Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

International Spinal Cord Injury Vocational Rehabilitation Basic Data Set

Gillean Hilton

Gillean.Hilton@austin.org.au

Austin Health

James Middleton

Northern Sydney Local Health District, NSW, Australia https://orcid.org/0000-0002-2777-8619

Reuben Escorpizo

Ellen Roels

University Medical Centre Groningen https://orcid.org/0000-0002-3944-5491

lisa ottomanelli

va.gov

Annelie Leiulfsrud

Conran Joseph

Stellenbosch University

Mohammad Ullah

La Trobe University https://orcid.org/0000-0002-0075-3796

Article

Keywords:

Posted Date: December 11th, 2025

DOI: https://doi.org/10.21203/rs.3.rs-8114000/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: There is no duality of interest

Abstract

Study design: International expert working group consensus.

Objective: To develop an International Spinal Cord Injury (SCI) Vocational Rehabilitation Basic Data Set presenting a standardised format for collection and reporting of a minimal amount of information on vocational rehabilitation in daily practice or research in SCI.

Setting: Representation from six countries and four world regions.

Methods: An iterative decision-making and consensus process was applied, integrating evidence and expert opinion related to SCI and vocational rehabilitation. A *Rapid Review* of key literature was conducted to identify key concepts, models or frameworks, relevant domains/categories, specific items, and outcomes or predictors in vocational rehabilitation. Following this, a *Data Mapping Exercise* matched data fields/items from multiple sources and existing International Spinal Cord Society (ISCoS) Data Sets. Further mapping was performed for alignment of fields against the conceptual framework using a *consensus approach*, identifying gaps and anchoring decisions on key elements and agreement on common terms/definitions. The ISCoS Data Set Advisory Committee provided feedback and assisted with key decision-making throughout the consultative and consensus process. Consumer perspectives were integrated into the data set development. Suggested revisions were considered, and a final version of the data set was disseminated again for final approval and adoption.

Results: The Basic Data Set was developed, consisting of nine items.

Conclusion: The International SCI Vocational Rehabilitation Basic Data Set provides a standard and consistent way to capture the lived experience of work functioning of people with SCI and support the integration of vocational rehabilitation in clinical practice and comparative research.

Sponsorship: N/A

Introduction

Work participation under the International Classification of Functioning, Disability and Health (ICF)[1] is a major life area which includes remunerative (paid) and non-remunerative (unpaid) employment. Most people spend a part of their lifetime working and this is known to be an important determinant of health and well-being [2]. Benefits of work participation in people with spinal cord injury (SCI) include the promotion of productivity and contribution to society while supporting a sense of self-identity, status, and social recognition [3,4]. Work participation also contributes to economic self-sufficiency and can improve overall quality of life. Employment rates for people with SCI, regardless whether a traumatic or non-traumatic cause, are significantly lower than for the general population, typically at around 35% on average, although can vary widely between 3–80% [5,6]. Employment as it is used here refers to any activity to produce goods or provide services for pay or profit, whereas the term work refers more broadly to activities performed to produce goods or to provide services for use by others or for own use

without a clear distinction between paid and unpaid activities within institutions, community and family relations[7,8]

Vocational rehabilitation following SCI aims to optimise employment participation. The purpose of vocational rehabilitation includes returning to and remaining in previous employment or obtaining and maintaining new employment. A biopsychosocial framework such as the International Classification of Functioning, Disability and Health (ICF) [1] can guide the development of vocational rehabilitation, hence helping to implement holistic and person-centered return-to-employment strategies. A conceptual definition based on the ICF framework describes vocational rehabilitation as a multi-professional evidence-based approach that is provided in different settings, services, and activities to working-age individuals with health-related impairments, limitations, or restrictions with employment functioning, and whose primary aim is to optimise work participation [9]. Within that definition, the concept of work functioning refers to a person's capacity and ability to engage in work more broadly or in employment taking into account personal factors and the environment.

