target(s) allocated to them during the intervention phase of the Rehab-Cycle®. To facilitate coordination of the interventions, and individual responsibilities and resources of the multidisciplinary rehabilitation team, an ICF Intervention Table was created. Martin's ICF Intervention Table shows all the intervention targets defined for Martin (as represented by ICF categories), the interventions themselves and the corresponding team member who was assigned to address each intervention target.

See "Table 5: ICF Intervention Table" on page 34 at the end of this booklet.

Aspiring toward Vocational Reintegration – The Interventions

To tackle Martin's aspiration to return to work (as reflected in his cycle goal 'vocational reintegration'), 'remunerative employment' was listed as a target for which the interventions of VR counselling and training were provided exclusively by the VR counsellor. These interventions corresponded to the activities executed during the activation phase of VR. At the beginning of the activation phase that started prior to the start of this Rehab-Cycle®, Martin took a typing course as a pre-requisite for participating in a computer course. Although Martin expressed initial misgivings, Martin and the VR counsellor agreed that he would receive computer training along with VR counselling. Martin's computer training began with a word processing course and ended one month later with a class on the basics of creating and using spreadsheets.

"...Martin and the VR counsellor agreed that he would receive computer training along with VR counselling."

Although VR counselling and training were the only interventions defined for addressing the intervention target of 'remunerative employment', and 'remunerative employment' was the only intervention target that was documented as corresponding to the cycle goal of 'vocational reintegration', this was not the only intervention target nor the only cycle goal that was relevant for successful return to work. The interventions related to the cycle goals of 'mobility' and 'self-care' were also very relevant to enhancing Martin's vocational potential. For instance, the various aspects of mobility – from the body functions perspective e.g. improvement of muscle power functions, to the perspective of activities and participation e.g. being able to move around independently using the wheelchair and driving motorised vehicles – would affect Martin's ability to get to and from work as well as impact his mobility at the workplace. To improve his mobility, specifically to increase the power of isolated muscles and muscle groups and the muscles in his trunk, the physical therapist guided Martin's daily physical training using an exercise circuit, while the occupational therapist provided instruction and training to increase Martin's outdoor mobility using different equipment like the wheelchair or the Swiss-Trac™, as well as counselling on vehicle adaptation and driver training.

The nurse assisted and instructed Martin on optimal self-care strategies with the aim of enabling him to regain independence in this area of functioning. Being able to adequately execute self-care activities e.g. washing, dressing and regulating defecation are essential for successful work participation. In addition, the psychologist met Martin every week to support him in coping with his spinal cord injury and in increasing his self-confidence.

"Being able to adequately execute self-care activities... are essential for successful work participation."

During the intervention phase of Martin's Rehab-Cycle®, the flexibility to adapt the interventions to changes in Martin's functioning proved to be essential. For example, due to increasing spasticity experienced by Martin, hippotherapy, a form of physical, occupational and speech therapy using the physiological effects of riding on a horse, the use of a sauna, and instructions on specific spasticity-reducing body positions were implemented.

The outcomes of the interventions and the change in Martin's functioning status were evaluated in the next phase of the Rehab-Cycle® – the evaluation phase.

Evaluation

Two months after the intervention phase started in this Rehab-Cycle®, an evaluation of Martin's progress in the designated intervention targets revealed that he had made significant progress in multiple areas.

The outcome of the evaluation of each intervention target including goal achievement is illustrated in table 6, the **ICF Evaluation Display**. The ICF Evaluation Display is a visual depiction of the change between Martin's functioning status before and after intervention. It is important to note however that this "before-after" picture of change does not necessarily signify that the change is due to the intervention itself, but only that there was some sort of change.

Small Steps Toward Vocational Reintegration

In Martin's case, it seemed that **vocational rehabilitation (VR) counselling was successful in building the trust** between Martin and his VR counsellor, as attested by Martin's willingness to complete the computer course (including word processing and creating spreadsheets) that the counsellor recommended despite his lack of enthusiasm for computer work. In addition, VR counselling and training was successful in **promoting Martin's initiative-taking and in strengthening his self-confidence and decision-making skills**. It was ultimately Martin's decision to continue attending the computer courses until completion. Moreover, in the computer courses he demonstrated his ability to work independently and effectively.

