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Experiences of Individuals with Spinal Cord Injury and Return to Work: A Scoping Review

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Experiences of Individuals with Spinal Cord Injury and Return to Work: A Scoping Review

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Executive Summary

Background: Participation in productive work after a traumatic spinal cord injury (SCI) can often be a challenging experience. This experience is unique to each individual and is often impacted by personal and environmental factors as well as government policies. Previous studies have aimed to identify the factors associated with promoting successful return to work after SCI, but often the perceptions of those who experience SCI are excluded from these studies. This study aims to gain insights regarding the experiences of persons with SCI and participation in productive employment.

Purpose: To analyze existing literature about the perceptions of persons with (SCI) and their experiences with participation in productive work after SCI.

Theoretical Framework: This capstone project was guided by Engel and Romano's Biopsychosocial Model, an interdisciplinary model (Lugg, 2021).

Methods: A scoping review, guided by the Arksey and O'Malley's five stage framework was selected to explore the existing literature for this study. Qualitative studies with methods consisting of interviews and focus groups with adults who had experienced a SCI and engaged in productive work after their injury were synthesized for this review.

Results: Eleven studies were included in this scoping review and five common themes were identified. These five themes describe the experiences of individuals with spinal cord injury post injury as they return to work and sustain and maintain employment: (1) Persons who engage in productive employment after SCI report positive benefits on social and emotional health. (2) Successful participation in work starts with a strong desire. (3) The work environment is significant. (4) Access to financial educational resources influences return to work post SCI. (5) Social support impacts on return-to-work post SCI.

Conclusions: The findings of this review represent the common experiences reported by participants on their experiences with return to work post spinal cord injury. The results may be used in the rehabilitation of this population to enhance these experiences through interventions and increase the rate of employment in this population.

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CERTIFICATION OF AUTHORSHIP

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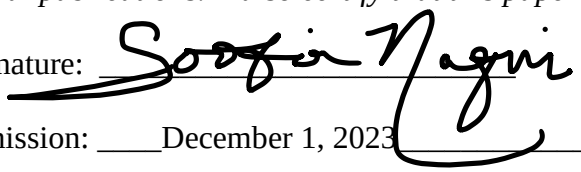
Student's Signature: 

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Introduction

In the United States, there are over 17,000 new spinal cord injury (SCI) survivors reported annually (National Spinal Cord Injury Statistical Center [NSCSC], 2019) and the total number of survivors globally are estimated to be anywhere between 250,000 or 500,00 survivors (World Health Organization [WHO], 2013). For many people, spinal cord injury leads to some form of paralysis and very few achieve complete neurological recovery (Flint Rehab, 2021). Tetraplegia or quadriplegia happens when a patient cannot move their arms or legs and paraplegia is the paralysis of the lower extremities and retention of function in the upper extremities (NSCISC, 2019). Level of injury can influence the experiences of spinal cord injury individuals greatly (Dorstyn, 2023). NSCISC presents data that indicates 47.6% of individuals who suffer SCI incur incomplete tetraplegia, 12.3% complete tetraplegia, 19.6% complete paraplegia, and 19.9% incomplete paraplegia (NSCISC, 2019). In the last 50 years, the most common age for initial SCI has varied between ages 29-43 (NSCISC, 2019), which corresponds with a typical working age or age of vocational development (Ullah et. al., 2017). After a SCI, participation in productive work for this population is often met with many challenging experiences, reflecting an average rate of persons with SCI obtaining employment being only 35% (Inge et al., 2015).

Productive work is described as the obtainment of competitive employment, and this is often used to understand one's quality of life after SCI (Nowrouzi-Kia et. al., 2022). In fact, work is considered one of the key social determinants of health, as individuals who have opportunities for employment often experience greater health outcomes and higher reported quality of life (Hilton et al., 2018; Pinto et. al., 2018). Some of the positive experiences that persons with SCI report after returning to work include increased social contact, a sense of

purpose, improved self-esteem, personal growth, and financial independence (Trenaman et al., 2015; Nowrouzi-Kia et. al., 2022). Further, for many people, being employed can be a central component to identity and may encourage full societal participation (Trenaman et al., 2015). Due to these benefits, productive employment often serves as an outcome measure of rehabilitation, community reintegration, life satisfaction, and quality of life for a person with SCI (Eskola, et. al., 2022).

While it is not everyone's desire to engage in work after SCI, many people identify participation in work as one of their goals (Treneman et al., 2015; Model Systems Knowledge Translation [MSKTC], 2021). This goal however is not always achieved due to the complexity and impact of SCI on the individual (Holmund et al., 2017). According to the National Spinal Cord Injury Statistical Center, 2019 many individuals seeking employment post SCI were employed prior to injury. Other SCI individuals were seeking employment for the first time in their life and whether the person is attempting to return to the workforce, or is entering for the first time, this transition after SCI is complex and has been described as a difficult experience (NSCSC, 2019; Holmlund et al., 2021). Specifically, a person with SCI must navigate environmental and physical barriers, medical complications, and legal, administrative, and financial systems as part of the transition to the workforce (Holmlund, et. al., 2017). Engaging in productive employment post SCI can also be a time-consuming experience (Ullah et al., 2017; Moreno, et. al., 2017). Further, there are other factors that influence the complexity of work including but are limited to time since injury, supports and resources that are accessible to the person, the type of employment and physical requirement needed to complete the job, and demographic factors (age, level of education, cultural background) (Ullah et al., 2017). The

experiences of individuals with SCI who engage in productive work post injury can be unique to everyone (Fitzsimmons, 2016).