Vocational rehabilitation, while central to functioning, can be challenging to assess and operationalise in practice or in research because of the complex interplay of factors surrounding the person, their work, and their environment. The temporal nature of vocational rehabilitation across the post-injury period demands timely attention and efficient transition of care from early inpatient care in an acute hospital or rehabilitation unit through to the community. A broad range of stakeholders may be involved in vocational rehabilitation, including people with SCI, their families and caregivers, healthcare providers, peer mentors, insurers, or payers, and employers. It is therefore to be expected that there is a diversity of perspectives on vocational rehabilitation centred around the person with SCI and subsequently the systems organising the rehabilitation services. To capture the lived experience of work functioning in SCI rehabilitation, it is essential that we have a minimum set of common variables to capture more general aspect of work functioning, including that of employability potentials that can inform vocational rehabilitation. With the common variables, we can also better compare across settings, SCI characteristics, and environments.

The Work Rehabilitation Questionnaire (WORQ), an ICF-based generic questionnaire, can potentially be used to describe a person's levels of functioning on work and employment-related domains prior to, during, and after vocational rehabilitation. WORQ may also be used to set vocational rehabilitation goals and monitor functioning when collected over time; to facilitate interdisciplinary and client communication in vocational rehabilitation, and to motivate the person to actively participate in their vocational rehabilitation process [10]. While WORQ has recently been tested in SCI, it has its limitations when it comes to ICF relevant questions for use in vocational rehabilitation in persons with SCI such as moving around with equipment, changing body positioning and transferring, defecation and urination function. Consequently, the content validity of the WORQ without additional items is insufficient for persons with SCI [11]. A WORQ version specific to SCI is currently being validated to have a more inclusive view of work and employment functioning in SCI [12]. Given the use of the ICF in vocational

rehabilitation, it is essential that we find a common understanding of its application in SCI to inform our assessment and interventions specific to employment.

The formation of the International SCI Data Sets is led by the ISCoS Data Set Committee and seeks to establish common language for SCI data to be used consistently across centres and countries internationally [13–15]. Defining a Core Data Set enables comparison of injury types, treatment and outcomes. Basic and extended data sets contribute further specificity across different relevant topics. By providing common language and standard definitions for international comparability and applicability, data sets have the potential for impact across clinical and research outcomes, service improvements, funding, and policy. Further information on the international data sets can be found here: https://www.iscos.org.uk/page/Int-Data-Sets

In accordance with the vision of the International SCI Data Sets [13], a working group was initially formed in 2019 with the purpose of developing the International SCI Vocational Rehabilitation Basic Data Set. The aim of the resulting basic data set was to provide a standardised, structured format for the collection and reporting of a minimum amount of information on vocational rehabilitation in clinical practice or in research. The development of an accompanying Extended Data Set for Vocational Rehabilitation is underway.

The basic data set has been designed to be used in various settings, and at multiple time points. In the development of the data set, the clinical settings of hospital (acute and/or subacute rehabilitation admission), outpatient clinic or community have been considered along with the use of the data set for research purposes across the continuum of care. While the primary audience is people of working age, use of the data set may also be considered with people younger than the working age where return to education is part of the vocational rehabilitation pathway. It is anticipated that different members of the multidisciplinary team, or the person with SCI, could complete the data set.

Methodology

The methods to develop the International SCI Vocational Rehabilitation Basic Data Set involved a formal decision-making and consensus process, integrating evidence from targeted activities listed below in addition to expert opinion. This developmental process followed the steps outlined below:

1. The plan to develop an International Spinal Cord Society (ISCoS) Core Data Set for Vocational rehabilitation in people with SCI, was discussed at a meeting held on 4 November 2019 in Nice, France. Project objectives, scope and committee membership were discussed and received approval from ISCoS to proceed. A Data Set Committee was subsequently established with international experts/opinion leaders in the specialised area of vocational rehabilitation following SCI. The Data Set Committee members had international representation (Australia, Bangladesh, Netherlands, Norway, South Africa, and the USA), clinical and academic expertise, and diverse experience in research, service provision and policy aspects of delivering vocational rehabilitation to people with SCI.
2. We undertook a rapid review of key literature to identify relevant vocational rehabilitation models, frameworks or concepts; vocational rehabilitation domains/categories or specified elements; employment outcomes, predictors or barriers/facilitators; as well as existing relevant data sets (including the ICF Core/Brief Sets for Vocational rehabilitation and SCI, ISCoS Core Set, and ISCoS Activity and Participation Data Set).
3. We identified a suitable conceptual vocational rehabilitation framework along with related definitions appropriate for people with SCI.
4. We performed a *Data Mapping Exercise* to match data fields/items from the multiple sources and existing ICF/ISCoS Data Sets from Step 2 to define, standardise and group common concepts, ICF domains/categories and elements for vocational rehabilitation into a schema that would inform the dataset development (refer to Supplementary file 1).
5. Using the ICF-based Disability Evaluation, Livelihood, and Employment Rehabilitation (DELIVER) [16,17] model (shown in Fig. 1) as a conceptual framework for the Vocational Rehabilitation Data Set for SCI, working sub-groups of the Data Set Advisory Committee met (online) to link the identified relevant concepts, domains and elements (based on Data Mapping Exercise) to the structure (i.e., integrative approach: vertical and horizontal components) of the DELIVER model. A consensus approach was used to identify gaps, decide on draft Data Set elements and agree on common terms/definitions.
6. The ISCoS Vocational Rehabilitation Data Set Advisory Committee provided advice and assisted with key decision-making throughout the consultative and consensus process. This included decisions related to content of the basic versus an extended data set. Feedback from corresponding members was also sought where specific expertise was required. A subject matter expert and scientist with lived experience of SCI was engaged in reviewing the data set.
7. The peer review process involved feedback from the ISCoS International SCI Data Sets Committee, and then by the American Spinal Cord Injury Association (ASIA) and ISCoS members prior to final approval by the ISCoS and ASIA Boards.

Results

Overview

In addition to the date of data collection, the International SCI Vocational Rehabilitation Basic Data Set consists of nine items:

(1) level of educational attainment pre-injury,

(2) pre-injury occupational role / employment status,

(3) pre-injury occupation type,

(4) current occupational role / employment status,

(5) current occupation type,

(6) importance of employment,

(7) return to employment goal,

(8) participation in vocational rehabilitation, and

(9) vocational rehabilitation intervention.

Each variable and corresponding response categories have been defined and designed in such a way to facilitate the collection of uniform data. The complete data set form is included as a supplementary file to this manuscript.

Date of data collection

The collection of vocational rehabilitation data may be carried out at any time after the SCI and at multiple timepoints after. This variable provides a way to relate the collected data to other data collected on the same individual at various time points hence allowing for examining temporal relationships.

Level of educational attainment pre-injury

Documentation of the highest level of education attained prior to the person sustaining SCI acknowledges that education is part of a vocational pathway. The level of formal education is defined in terms of the International Standard Classification of Education (ISCED-2011) [18], which outlines requirements for competent performance of the tasks and duties involved. The ISCED is a comprehensive framework for organising education programmes and qualifications and uses uniform and internationally agreed definitions. In addition, the level of educational attainment is well established as a key predictor of employment outcome after SCI [5,19].

Pre-injury occupational role / employment status

This variable documents whether the person was employed at the time of their SCI, or if not employed, the best description of employment status prior to onset of SCI. There could be more than one response as, for example, a person may have been studying and working for wages at the same time, and the intent of this question is also to capture an understanding of a person's employment experience. In line with the definition of ILO (2023), employment is defined as any activity to produce goods or provide services for pay or profit for people of working age. They can be persons in employment (defined as working for at least one hour) or not in employment work due to temporary absence from a job [7]. A category was included for self-employed family business, where a person may or may not receive a wage. When recording hours of employment in a week, average number of hours per week over the last 3–6 months are captured. This would capture fluctuating employment such as if a person is engaged in seasonal employment. Where a person was employed as an apprentice then this would be considered under the category of working for wages or salary with an employer. Where a person was unemployed and in receipt of disability benefits (or equivalent) before SCI, the category f, g, h, i or j can be used to best reflect the person's experience.

Pre-injury occupation type

This variable documents the occupation for which the person was primarily employed prior to SCI, if applicable. The classification of occupation type relates to the International Standard Classification of Occupations (ISCO) and is used in labour statistics. A *job* is defined in ISCO-08 as "a set of tasks and duties performed, or meant to be performed, by one person, including for an employer or in self-employment".

