

# The Foundational Study on a Longitudinal SCI Rehabilitation Panel

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## Objective & Background

Spinal cord injury (SCI) significantly affects physical, psychological, cognitive, and social functions, necessitating long-term rehabilitation. However, in South Korea, there is a lack of longitudinal panel/cohort studies that systematically analyze the rehabilitation process, secondary impairments, social participation, and quality of life of individuals with SCI. This study aims to establish a standardized assessment framework and develop a structured data collection system based on the Logical Framework for Rehabilitation Monitoring and the Biopsychosocial (BPS) Model to lay the foundation for a long-term SCI rehabilitation panel study.

## Method

To ensure scientific validity, this study reviewed international SCI registries, including the National Spinal Cord Injury Statistical Center (NSCISC, USA), the Rick Hansen Spinal Cord Injury Registry (RHSCIR, Canada), and the Swiss Spinal Cord Injury Cohort (SwiSCI, Switzerland), incorporating their data collection methodologies into the study's evaluation framework. Designed as a longitudinal observational study, data will be collected at admission, discharge, and at 1-year and 2-year follow-up to comprehensively assess the rehabilitation progress and long-term outcomes of individuals with SCI. The assessment framework comprises four core domains (Table 1).

Table 1. Core Domains of the Assessment Framework for Basic Research on the SCI Rehabilitation Panel

Assessment Domains	Description
Initial Factors	Pre-existing health conditions, injury level, injury cause (traumatic/non-traumatic), severity, and socioeconomic background
Input	Utilization of acute and rehabilitation services, FITT principles of rehabilitation interventions (Frequency, Intensity, Time, and Type: physical therapy, occupational therapy, assistive devices), and community-based rehabilitation resources, Family and social support networks
Output	Functional outcomes assessed by healthcare professionals, including independence in daily activities (SCIM), improvements in mobility and self-care, and physical function changes
Outcome & Impact	Patient-reported long-term outcomes, including quality of life (EQ-5D), psychological health (depression, anxiety, stress), cognitive function, and long-term social reintegration (community participation)

To facilitate comprehensive data collection, the study integrates self-reported surveys, clinical assessments, and electronic medical records (EMR). The key variables assessed in this study are presented in Table 2.

Table 2. Categories and Variables in Basic Research on the SCI Rehabilitation Panel

Category	Key Variables
Demographics	Gender, age, education, income, health insurance, disability grade, household structure.
SCI-Related Information	Cause, injury level, severity, Time since injury
Physical Health	Secondary impairments, chronic conditions, pain (VAS), spasticity, pressure ulcers, alcohol consumption, nutrition status (BMI, Malnutrition)
Rehabilitation Interventions	Physical/occupational therapy, rehabilitation exercise, complementary medicine, use of assistive devices, community-based rehabilitation resources, structured based on FITT parameters (Frequency, Intensity, Time, and Type)
Psychological & Cognitive Status	Depression (PHQ-9), anxiety (GAD-2), stress, self-esteem, cognitive function (SMCQ)
Social Participation & Environment	Employment status, vocational training, social support, community reintegration programs, transportation accessibility
Functional Status & Disability	WHODAS 2.0, SCIM
Healthcare Utilization & Economic Burden	Hospital visits, treatment costs, caregiver presence, disability support services
Quality of Life (QOL)	EQ-5D

## Results & Expected Impact

This study will establish a standardized dataset for analyzing rehabilitation outcomes and long-term trajectories in individuals with SCI. By incorporating international SCI registry standards, the study evaluates the feasibility of adopting a nationally standardized assessment system. The 1- and 2-year follow-up assessments will provide critical insights into rehabilitation progress, long-term functional recovery, and reintegration into society. Furthermore, the study aims to support the development of evidence-based, patient-centered rehabilitation services and policies by providing empirical clinical data on SCI rehabilitation in South Korea.

## Conclusion

This study serves as a foundational step toward developing a nationwide, multicenter longitudinal SCI rehabilitation panel. By applying a structured assessment framework and standardized data collection methods, the study lays the groundwork for future large-scale research and the advancement of personalized rehabilitation strategies. The findings will facilitate the establishment of a national SCI rehabilitation database, supporting long-term rehabilitation planning, service optimization, and policymaking to enhance the quality of life and functional independence of individuals with SCI.