Problem Statement

With a large number of persons being affected by SCI annually, and the experiences with participation in work after injury being unique to each individual, there is a need to better understand the perceptions of those with SCI. Understanding the experiences of spinal cord injury individuals may lead to better outcomes and quality of life for this population (WHO, 2013). Due to various challenges and lack of support post injury, some experiences can be negative and can discourage individuals from participating in many functional activities including productive employment (Fitzsimmons, 2016). On the other hand, some individuals report very positive experiences and can achieve and maintain employment post injury successfully (Dorsett, 2019). Since SCI is complex and unique to everyone, there has been an increase in the number of qualitative studies regarding this SCI and employment that highlight the various barriers and supports experienced by these individuals (Hilton et al., 2018; Treneman et al., 2015; Rodriguez-Mendoza, 2020). One systematic review (Hilton et al, 2018) explored the facilitators and barriers perceived by persons with SCI with return to work through the years 1996-2016, but since this time the workplace has experienced much change in terms of workplace redesign, technological advances and inclusion of remote work that was not as common in the past as it is currently (Ancillo et al., 2021). The workplace has become much more adaptive to the employees' needs and work style (Deering, 2023). In the past few years particularly, the challenges brought on by Covid-19 have created an evolution in the workplace forcing adjustments in how and where we work (Shepherd, 2022). Individuals with disabilities especially have raised voices recently demanding changes that were historically rejected by

employers for decades such as hybrid and remote working, accessibility to mental health resources in the workplace, expansion of caregiver benefits, employee power, and the elimination of subminimum wage (O'Connell, 2022). Fortunately, workplace advancements and innovations in these areas are taking place and will result in more work opportunities for individuals with disabilities (O'Connell, 2022). There is a need to explore more recent literature regarding the experience of persons with SCI who engage in productive work after injury.

Purpose

The purpose of this study is to explore the current literature regarding the experiences of persons with SCI and their perception of participation in productive work after injury.

Research Question

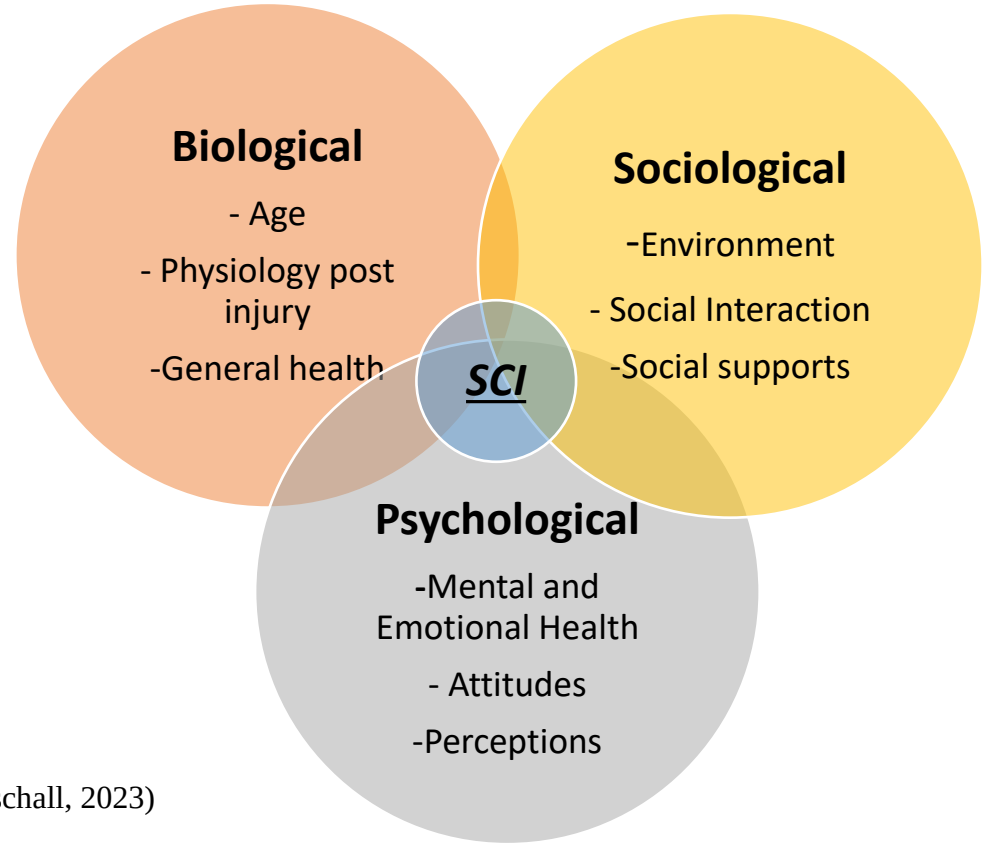
The question this scoping review seeks to answer is: What are the experiences of persons with spinal cord injury and their transition to participation in productive work after injury?