Occupation refers to the kind of work performed in a job. The concept of *occupation* is in this context defined as a "set of jobs whose main tasks and duties are characterised by a high degree of similarity". A person may be associated with an occupation through the main job currently held, a second job, a future job or a job previously held. Detailed definitions for the 10 classifications of occupation are available on the International Labour Organisation website (https://ilostat.ilo.org/methods/concepts-and-definitions/classification-occupation/). Occupation in this context is not to be confused with the idea of occupation as a broader category of activities in occupational therapy or occupational science.

Current occupational role / employment status

This variable documents the employment status after injury and at the time of data collection. Definition of employment is as previously described. The question can be asked regardless of context, that is, whether in rehabilitation or engaged with services later after injury. It is acknowledged that a person may not have been engaged in vocational activity since their injury. This question has been adapted from WORQ question 4 [20], also with additions from the International Spinal Cord Injury Community Survey (https://insci.network) and expert consensus.

Current occupation type

The occupation for which the person is primarily employed after injury at the time of data collection is captured with this variable, if employment applies. The same classification is used as stated in the pre-injury occupation type variable.

Importance of employment

The level of importance with which a person perceives employment appears to be a facilitator of employment outcome for people with SCI [21]. In capturing how important a person perceives employment to be, whether they are employed, can assist in tailoring vocational rehabilitation. The statement about importance has been derived from the Canadian Occupational Performance Measure [22].

Return to employment goal

Similarly to importance, holding a goal related to return to employment can facilitate employment outcomes [23], or at least support tailoring of vocational rehabilitation to be individualised and meaningful to an individual [24–26]. The process of finding and engaging in employment can be lengthy and can be influenced by other factors, such as availability of specialised vocational rehabilitation program, type of employment experience and level of educational attainment [23,27,28]. In practice a person may have ambivalence or conditions around employment in the future such as: “I’ll be able to think about employment when I have sorted out where I am living” and this remains clinically important information to guide intervention. The temporal component of this variable being ‘within the next year’ defines employment as a current goal as opposed to an acknowledgement that they would like employment at an undefined time in the distant future.

Participation in vocational rehabilitation

As described previously, Vocational Rehabilitation is a multi-professional approach offered in the context of different settings, services, and activities [9].

In practice vocational rehabilitation approaches can vary based on context, setting and resources. The intent of this question is to ascertain where a person is receiving any individualised, goal driven support as part of a vocational pathway. This support may be received from different disciplines and healthcare professions.

It is intended that this question would precede the subsequent development of an *Extended Data Set* that would explore vocational rehabilitation interventions and outcomes in further detail. Answering ‘yes’ would prompt the final question and would direct the respondent to complete the questions from the extended data set.

Vocational rehabilitation intervention

The final variable aims to document the vocational rehabilitation intervention a person has received in the past, or is currently receiving, related to a goal of returning to, or obtaining, employment. Development of this variable required an extensive review of existing sources including WHO's International Classification of Health Interventions (ICHI), employment related questionnaires (WORQ) and contemporary literature [29]. The resulting list underwent a consensus process with expert clinicians, including an activity conducted during an interactive workshop held at the ISCoS Annual Scientific Meeting in 2024 with approximately 50 international participants in attendance.

The question aims to gain a high-level indication of the types of intervention a person may have experienced in the time since SCI onset and as a consequence the interventions are presented in 'categories'. Definitions of the four broad categories of responses for the vocational rehabilitation intervention are as follows:

a) Guidance and Counselling

Providing advice and support to help individuals navigate career paths or employment challenges such as vocational counselling including guiding individuals in selecting or adjusting to suitable vocational roles; career counselling including supporting individuals in planning and advancing their careers.

b) Assessment and Evaluation

Evaluating the suitability of individuals, workplaces, or roles for effective employment, such as workplace assessment and adaptation including analysing and modifying workplaces to meet individual needs or improve accessibility; work evaluation including assessing an individual's capabilities and readiness for work; job analysis including breaking down job roles to identify key tasks, skills, and requirements.

c) Training and Skill Development

Activities focused on enhancing physical, cognitive, and vocational abilities to prepare individuals for employment such as physical training including improving physical capacity to meet job demands; cognitive training including developing cognitive skills such as problem-solving, memory, and decision-making; vocational training including equipping individuals with specific job-related skills or technical expertise.

d) Support and Management

Coordinating resources and support systems to assist individuals in achieving employment goals such as case management including overseeing and organising services or interventions tailored to an individual's work-related needs; job development and job placement including identifying and designing potential roles and matching qualified individuals to available jobs.