With regard to initiative-taking, Martin made his own suggestion for a course to take – he wanted to enrol in a course for English as a foreign language. The VR counsellor found this to be a very positive development given Martin's prior indecisiveness. It also demonstrated that the process of defining potential vocational direction and possible options was under way.

> *"Surprisingly Martin asked to learn English... This shows me that he has now become active...and this is the starting point for any clarification of vocational options."*
>
> *Martin's VR counsellor*

Accordingly, Martin's ICF Evaluation Display shows that the moderate goal he and his rehabilitation team had set for the intervention target of 'remunerative employment' was achieved, that is, an improvement from complete to severe problem. Considering this moderate achievement, there was room for further improvement in a subsequent Rehab-Cycle®. The VR counsellor decided to proceed with the clarification and decision phase of VR in a new Rehab-Cycle® to start after this Rehab-Cycle® has finished.

See "Table 6: ICF Evaluation Display" on page 36 at the end of this booklet.

Big Step Toward Independent Living

Regarding Martin's overall functioning, the rehabilitation team was pleased to find that he had made excellent progress. After four months of rehabilitation, he was completely independent in executing activities of daily living and self-care including bowel and bladder management. From the perspective of his rehabilitation team, Martin was ready to be discharged from the rehabilitation centre.

"After four months of rehabilitation, he was completely independent in executing activities of daily living and self-care..."

However, some challenges for Martin remained.

A number of impairments in body functions and structures persisted. While Martin's leg pain was under control, pain that he was experiencing at the base of the spine was increasing in intensity and was not yet manageable. Muscle spasticity continued to be a problem. Unfortunately, neither sauna therapy nor hippotherapy was able to relieve Martin of the spasticity. Another outstanding issue was recurring urinary tract infections, despite continuous medical treatment.

In spite of these **persistent health complications**, Martin succeeded in achieving all of his cycle goals, leaving him and his rehabilitation team optimistic about Martin's future.

"...Martin succeeded in achieving all of his cycle goals, leaving him and his rehabilitation team optimistic about Martin's future."

During the course of rehabilitation, Martin's spinal cord independence measure (SCIM) score[21] steadily increased from 8 to 70 out of 100. The higher the score, the more independent a person is. See table 1. Although the biggest improvement in independence occurred in self-care and sphincter management (bladder and bowel), Martin's SCIM score also showed advances in mobility.

The psychologist who supported Martin primarily in addressing the personal factor-related intervention targets also provided input for the final evaluation in the current Rehab-Cycle®.

> *"Martin is dealing quite well with his situation and really shows interest in his well-being and his future. He is sensitive and very open about his emotions – a very positive trait. Taking Martin's behaviour into account, I think he'll have no trouble achieving his goals."*
>
> *Martin's psychologist*

Martin's VR counsellor added:

> *"Initially Martin had difficulties with making decisions and commitments, and we really had to push him to participate in the computer course. He then did extremely well and thrived in the face of the challenges he faced."*

Discussion

"At the end of rehabilitation I really made some big gains – independence in using the wheelchair, better self-care and being able to position my body...I also hope to get a car and be able to drive. The most important thing for me is to be able to work once I'm discharged. The support I've received [from the vocational rehabilitation counsellor] has been a tremendous help. I'm now even thinking of asking my old boss at the moving company if there is work that I could do there."

Martin, reflecting on his progress and his future

For survivors of spinal cord injury (SCI), deciding on a vocational direction in light of the SCI and finding employment once a vocational decision has been made, present a set of challenges that can seem very daunting.

Persons with SCI who are able and willing to work can benefit greatly from the guidance and support offered by a vocational rehabilitation (VR) counsellor.[6,7,8,11,13,15,17] The VR counsellor can assist the person through his or her vocational exploration and decision-making, and ultimately reintegration into a desired profession.

This case study of Martin centred around the actions taken during the first phase of a three-phase model of VR – the activation phase. The activation phase aimed to establish trust between Martin and the VR counsellor (and others involved in the process), and provide the opportunity to encourage and support Martin in taking the first steps toward re-entering the work force. VR counselling and continuing education courses helped him to pinpoint his interests and to develop ideas that can be explored in the later phases of VR counselling.