Theoretical Framework

This scoping review was guided by Engel and Romano's Biopsychosocial Model (Lee, 2022). This model is a holistic approach that studies the connection between biological, psychological, and socio-environmental factors and applies to health, disease, and human development (Lugg, 2021). For individuals with spinal cord injury, level of well-being can be connected to a positive biopsychosocial experience that allows for successful return to productive and meaningful employment (Smedema, 2017). As a key social determinant of health and leader to better quality of life, work can be considered an underlying social need for individuals with disability as indicated by the biopsychosocial model (Marschall, 2023). For instance, the sociological aspect of this model, experiencing changes in an individual's

environment as well as social interaction and support can impact wellbeing and may be needed by the individual just as therapy or medications are needed (Marschall, 2023). For SCI individuals, positive productive employment experiences and sustained work may be the environmental change and social support needed to enhance health and well-being. The biological component of this model corresponds to the age, physiology post injury, and general health of individuals with SCI as these influence experiences post injury especially for return to occupation leading to positive or negative outcomes (Smedema, 2017). Last, the psychological component can include the mental and emotional health, attitudes, and perceptions of SCI individuals as they live the experience of disability and then experience reintegration in occupations and society in general (Marschall, 2023). The Biopsychosocial Model is aligned with the purpose of this project to study the connection between environmental, social, and behavioral perceived barriers and facilitators that generate overall positive or negative experiences of individuals with spinal cord injury as they pursue employment post injury.

Figure 1: The Biopsychosocial Model and SCI



(Marschall, 2023)

Significance of the Study

Such a review may pose benefits to individuals with SCI, families of individuals with SCI, and healthcare professionals who participate in the rehabilitation of this population in helping to enhance this experience and increase the rate of employment in this population. For individuals living with SCI work can be important as it ties to social connections, identity, sense of purpose, financial independence, and daily routines (Holmlund, 2017). Returning to work encourages full societal participation and independence which leads to the feeling of being normal and productive (Linebaugh, n.d.). In turn experiencing the feeling of being normal can

lead to increased well-being, quality of life and better physical and mental health outcomes (Karcz et. al., 2022; Lindebaugh, n.d.).

Section II: Literature Review

The purpose of this literature review is to study the experiences of individuals with spinal cord injury as they pursue reintegration into the labor market either to their pre-employment job or a new job. Participation in everyday activity is instrumental for a person's health and wellbeing and for many this may include meaningful work (Holmlund, 2021). Therefore, understanding the experiences of SCI individuals post injury during the return-to-work process may help in increasing the rate of employment and employment sustainability in this population. Studies show that people who work after spinal cord injury report having a better quality of life and less depression as compared to individuals with SCI who do not engage in work (Psychreg, 2020). A Healthy People 2030, leading health indicator states that "People who work are more likely to have positive health outcomes" (Healthy People, 2030).

Experiences with return to work post spinal cord injury can be positive and/or negative (Hilton, 2018). These experiences can be impacted by factors such as inaccessible physical environment, difficulty accessing relevant assistive technology, negative attitudes, stereotypes of people in the community towards disability, and services or policies that either do not exist or that can hinder the involvement of people with health conditions in all areas of life especially the work or vocational environment (Monden et. al., 2020).

Experienced Barriers to Participation in Productive Employment

Participants report several experienced environmental barriers for gaining and sustaining stable employment after SCI. Experiencing these challenges can often lead to failure of

achieving employment (Houlihan et. al., 2016). Environmental barriers may include limitations of the physical environment, lack of funding or social policies to support the person with SCI or lack of social and cultural acceptance (Hilton et al., 2018). Negative attitudes of the common community to persons with SCI are a distinct experienced barrier and prejudice that individuals are challenged with (Escorpizo et al., 2018). Specifically, finding appropriate jobs can be difficult for this population in part due to the negative preconceived prejudices of employers who often believe that the disabled population will not be able to efficiently perform (Hilton et al., 2018; United Spinal Association [USA], 2019; Aichner, 2021). Employers may be reluctant to not only hire but also provide the needed accommodations for persons with SCI, fearing the cost would be too high and the investment would be a failure with a low producing employee (Escorpizo et. Al., 2018; Kandola, 2020; Aichner, 2021). In general, the attitudes of employers, if negative, can limit the job market for people with spinal cord injury or have a detrimental effect on an SCI employee if hired, which can create an experience of rejection or decreased worth (Escorpizo et. Al., 2018). Experiencing rejection by co-workers can also cause difficulty for SCI employees (Lalande, 2021). Co-workers may feel that their SCI counterpart is not as productive as they should be or are given special treatment and lenient expectations with easier timelines (Kandola, 2020). This rejection can create a harsh work environment, one in which achieving success may be difficult for SCI employees to focus on their work and succeed (Grzeskowiak et. Al., 2021).