Discussion

There are broadly agreed principles, although no fixed procedure for creating a new data set. In this case, data set development drew not only on technical expertise and consensus-building processes or surveys

to define data set items but also involved synthesis of evidence from a rapid review, identification of a conceptual model and mapping of data elements from a variety of sources.

The purpose of the ISCoS Basic Data Set for Vocational Rehabilitation is to support minimum data collection related to the provision of vocational rehabilitation in a uniform and consistent way internationally. This data can be collected for clinical practice and for research. To keep this data set as useful and relevant as possible, particularly in a clinical or trial setting, the number of data items was kept as low as possible. Ultimately the nine items included were deemed to cover the most clinically relevant information about employment and participation in vocational rehabilitation. Where vocational rehabilitation intervention has commenced, an extended dataset which is under development, could be completed.

It is recommended that the basic data set is used in conjunction with the International SCI Core Data Set, specifically, the complementary data items of injury date, birth date, date of acute admission, final date of hospital admission, sex, spinal cord etiology and neurological impairment. These variables are necessary to facilitate the analysis of, for example, employment related pathways such as the derivation of time relative to employment status post injury. The ISCoS Basic Data Set variables also allow exploration of the impact of employment on other life factors and vice-versa.

This data can also be collected in addition to the Sociodemographic Basic Data Set [14] items of 'Years of formal education' and 'Primary occupation', and the Activity and Participation Data Set [15] items of 'Rating of performance (hours)' and 'Satisfaction in paid work, unpaid work and volunteer work'. Together, these data sets will provide a broader picture of the lived experience of the person with SCI considering work and non-work related aspects of functioning.

When related to the WORQ-SCI, an ICF based questionnaire (ref to follow), the collection of data through the ISCoS Basic Data Set for Vocational Rehabilitation will provide a bare minimum of relevant information in the trajectory of optimising work participation following SCI. The data set is short and easy to fill in and is therefore practical for daily use in clinical practice by rehabilitation and SCI professionals. The WORQ-SCI is more extensive (42 basic WORQ items and 24 additional SCI items) and therefore requires more time for filling in, however, the WORQ-SCI can be a very valuable addition by assessing a person's levels of functioning on work-related domains at the start of vocational rehabilitation and to set vocational rehabilitation goals. In this way both questionnaires can be complimentary.

Having a standard way to consistently collect vocational rehabilitation information (and in the future vocational rehabilitation interventions) across different settings, cultures and environments will allow comparison of research results and clinical data worldwide.

Future directions

Similar to the other international SCI data sets, the vocational rehabilitation data set should be viewed as a work in progress. As the next step, we will work with the ISCoS Peer Support and Consumer Engagement Special Interest Group to develop a more formal, structured process (*Consumer Engagement Strategy*) for review and validation of the data set and its useability as a self-report form.

Administration of the International SCI Vocational Rehabilitation Basic Data Set to individuals with SCI whose primary language is not English will require careful translation using recommended process [30]. Additionally, further study is needed to validate the data set and operationalise into practice in different settings. Development of a secure web application, such as using REDCap (https://project-redcap.org) or a similar platform for building and managing online surveys and databases would assist in broad distribution of the data set and support use in different settings and contexts. Similarly, incorporating an option for feedback will support continual refinement and/or development of the data set.

Testing and implementation of this data set in non-industrialised or low- and middle-income countries, where the vocational rehabilitation process differs from that in high-income countries, would provide more practical insights into the suitability of this data set to gather information. These insights could be used to further refine and support the ongoing development of the data set.

Finally, an extended data set is under development that includes a classification for vocational interventions provided in specialised service settings.

Conclusion

The International SCI Vocational Rehabilitation Basic Data Set consists of nine items and is applicable to individuals with SCI of working age. The basic vocational rehabilitation data set is intended to capture a broad initial picture of employment and vocational experience in daily clinical practice at both in- and outpatient SCI clinics around the world and to support comparative research. It is anticipated that different members of the multidisciplinary team, or the consumers themselves, could complete the data set.

Declarations

The authors declare **no competing interests.** All authors confirm that they have **no financial, personal, or professional relationships** that could be construed as influencing the work reported in this manuscript.