As illustrated by this case study, **VR (counselling and training) is one important component of rehabilitation management in SCI**. Martin's case also showed that rehabilitation management and VR can benefit from the phase-by-phase Rehab-Cycle® approach, specifically its person- and resource-oriented assessment, targeted goal-setting, coordinated allocation of resources and interventions, and evidence-based evaluation of progress.

In Martin's case, VR counselling and training had already begun prior to the start of the present Rehab-Cycle® and continued until the end of the Rehab-Cycle®. Almost immediately after Martin's rehabilitation started, he began considering his future including the prospects of working. Martin recognized early on that as a young man of 26, he needed and wanted to work in something he enjoyed. For Martin, work participation was more than just earning money; it was an important part of his reintegration into life and society. This view of work is consistent with the findings indicating that the majority of the persons with SCI studied expressed the desire to work.[15]

"For Martin, work participation was more than just earning money; it was an important part of his reintegration into life and society."

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However, despite this view of work, Martin was unsure about the options available to him as a person living with SCI, and even less sure about the options with which he would feel comfortable. He acknowledged that it was no longer possible for him to do the physical work he previously enjoyed as a mover. Martin's acknowledgement that he will no longer be able to do such physical work can be seen as positive, considering that persons with SCI who had less physically-demanding occupations are more likely to find gainful employment.[6,7,10] However, Martin experienced difficulty deciding on the vocational direction and the next steps he should take.

VR counselling and training empowered Martin to explore different options and to get "hands-on" by acquiring basic training in using a computer. Participation in the computer course was only the means that the VR counsellor employed to help Martin build his self-confidence and strengthen his decision-making skills. It also inspired his initiative-taking; this was evident in Martin's decision to participate in an English language class. This VR approach seemed to have opened up the road to discovering new possibilities, and at the same time clarified areas of work that Martin did not want to pursue.

Besides the interventions to address Martin's specific goal of returning to work, other interventions were provided to tackle other important goals i.e. mobility and self-care – both also relevant to increasing vocational potential.[2,7,8,13,17,20] Greater independence in mobility, especially in transportation and driving has shown to be a positive predictor of work participation following a SCI.[2,8,13] Achievements in improving mobility and self-care proved to be contributory to Martin's later success in finding and keeping a job.

Annex

Table 1: Spinal Cord Independence Measure (SCIM)

Spinal Cord Independence Measure (SCIM)				
		4 June	19 September	12 October
Self-Care	Feeding	0	3	5
	Bathing	0	2	4
	Dressing	0	2	4
	Grooming	0	3	4
	Sub-score	0	10	17
Respiration and sphincter management	Respiration	8	10	10
	Sphincter management-bladder	0	10	10
	Sphincter management-bowel	0	5	10
	Use of toilet	0	4	4
	Sub-score	8	29	34
Mobility in room and toilet	Motion in bed and sore prevention	0	6	6
	Transfers: bed-wheelchair	0	1	2
	Transfers: wheelchair-toilet-tub	0	1	2
	Sub-score	0	8	10
Mobility indoors and outdoors	Mobility indoors	0	2	2
	Mobility for moderate distances	0	2	2
	Mobility outdoors	0	2	2
	Stair management	0	1	1
	Transfer: wheelchair-car	0	1	2
	Sub-score	0	8	9
Total score		8	55	70

Table 1: *Martin's Spinal Cord Independence Measure (SCIM) scores from the start of rehabilitation to the end of the first Rehab-Cycle®.*

Table 2: A Three-phase Model of Vocational Rehabilitation (VR)

A Three-phase Model of Vocational Rehabilitation (VR)				
1. Activation Phase	2. Clarification and Decision Phase			3. Integration Phase
1.1 **Build-up and strengthening of self-confidence and decision-making skills** – Motivational and empowerment activities e.g. participation in computer and/or language courses				
	2.1 **Analysis of knowledge and skills, existing and lost resources** – VR counselling – Various tests – Development of new skills that can compensate for lost resources			
		2.2 **Defining of potential vocational direction and options** – VR counselling to help choose a suitable profession in consideration of the results in 2.1		
			2.3 **Knowledge transfer** – VR counselling to establish a plan for the integration phase based on the outcomes in 2.1 und 2.2	
				3.1 **Preparation for Reintegration** – VR counselling to establish a concrete re-integration plan with clear goals and to provide support in finding employment or training – in consideration of the outcomes in 2.3