Other experienced barriers to employment include perceived challenges with personal factors after injury (Houlihan et. al., 2016). Personal factors may include decreased physical and/or mental health issues such as increased fatigue, decreased self-esteem, and general difficulty with adjusting to disability making it difficult to engage in work while also working to

maintains one's own health (Aichner 2021; Lalande, 2021, Karcz, 2022). Difficulties and conflicts between family life and work may occur as individuals with SCI begin carrying the burden of work responsibilities and managing their condition (Fekete, 2018). Experiencing disability can lead to changes in family roles and relationships causing adjustment with disability and accomplishment of daily tasks including work to become difficult (MSKTC, 2022). For some individuals managing work and family can pose highly stressful experiences and can lead to a general decrease in level of health and well-being (Fekete, 2018). Participants report experiencing conflicts among relationships as they become more involved in various social roles such as being an employee, a partner or caregiver and attempt to manage the expectations of each role (Fekete, 2018). For individuals with SCI, it can be difficult to manage relationships and roles which can lead to drastic changes in personality and behaviors leading to a negative impact on family life as well as marital relationships (Angel, 2011; Fekete, 2018). Personality and behavior changes may even take place after SCI and return to work as the individual may feel neglected, overworked, and less productive than before while their spouse or partner may be overwhelmed with dealing and managing work responsibilities as well as the disability of their loved one (Fekete, 2018). Overall, the experience of managing family life with work for the SCI population can affect quality of life (Fekete, 2018).

Experienced Supports to Participation in Productive Employment

While SCI may be difficult to manage, accessible social supports and supportive services such as medical teams, rehabilitation or other programs, and supportive friends and family can enhance this experience leading to a greater likelihood that the person with SCI will engage in productive employment after injury (Kandola, 2020). A personal experienced support to engaging in productive work can include the person with SCI having adjustment and adaptation

skills, allowing them to better adjust to their injury leading to a positive return to work experience (Karcz et al., 2022; MSKTC, 2021). The most difficult part about disability can be the adjustment to a new way of life (Bhati, 2021). Adjustment and coping can take place in four stages: (1) shock, (2) denial, (3) depression or anger, and (4) acceptance and adjustment (Bhati, 2021). Specifically, adjustment goes beyond the person with SCI accepting the situation but also learning to live with the effects (Covey, 2021). Adjustment after SCI is a long-term and ongoing experience which often requires the support of the environment (MSKTC, 2021; Karcz et al., 2022). Environmental support including accessibility, community support, and having several work opportunities available can create an easier experience for achieving and maintaining employment for SCI individuals (Hanapi et. al., 2019). Additionally, a person with SCI who is empowered to advocate for a supportive work environment and communicate their needs has found to have a more positive transition experience to work after injury (Karcz et al., 2022). Rehabilitation efforts that include strategies for self-advocacy have particularly been beneficial to this population (Houlihan et al., 2016; Karcz et al., 2022).

Although SCI is incurable and complex, participating in productive work after SCI is achievable (Hilton et al., 2018; USA, 2019). However, without proper vocational support, this is often not possible (Ottomanelli et al., 2015; Trenaman et al., 2015). Vocational rehabilitation strategies aim to minimize complications, overcome barriers, and maximize independence (Arsh et. al., 2022). Vocational rehabilitation programs and counselors can provide support and assistance to persons with spinal cord injury throughout the return to productive employment experience (MSKTC, 2021). Vocational rehab encompasses a variety of services that can help persons with SCI identify career choices and goals, obtain skills required for the job, acquire relevant education needed for the job, job search, and gain work accommodation approvals

(MSKTC, 2021). Most people with SCI need support, training, and vocational rehabilitation services to help them return to work and maintain their employment (Ottomanelli et al., 2015). This supportive service can provide help with a multidisciplinary approach and boosts experiences by helping overcome barriers that the individual may not have control over such as health care issues, financial implications, and accessibility (Ottomanelli et al., 2015). Participants report positive experiences from vocational rehabilitation interventions and describe them as being client-centered with individualized focus on the needs of each person with a unique experience (Pinto et al., 2018; Maher, 2020; Rodriquez-Mendoza, 2020).

Previous studies indicate that achieving productive employment post SCI is particularly important for reintegration into the community post SCI (Hilton et. al., 2018). The benefits of returning to work post SCI have been well recorded in current literature and include better physical and psychological health and well-being, financial independence, and increased self-esteem (Hilton et. al., 2018). Return to work post spinal cord injury can however be complex and overcoming barriers can be difficult (Holmlund et. al., 2017). Achieving employment requires an individual to navigate personal and environmental factors (Hilton et. al., 2018). The factors may include social policy, funding arrangements, social attitudes, and the physical environment (Hilton et. al., 2018). Due to the complexities such as non-accessible environment, employer and colleague attitudes, and lack of financial resources, around the return-to-work process after SCI, some individuals may choose to opt in or out of work soon after injury (Holmlund et. al., 2021).

Entering the work force post SCI may take considerable time to accomplish and the process of return to work can be affected by many interrelated factors (Ullah, 2017). These interrelated factors can include individual needs, expectations, time elapsed since injury,

supports and resources, type of employment, employer attitude, age of individual, education level, severity of injury, and work experience prior to injury (Ullah, 2017).

This scoping review attempts to study the experiences of individuals with SCI post injury as they embark on a new life with disability and attempt to seek productive employment again. In doing so, this review may shed light on the factors that impact the return-to-work process, achievement of employment after injury, and sustaining of employment long term by this population.