Acknowledgements

We wish to acknowledge the contributions of Professor Marcel W. Post, Center of Excellence for Rehabilitation Medicine, De Hoogstraat Rehabilitation, Utrecht and University Medical Center Groningen, the Netherlands and Dr James S. Krause, Distinguished University Professor and Director of the Center for Rehabilitation Research in Neurologic Conditions at the Medical University of South Carolina, USA.

Professors Post and Krause provided their expert peer review and input at key points in the data set development process.

References

1. World Health Organization. International Classification of Functioning, Disability, and Health: ICF. Geneva: World Health Organization; 2001.
2. Frank J, Mustard C, Smith P, Siddiqi A, Cheng Y, Burdorf A, et al. Work as a social determinant of health in high-income countries: past, present, and future. The Lancet. 2023 Oct;402(10410):1357–67.
3. Leiulfsrud AS, Ellinggard KB, Post MWM, Joseph C, Leiulfsrud H. Disability and social trust: a comparison of people with a spinal cord injury and the general population in Norway, the Netherlands, and South-Africa. Social Theory & Health. 2024 Jun 15;22(2):119–38.
4. Leiulfsrud AS, Ellinggard KB, Post MWM, Arora M, Leiulfsrud H. Experienced inclusion and recognition amongst people with spinal cord injury: A comparative study in Norway, The Netherlands, and Australia. PLoS One. 2025 Apr 1;20(4):e0306231.
5. Post M, Reinhard J, Avellanet M, Escorpizo R, Engkasan J, Schwegler U. Employment among people with spinal cord injury in 22 countries across the world: results from the International Spinal Cord Injury Community Survey. Arch Phys Med Rehabil. 2020;101(12):2157–66.
6. Ottomanelli L, Lind L. Review of Critical Factors Related to Employment After Spinal Cord Injury: Implications for Research and Vocational Services. J Spinal Cord Med. 2009 Jan;32(5):503–31.
7. International Labour Organization. International Standard Classification of Occupations. 2025.
8. Taylor RF. Extending Conceptual Boundaries: Work, Voluntary Work and Employment. Work, Employment and Society. 2004 Mar 1;18(1):29–49.
9. Escorpizo R, Reneman MF, Ekholm J, Fritz J, Krupa T, Marnetoft SU, et al. A Conceptual Definition of Vocational Rehabilitation Based on the ICF: Building a Shared Global Model. J Occup Rehabil. 2011 Jun 17;21(2):126–33.
10. Finger ME, Escorpizo R, Glässel A, Gmünder HP, Lückenkemper M, Chan C, et al. ICF Core Set for vocational rehabilitation: results of an international consensus conference. Disabil Rehabil. 2012 Mar 10;34(5):429–38.
11. Roels EH, Schneider CC, Reneman MF, Post MW. Content validity of the Work Rehabilitation Questionnaire (WORQ) for persons with spinal cord injury: a mixed-methods study. Spinal Cord. 2022;60(4):354–60.
12. Anouk LC, Veenhuysen RVD, Roels EH, Reneman MF. Reliability of a spinal cord injury specific extension of the Work Rehabilitation Questionnaire (WORQ-SCI). Spinal Cord. 2025 (in press).
13. Biering-Sørensen F, Scheuringer M, Baumberger M, Charlifue SW, Post MWM, Montero F, et al. Developing core sets for persons with spinal cord injuries based on the International Classification

of Functioning, Disability and Health as a way to specify functioning. Spinal Cord. 2006 Sep 6;44(9):541–6.