Table 2: *The elements and possible interventions of a three-phase approach to vocational rehabilitation (VR) counselling. This case study of Martin focused on the activation phase.*

Table 3: ICF Assessment Sheet

ICF Assessment Sheet

		Body Functions & Structures	Activities & Participation
Patient Perspective		– I have some pain when moving my legs – I can sense strong pressure – I have some sensations in my toes – I have spasticity, in particular when moving my body – I have a urinary tract infection – I cannot control my defecation – I have a fungal skin infection – I have problems with regulating my body temperature – My circulation is not stable – I need compression hosiery – I have problems with my body balance	– I cannot sit without using my arms to prop – Moving around using my wheelchair is getting better, but I still have problems overcoming obstacles – I am able to manage my bladder – I am not allowed to dress below my waist – I take care for my medication and treatment schedule – I used to go motorcycling – I want to do some kind of sport – I like meeting my friends (at least once a week) – I want to go home for the weekend – I want to work again but I cannot imagine working at the computer the whole day
Health Professional Perspective		– Proprioceptive functions – Touch functions – Blood vessel functions – at risk – Blood pressure functions – Defecation functions – Weight maintenance functions – Thermoregulation functions – Urination functions – Sexual functions – Mobility of joint functions – at risk – Power of isolated muscles (arms) – Power of muscles in the lower half of the body – Power of muscles of the trunk – Tone of the muscles in the legs – Involuntary movement reaction functions – Supportive functions of the arms – Structure of areas of the skin – at risk	– Changing basic body positions – Maintaining a sitting position – Transferring oneself – Walking – Swimming – Moving around in different locations – Moving around using equipment – Driving motorised vehicles – Washing oneself – Caring for the skin – Regulating urination – Regulating defecation – Dressing – Looking after one's health – Remunerative employment

Environmental Factors	Personal Factors
– Wheelchair is not an ideal fit – Uses sliding board for transfers – Uses compression hosiery – Car is not wheelchair-adapted – Flat is not wheelchair-adapted – Accident insurance is paying for health services – Parents support him – Friends support him – Health professionals – Strangers are friendly	– 26 years old – male – Sharing a flat with a friend – Trained as a salesperson, but had been working as a mover at the time of the accident – Is able to cope with the health condition – Self-confidence is a little low – Has difficulties dealing with emotions – Is determined to walk again – Is motivated to clarify vocational potential

Table 4: ICF Categorical Profile

ICF Categorical Profile												
Assessment												
Global Goal: Independent living												0
Service-Program-Goal: Independence in daily activities												1
Cycle goal 1: Mobility												1
Cycle goal 2: Self-care												1
Cycle goal 3: Vocational reintegration												3

ICF categories		ICF Qualifier									Goal Relation	Goal value
						problem						
						0	1	2	3	4		
b260	Proprioceptive functions										-	-
b265	Touch functions										-	-
b270	Sensory functions related to temperature and other stimuli										-	-
b280	Sensation of pain										1	0
b415	Blood vessel functions										SP	0
b420	Blood pressure functions										1	1
b4450	Functions of the thoracic respiratory muscles										-	-
b525	Defecation functions										-	-
b530	Weight maintenance functions										-	-
b550	Thermoregulation functions										-	-
b620	Urination function										-	-
b640	Sexual functions										-	-
b710	Mobility of joint functions										1	0
b7300	Power of isolated muscles and muscle groups										1	0
b7303	Power of muscles on lower half of the body										-	-
b7305	Power of muscles of the trunk										1	1
b7353	Tone of muscles of lower half of body										1	1
b750	Motor reflex functions										-	-
b755	Involuntary movement reaction functions										1	1
b7601	Control of complex voluntary movements										-	-
b7603	Supportive functions of arms										1	0
s810	Structure of areas of skin										SP	0
d410	Changing basic body positions										1	1
d4153	Maintaining a sitting position										1	1
d420	Transferring oneself										1	1
d450	Walking										-	-
d4554	Swimming										-	-
d460	Moving around in different locations										-	-
d465	Moving around using equipment										1	0
d4751	Driving motorized vehicles (adapted vehicle)										1	2
d510	Washing oneself										2	0
d5200	Caring for skin										2	2
d5300	Regulating urination										-	-
d5301	Regulating defecation										2	2
d540	Dressing										2	0
d570	Looking after one's health										2	1
d850	Remunerative employment										3	3
d920	Recreation and leisure										-	-
		facilitator					barrier					
		4+	3+	2+	1+	0	1	2	3	4		
e1101	Drugs										SP	2+
e1151	Assistive products...for personal use in daily living										1, 2	4+
e1201	Assistive products...for personal...mobility										1	3+
e155	Design, construction... of buildings for private use										SP	2
e2250	Temperature										-	-
e310	Immediate family										-	-
e320	Friends										-	-
e355	Health professionals										-	-
e360	Other health professionals (social workers)										-	-
e5800	Health services										-	-
pf	Coping with health condition										SP	3+
pf	Dealing with emotions										SP	1
pf	Self-confidence										SP	2