Section III: Methods

Project Design

This review was guided by the methodological framework for scoping studies by Arksey and O'Malley. Scoping review is the preferred method of research in this study as it seeks to find the evidence that is already available on the topic of experiences of SCI individuals post injury during reengagement in productive employment or return to work (Munn, 2018). The five stages, identifying the research question, searching for relevant studies, study selection, charting and collating data, and summarizing and reporting the results described by Arksey and O'Malley in the scoping review methodology were used to guide this scoping review (Arksey & O'Malley, 2005). The scoping review method as prescribed by Arksey and O'Malley as a rapid review that will examine the extent and nature of this research topic and generally describe the research findings was used as the review approach for this study (Arksey & O'Malley, 2005).

This scoping review specifically included qualitative research as qualitative research explores how the individual or groups of people understand and experience meaning as perceived through their experiences (Creswell & Creswell 2017). The scoping review is attempts to identify key factors related to a particular topic, in this case, the perspectives of persons with

SCI regarding their experience with participation in productive work after SCI (Munn, 2018). Qualitative studies included in this review on this topic focus more on individual perspectives about successful return to work and engaging this population about their employment options, their desires, and needs (Dorstyn, et. al., 2023).

Stage 1: Identifying the research question

The question of the scoping review was "What are the experiences of persons with SCI and their transition to participation in productive work after injury".

Stage 2: Identifying the relevant studies

Search phrases and terms for this research included "spinal cord injury," "return to work after spinal cord injury," "employment with spinal cord injury," "productive employment after spinal cord injury," or "life after spinal cord injury." The inclusion criteria for the search included studies that are in English, dated in the last 10 years, qualitative or mixed methods design, and were peer reviewed. Four electronic databases/search engines including Google, CINAHL, MEDLINE, and PubMed were utilized for searching for studies related to the topic of this scoping review (see Table 1).

Table 1: Inclusion and Exclusion Criteria

Inclusion Criteria	**Exclusion Criteria**
- Peer reviewed articles, published in English between the years of 2013-2023. - Qualitative data collected on a broad range of experiences regarding participation in work after SCI.	- Studies published before 2013. - Studies that did not include qualitative data. - Studies not published in English.

Stage 3: Study Selection

Based on the inclusion criteria, 11 studies were identified as acceptable matches, and the complete text was thoroughly read. All studies identified through the database search were downloaded and housed in a google folder for both reviewers to access. Both reviewers agreed upon the qualification of each study based on the inclusion criteria.

Stage 4: Charting Data

Charting data for this scoping review was completed in three steps; 1. data review 2. data extraction and 3. data analysis. First, the primary investigator read the articles carefully to better understand the findings of each data set. These articles were then also reviewed thoroughly by a second reviewer. Next, the primary investigator began data extraction by performing a critical appraisal on each study using the *standards for reporting qualitative research checklist (SRQR checklist).* To reduce bias and improve accuracy with data extraction, each article and SRQR in this study was read and reviewed on multiple occasions by two different reviewers as recommended for synthesis of qualitative study reviews (Campbell et al., 2012). The critical appraisal allowed for the author to understand the focus or purpose of the study as well as the major themes identified and the overall results. Key information about each study was identified and organized in table form (Appendix A: Overview of Included Studies) with headings including: Author/year, purpose, study design, study methodology (recruitment/sampling, data collection/analysis, and location/context), description of participants (gender, age, time since injury, employment status at time of injury), Themes/General Findings, Limitations, Ethical Concerns. Table 3 represents five common themes that were identified in this review and is accompanied by an explanatory summary. Last, data was analyzed by thematic inductive analysis.

Quality Assessment

Articles for this study were assessed for quality using a quality checklist tool (metQuality of Studies) with assessment of credibility, dependability, transferability, and reflexivity (Stenfors et al., 2020). This checklist was adapted by Key Criteria in the evaluation of the trustworthiness of qualitative research (see Table 2: Quality Assessment) (Stenfors et. al., 2020). Based on assessment of all included articles in this review, two articles met all five of the quality assessment evaluation criteria for trustworthiness. Two other articles met at least four criteria and the remaining seven articles met at least three of the criteria in the checklist. While not all studies meet every metQuality criteria, all studies are from reputable peer-reviewed sources and provide valuable input regarding current qualitative studies.

Table 2: metQuality Assessment of Studies

Criteria/Study	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
Informative Abstract (research problem, aim, condensed version of the study, novelty of study, contribution of study to clinical practice and research)	met	met	met	met	met	met	met	met	met	met	met
Credibility	met	met	met	met	met	met	met	met	met	met	met
Dependability	met	met	met	met	met	met	met	met	met	met	met
Transferability	Not met	met	Not met	Not met	Not met	met	Not met	Not met	Not met	Not met	Not met
Reflexivity	Not met	met	Not met	Not met	Not met	met	Not met	Not met	Not met	met	met

Score Key: Met, not met, not stated

Study Key:
S1 (Dorset et. al., 2019)
S2 (Dorstyn et. al., 2023)
S3 (Hilton et. al., 2018)
S4 (Holmlund et. al., 2017)
S5 (Jean et. al., 2013)
S6 (Karcz et. al., 2022)
S7 (Leiulfsrud et. al., 2014)
S8 (Marti et. al., 2017)
S9 (Monden et. al., 2019)
S10 (Ramakrishnan et. al., 2016)
S11 (Wilbanks, 2015)

Stage 5: Collating and Reporting Results

The primary investigator then used thematic inductive analysis for data analysis. The six-stage process for data analysis as described by Peel (2020) includes: (1) collecting data (2) engaging with and understanding the data (3) coding; (4) generating the code categories; (5) conceptualizing the themes; and (6) contextualizing and representing the findings. This process was completed with two reviewers to increase validity of data extraction and analysis.