14. Chen Y, Charlifue S, Noonan VK, New PW, Gururaj G, Katoh S, et al. International spinal cord injury socio-demographic basic data set (version 1.0). Spinal Cord. 2023 May 14;61(5):313–6.
15. Post MW, Charlifue S, Biering-Sørensen F, Catz A, Dijkers MP, Horsewell J, et al. Development of the International Spinal Cord Injury Activities and Participation Basic Data Set. Spinal Cord. 2016 Jul 20;54(7):530–4.
16. Aragaki D, Saby A, Zappaterra M, Escorpizo R. Occupational Medicine and Vocational Rehabilitation. In: Braddom's Physical Medicine and Rehabilitation. Elsevier; 2021. p. 89-99.e2.
17. Escorpizo R. The application and integration of the ICF towards a better understanding of health and disability. [Luzern]: University of Luzern; 2014.
18. UNESCO Institute for Statistics. International Standard Classification of Education: ISCED 2011. 2012. UNESCO Institute for Statistics. International Standard Classification of Education: ISCED 2011 [Internet]. 2012.
19. Krause JS, Terza J V, Saunders LL, Dismuke CE. Delayed entry into employment after spinal cord injury: factors related to time to first job. Spinal Cord. 2010 Jun 24;48(6):487–91.
20. Finger ME, Escorpizo R, Bostan C, De Bie R. Work Rehabilitation Questionnaire (WORQ): Development and Preliminary Psychometric Evidence of an ICF-Based Questionnaire for Vocational Rehabilitation. J Occup Rehabil. 2013 Nov 27;
21. Hilton G, Unsworth CA, Stuckey R, Murphy GC. The experience of seeking, gaining and maintaining employment after traumatic spinal cord injury and the vocational pathways involved. Work. 2018 Feb 3;59(1):67–84.
22. Law M, Baptiste S, McColl M, Opzoomer A, Polatajko H, Pollock N. The Canadian Occupational Performance Measure: An Outcome Measure for Occupational Therapy. Canadian Journal of Occupational Therapy. 1990 Apr 1;57(2):82–7.
23. Finger ME, Karcz K, Schiffmann B, Staubli S, Hund-Georgiadis M, Escorpizo R. Factors influencing sustainable employment of persons with acquired brain injury (ABI) or spinal cord injury (SCI): A qualitative study evaluating the perspective of health and work professionals. Frontiers in Rehabilitation Sciences. 2023 Jan 20;3.
24. Dunn JA, Martin RA, Hackney JJ, Nunnerley JL, Snell DL, Bourke JA, et al. Developing A Conceptual Framework for Early Intervention Vocational Rehabilitation for People Following Spinal Cord Injury. J Occup Rehabil. 2023 Mar 4;33(1):179–88.
25. Bridger K, Kellezi B, Kendrick D, Radford K, Timmons S, Rennoldson M, et al. Patient Perspectives on Key Outcomes for Vocational Rehabilitation Interventions Following Traumatic Injury. Int J Environ Res Public Health. 2021 Feb 19;18(4):2035.
26. Middleton J, Johnston D, Murphy G, Ramakrishnan K, Savage N, Harper R, et al. Early access to vocational rehabilitation for spinal cord injury inpatients. J Rehabil Med. 2015;47(7):626–31.

27. Gross-Hemmi MH, Pacheco Barzallo D. People with Spinal Cord Injury in Switzerland. Am J Phys Med Rehabil. 2017 Feb;96(2):S116–9.
28. Staubli S, Schwegler U, Schmitt K, Trezzini B. ICF-Based Process Management in Vocational Rehabilitation for People with Spinal Cord Injury. In 2015. p. 371–96.
29. Ottomanelli L, Goetz LL. Issues and Interventions for Workforce Participation After Spinal Cord Injury. In 2016. p. 519–44.
30. Biering-Sørensen F, Alexander MS, Burns S, Charlifue S, DeVivo M, Dietz V, et al. Recommendations for translation and reliability testing of international spinal cord injury data sets. Spinal Cord. 2011 Mar 9;49(3):357–60.

Figures

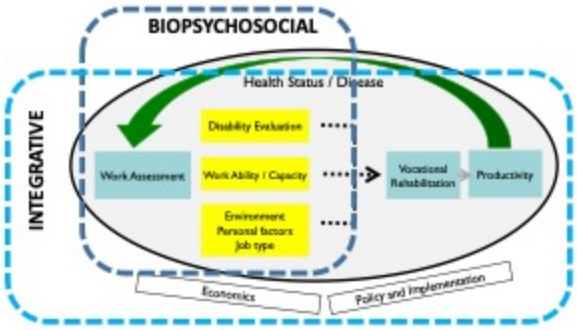

Figure 1

Legend not included with this version

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- 250922BasicISCoSdatasetVocationalRehabilitationclean.docx
- SupplementaryFile1VRmapping.pdf