Table 4: 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 refers to Cycle goal 1, 2, 3; SP refers to Service-Program Goal; Goal value refers to the ICF qualifier to achieve after an intervention.

Table 5: ICF Intervention Table

ICF Intervention Table													
	Intervention target		Intervention	Doc	Nurse	PT	OT	Psych	SW	VR	First value	Goal value	Final value
Body function / structure	b280	Sensation of pain	Medication	x							1	0	1
			Manual therapy			x							
	b415	Blood vessel functions	Medication	x							0	0	0
			Compression hosiery		x								
	b420	Blood pressure functions	Compression hosiery		x						3	1	0
	b710	Mobility of joint functions – at risk	Passive movement, positioning			x					0	0	0
	b7300	Power of isolated muscles and muscle groups	Training with equipment			x					1	0	0
	b7305	Power of muscles of the trunk	Training with equipment			x					2	1	1
	b7353	Tone of muscles of lower half of body	Medication	x							2	1	2
			Body positioning / Hippotherapy		x								
	b755	Involuntary movement reaction functions	Training of postural control			x					3	1	1
	b7603	Supportive functions of arms	Prop-up training			x					1	0	0
	s810	Structure of areas of skin – at risk	Instruction for skin control		x						0	0	0
Activities / Participation	d410	Changing basic body positions	Training of changing body positions			x					3	1	0
	d4153	Maintaining a sitting position	Reaction training			x					3	1	1
	d420	Transferring oneself	Transfer training (from wheelchair to bed, wheelchair to bathtub)			x	x				2	1	1
	d465	Moving around using equipment	Wheelchair training			x					2	0	0
			Instruction of Swiss-trac™				x						
	d4751	Driving motorised vehicles (adapted vehicle)	Counselling on vehicle adaptation, driver training				x				4	2	1
	d510	Washing oneself	Assistance and instruction		x						1	0	0
	d5200	Caring for skin			x						4	2	0
	d5301	Regulating defecation			x						4	2	0
	d540	Dressing			x		x				3	0	0
	d570	Looking after one's health	Counselling / instruction		x						2	1	0
	d850	Remunerative employment	Vocational rehabilitation counselling and training							x	4	3	3
Environmental factors	e1101	Drugs	(intervention itself)	x							2+	2+	2+
	e1151	Assistive products... for personal use in daily living	Choice of assistive devices				x				3+	4+	3+
	e1201	Assistive products... for personal... mobility	Choice of wheelchair				x				2+	3+	3+
	e155	Design, construction... of buildings for private use	Analysis, counselling and arrangements for adaptations				x				4	2	2
			Coordination of payment for adaptations						x				
	pf	Coping with health condition	Psychological therapy					x			2+	3+	3+
	pf	Dealing with emotions						x			2	1	1
	pf	Self-confidence						x			2	2	2

Table 5: ICF Intervention Table; Doc = Physician; PT = Physical Therapist; OT = Occupational Therapist; Psych = Psychologist; SW = Social Worker; VR = Vocational Rehabilitation Counsellor. 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 actual rating at the second assessment or evaluation. ICF qualifiers were used to determine theses ratings (0 = no problem to 4 = complete problem) in the intervention targets. For the intervention targets representing the environmental factors, the plus sign next to value indicates a facilitator.