Section IV: Results and Discussion

Results

Critical appraisal was completed on the 11 studies that met the inclusion criteria. The 11 studies were coded, and code categories were generated. 5 common themes describing the experiences of SCI individuals with return to work were generated and conceptualized with 4 of the themes further described by subthemes (see Table 3: Themes and Subthemes). Descriptions of each of the themes were generated and reported with examples of direct participant quotes.

Table 3: Themes and Subthemes

Extracted Themes	Corresponding Subthemes
(1) Persons Who Engage in Productive Employment After SCI Report Positive Benefits on Social and Emotional Health. Work is described as a contributing factor to increased social participation, mental health and well-being, and feelings of increased self-esteem and self-worth.	(1) Increased social interactions/social contributions. (2) Mental health benefits reported by participants including psychological well-being, improved self-esteem, and self-worth.
(2) Successful Participation in Work After SCI Starts with a Strong Desire. After SCI, there is much unknown, but many persons with SCI reported a hope and anticipation for employment for their future.	(1) Motivation and hope for return to work after SCI is self-generated. (2) Individuals with SCI were motivated by financial independence to gain employment post SCI.
(3) The Work Environment Is Significant The social and physical environment of the workplace greatly influences a person's ability to engage in productive work after SCI.	(1) Having an adaptive and accessible physical environment promotes a positive experience for individuals with SCI who return to productive employment.

	(2) Supportive employers can enable individuals with SCI to successfully achieve and maintain employment. (3) Having supportive colleagues can lead to positive work life experiences for individuals with SCI leading to a pleasant work environment experience and positive outcomes. (4) Individuals with SCI can have negative experiences with return to work often due to discrimination in the workplace and employers who may not be understanding and flexible.
(4) Access to Financial and Educational Resources Influences Return to work Post SCI. The availability of state services for job search and placement, and funding arrangements along with the backing of higher formal education can positively influence return to work after SCI.	(1) Individuals with SCI reported that state related services can offer a positive experience for persons with SCI by helping gain employment and seek funding if needed. (2) Having a higher formal education can make navigating the job market and finding suitable employment an easier experience for individuals with SCI.

(5) External Work Supports and Services Positively Impact Return-to-Work Post SCI. A strong support system post SCI can influence the decision, process, and outcomes of return-to-work post SCI.	(1) Having access to vocational rehabilitation can help initiate the return-to-work process for persons with SCI. (2) Family and friends who can provide support, understanding and encouragement to individuals with SCI can make the experience of return to work positive. (3) Having a network of professional acquaintances and relationships can provide insights into the job market for individuals with SCI searching for jobs.

Theme Descriptions with Illustrative Quotes from reviewed studies

Theme 1: Persons who engage in Productive Employment After SCI Report Positive Benefits on Social and Emotional Health

Positive influences on social and emotional health for this population can include increased social interactions/social contributions, positive mental health benefits, and improved self-esteem and self-worth. Participants described a sense of meaning and normalcy with increased social interaction, positive mental health benefits, improved self-esteem, and increased self-worth all achieved by return to work. Particularly an emphasis was made on the fact that work prevents individuals with SCI from becoming socially isolated (Wilbanks & Ivankova, 2015).

"Work…was really important socially so that was another motivation for getting back to work because up until their injury their whole social life revolved around going to work and then

you go to the pub with the guys afterwards and you have a few beers and that was your whole social life" (VR06-Hay-Smith et. al., 2013, p. 1440).

"…it's about sort of meeting people and spending time with people, I don't want to sit at home by myself all day and only ever see [partner], you know you need to have relationships with other people and I'm missing that, I've been missing that far too long it's huge"

(SB04-Hilton et. al, 2018, p. 77).

"Work is both activating and social. It gets you out of the house and to use your brain; to produce something in order to boost your ego. It is an arena where you can get feedback that lifts you up some levels and gives you self-confidence. It is very important. Nobody gives you that kind of feedback if you only stay at home: then it is only a kind of comforter" (Per, mid-40s, paraplegic, in employment – Leiulfsrud et. al., 2014, p. 1182).

In fact, work and employment were noted to be two of the most important factors that lead to the reintegration in society and work was believed to be a moral duty which enables individuals with SCI to be able to contribute to society (Leiulfsrud et. al, 2014):

"It comes down to your reason….why the reason that I want a job, is because I want to, I like the feeling of contributing" (P3, person with SCI/D-Dorstyn et. al, 2021, p. 248).

Contributing to society through work was noted to be an experience by individuals with SCI as one that was meaningful and enhanced self-worth (Wilbanks & Ivankova, 2015). Participants reported that the feeling of being needed increased by participating in productive work (Leiulfsrud et. al., 2014).

"It is important to have a job in order to participate in society. Without a job you are outside society" (Simen, paraplegic-Leiulfsrud et. al., 2014, p. 1184).

"Work is important in order to be needed, to contribute to society" (Ida-Leiulfsrud et. al., 2014, p. 1184)

Theme 2: Successful Participation in Work Starts with a Strong Desire

The return-to-work process post SCI begins with a strong desire to reengage in productive employment by the individual. Spinal cord injury persons may feel they have an uncertain future, however the hope for a bright future by returning to work or the hope to return to work at some point creates the motivation to overcome barriers including health issues and difficulty with adjustment (Hilton et. al., 2018; Leiulfsrud et. al., 2014). Some individuals seek a familiar job to return to, others hope for return to work with motivation to achieve employment in the future (Hay-Smith et. al., 2013).

"You've got to want to go out there and get back involved. Without your attitude, without you wanting to do it, it's not going to happen" (SCI01-L-Hay-Smith et. al., 2013, p. 1440).

"I guess what that-that [having compensation] did for me was it provided me some security, it's given me some time, a chance to do some different things and work out what I want to do" (SB09-Hilton, 2018, p. 76).

Theme 3: The work environment is significant

The work environment has a great impact on the successful obtainment and sustainability of a job post SCI. Long term support comes from an adaptable workplace environment that enables an individual with SCI to manage their disability during productive work (Wilbanks &

Ivankova, 2015). An adjusted work environment can include ramps, elevators, wheelchair accessible facilities, and workspace adaptations (Karcz et. al., 2022).

"The desk in my office was specially made for me…I had it made higher and narrower so I could have more room in my office…your typical desk I can't get under because my legs are too tall"

(G-man-Wilbanks & Ivankova, 2015, p. 742)

"…if I have a problem here it's like I can speak up and say, 'hey, that doesn't work for me, I can't reach that microwave' or 'that copier's not working' and it's ok"

(Sally-Wilbanks & Ivankova, 2015, p. 742).

"This goes back to time-management. In the last job we had extremely full calendars and have to move from one meeting to another within 2 mins, preferably on the other side of the building. I always had to look for the lift and was always too late (SCI_1-Karcz et. al., 2022, p. 12)

An adaptive workplace is much influenced by a supportive employer who is willing to make the adaptations (Marti, 2017). Without the support of an employer who is open to accepting an employee with disability, gaining, and retaining work can be very difficult (Marti et. al, 2017).

…and then it is the attitudes of some people because they have automatic assumptions about what we're capable of, how much management we'll need, how much sick time we'll have off"

(P1, person wit SCI/D-Dorstyn, et. al., 2023, p. 250)

"I found employer's attitude [was that] I would suggest things that I could do and then he would say "Oh, no, you're not going to be doing that, no, you're not going to be able to do that," so it was just constantly "no, no, no" (SCI01-L-Hay-Smith et. al, 2013, p. 1441).

"I have always had bosses that understood…as long as you have people who are willing to work with you it's not that bad" (Sulli-Wilbanks & Ivankova, 2015, p. 742).

"…managers and people are usually pretty good. Part of the job-my first job was I could do on call support, but that's not really an option, you can't get up during the night and get a laptop and a phone and start handling issues and things, but they accommodate, they said look you know you don't need to do on call support" (SA01-Hilton, et. al., 2018, p. 77).

Just like a supportive employer, supportive colleagues also play a pivotal role in the return-to-work process, attainment of work, successful employment, and long-term sustainability of work (Wilbanks & Ivankova, 2015). Supportive colleagues support return to work for persons with SCI and trust and believe in the abilities of their SCI colleagues (Hilton et. al., 2018). This support leads to gaining employment for the SCI population and ability to achieve good outcomes (Hilton et. al., 2018).

"I got an opportunity…I had people vouching for me that were high up in the company…I was very well supported to begin. I didn't need that support so much once I started working, because I was confident with what I could do and you know the runs on the board…"

(SA05-Hilton, et. al., 2018, p. 75).

"I had a very committed colleague before who was taking over some of my responsibilities because she just recognized my situation and saw that something would be difficult for me. When something needed to be arranged and they discussed how to organize it on my absence day, she would stand up for me and said something. I didn't always have to stand up for myself. It takes so much strength. Now, I have colleagues who just don't want to understand my

situation. And that's why I sometimes have to work quite long hours, because arrangements are not optimized for me" (E_SCI_1-Karcz et. al. 2022, p. 12).

In the workplace discrimination is a reported concern. Both active and subtle workplace discrimination were reported by participants and a difficult barrier toward being hired on the job (Dorstyn, 2021). Workplace discrimination can stem from employers who are not educated about spinal cord injury and who feel individuals with disability cannot perform (Dorstyn et. al., 2021; Wilbanks & Ivankova 2015).

"I think the biggest thing for me was getting my foot in the door, and for an interview. I tried to be honest in my cover letter, you know, saying I'm a wheelchair user, but still able to do most things, and just got totally ignored, to the point where I wasn't sure, you know, do I not be 100% honest and just apply for the position and then roll up in a wheelchair and then shock them"

(P7, person with SCI/D-Dorstyn et. al., 2023, p. 250).