Table 6: ICF Evaluation Display

ICF Evaluation Display																						
		Assessment											Evaluation									
Global Goal: Independent living						■	■	■	■			0					Not evaluated yet					-
Service-Program-Goal: Independence in daily activities						■	■	■				1					Not evaluated yet					-
Cycle goal 1: Mobility						■	■	■				1					■	■				+
Cycle goal 2: Self-care						■	■	■				1					■					+
Cycle goal 3: Vocational reintegration						■	■	■	■	■		3					■	■	■	■		+
ICF categories		ICF Qualifier									Goal relation	Goal value	ICF Qualifier									Goal achieve-ment
						problem											problem					
						0	1	2	3	4							0	1	2	3	4	
b280	Sensation of pain					■	■				1	0					■	■				-
b415	Blood vessel functions					■					SP	0					■					+
b420	Blood pressure functions					■	■	■	■		1	1					■					+
b710	Mobility of joint functions					■					1	0					■					+
b7300	Power of isolated muscles and muscle groups					■	■				1	0					■					+
b7305	Power of muscles of the trunk					■	■	■			1	1					■	■				+
b7353	Tone of muscles of lower half of body					■	■	■			1	1					■	■	■			-
b755	Involuntary movement reaction functions					■	■	■	■		1	1					■	■				+
b7603	Supportive functions of arms					■	■				1	0					■					+
s810	Structure of areas of skin					■					SP	0					■					+
d410	Changing basic body positions					■	■	■	■		1	1					■					+
d4153	Maintaining a sitting position					■	■	■	■		1	1					■	■				+
d420	Transferring oneself					■	■	■			1	1					■	■				+
d465	Moving around using equipment					■	■	■			1	0					■					+
d4751	Driving motorized vehicles (adapted vehicle)					■	■	■	■	■	1	2					■	■				+
d510	Washing oneself					■	■				2	0					■					+
d5200	Caring for skin					■	■	■	■	■	2	2					■					+
d5301	Regulating defecation					■	■	■	■	■	2	2					■					+
d540	Dressing					■	■	■	■		2	0					■					+
d570	Looking after one's health					■	■	■			2	1					■					+
d850	Remunerative employment					■	■	■	■	■	3	3					■	■	■	■		+
		facilitator					barrier						facilitator					barrier				
		4+	3+	2+	1+	0	1	2	3	4			4+	3+	2+	1+	0	1	2	3	4	
e1101	Drugs			■	■	■					SP	2+			■	■	■					+
e1151	Assistive products…for personal use in daily living		■	■	■	■					1, 2	4+		■	■	■	■					-
e1201	Assistive products…for personal…mobility			■	■	■					1	3+		■	■	■	■					+
e155	Design, construction… of buildings for private use					■	■	■	■	■	SP	2					■	■	■			+
pf	Coping with health condition			■	■	■					SP	3+		■	■	■	■					+
pf	Dealing with emotions					■	■	■			SP	1					■	■				+
pf	Self-confidence					■	■	■			SP	2					■	■	■			+

Table 6: ICF Evaluation Display; 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 refers to Cycle goal 1, 2, 3; SP refers to Service-Program goal; Goal value refers to the ICF qualifier to achieve after an intervention; Goal achievement: + means achieved, - means not achieved.

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Questions

Q1. **What are the facilitating factors that are associated with a higher employment rate following an SCI?** *(Refer to page 9 for the answer.)*

Q2. **What are the main targets that can be addressed by interventions provided to persons with SCI engaged in vocational rehabilitation?** *(Refer to page 11 for the answer.)*

Q3. **Which of these vocational rehabilitation intervention targets were addressed in Martin's Rehab-Cycle®?** *(Refer to page 34 for the answer.)*

Q4. **Briefly explain the three-phase approach of vocational rehabilitation with reference to Martin's case**. *(Refer to page 13 for the answer.)*

Q5. **Give examples of work and employment-related major life areas found in the ICF?** *(Refer to page 8 for the answer.)*

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