"People would underestimate me because I had a disability, some people think because you have a physical disability that you have a mental disability too…"

(G-man-Wilbanks & Ivankova, 2015, p. 746).

Theme 4: Access to Financial and Educational Resources Influences Return to work Post SCI

Individuals with higher formal education and/or higher socio-economic status are more likely to go back to work post SCI (Leiulfsrud et. al., 2014). In fact, it was noted that sustainable employment is easier to achieve if an individual has a higher formal education or university degree (Karcz et. al., 2022).

"I don't know what the future might bring on the job market, but I hope to get a job without involvement of the social welfare system. This is only silly! I hope a university education on my CV would help me!" (Leiulfsrud et. al., 2014, p. 1183).

"The more exclusive you are [education] and the more skills you can bring, the more they will go for it again, because they are looking for someone who can do it. Because professionals in the field are wanted. That's almost the only thing where I can qualify against the healthy people, compensate (SCI_1-Karcz et. al., 2022, p. 10).

In fact, those SCI individuals who did not have a higher education, often times, decided to seek further education and retraining to make themselves more qualified for a particular job (Leiulfsrud et. al., 201).

"So, then she [the administrator] said, 'yes you can start studying, then you'll be like an ordinary…like anyone else that starts studying'… 'and then, well, you think about how to manage, then maybe you're suddenly off the benefit and must I suddenly move from here'?" (Holmlund et. al., 2018, p. 2879).

State related services including vocational rehabilitation can also be helpful for individuals with SCI in gaining employment (Wilbanks & Ivankova, 2015). Many individuals do have awareness of their rights and are aware of legislation and regulations, however gaining employment post SCI may require navigation of social policy and funding arrangements which can be navigated with the help of state services (Wilbanks & Ivankova, 2015; Leiulfsrud et. al., 2014).

"…vocational rehab was very helpful in preparing me for work. They paid for my physical restoration, my wheelchairs, cushions, and they provided some counseling, so they were very helpful" (G-man-Wilbanks & Ivankova, 2015, p. 742).

"When I showed an interest in working, if I provided a vehicle, vocational rehabilitation would cover the cost to equip the vehicle so that I could drive" (Sulli-Wilbanks & Ivankova, 2015, p. 745).

"The Swiss Paraplegic Association brought to my attention that I was entitled to disability pension, which I never received. I only discovered that three years ago."

(ABI _1-Karcz et. al., 2022, p. 9).

Theme 5: External Work Supports and Services Positively Impacts Return-to-Work Post SCI

A strong support system post SCI can influence the decision, process, and outcomes of return-to-work post SCI. Vocational rehabilitation services help individuals with disabilities connect with counselors who assist them with finding jobs (Wilbanks & Ivankova, 2015)

"Vocational rehab was very helpful, far as getting me leads. They work with companies that work with people with disabilities so there are no surprises when you come in for the interview in a wheelchair. They help with gas money, or if you need adaptation, they help with that" (Sulli-Wilbanks et. al., 2015, p. 742).

Participants reported that access to vocational rehabilitation services early in the process helps in giving direction for achieving goals, provides a confidence boost, provides advocacy, and gives a sense of hope for a better future (Dorstyn, 2021; Ramakrishnan, 2016; Wilbanks, 2015). Vocational rehab provides the initiation of the return-to-work process (Dorstyn, 2023).

"I do think that acute sort of presence of a vocational counselor within the acute rehab setting is vital, because that's where the seed, really, is planted, that returning back to work is a possibility, and it's something that can be achieved" (P9, Dorstyn et. al., 2021, p. 251).

"It may have helped in preparing me to return to work. Beginning workplace modifications earlier would have resulted in returning to work earlier" (#32-Dorsett & McLennan, 2019, p. 134).

Having supportive partners, family, and friends was reported to be very impactful both emotionally and psychologically for individuals with SCI during the return-to-work process (Karcz et. al., 2022).

"If you've got a motivated family, you've got people around you that are doing stuff, are motivated, are there, you've got an employer that wants to get you back into the system, then you're halfway there already" (P6-Dorstyn et. al, 2021, p. 251).

"If there is any one person who is inspiring to me it would be my mom. When we were very young my dad left. She didn't give up anything…she was very hard-working single mom…she wasn't one to give up and still isn't one to give up so…that's the role model that I had."

(Phil-Wilbanks & Ivankova, 2015, p. 744).

"Without family it's nearly impossible" (Karcz et. al., 2022, p. 11).

Social networks and/or peer networks provide insights on the job market for the SCI population as well as assistance in gaining suitable jobs (Dorstyn et. al., 2023).

"Talking to people who have experienced a similar level injury and who are working, discussing the types of work out there that other like-minded people are doing."

(#11-Dorsett & McLennan, 2019, p. 136).

"…The advantage of working is the network of people that you have around…"

(G-man-Wilbanks & Ivankova, 2015, p. 747).

Discussion

The aim of this scoping review was to analyze existing literature about the perceptions of persons with (SCI) and their experiences with participation in productive work after SCI. In synthesizing the findings of this scoping review, it has been observed that there are many experiences that positively and/or negatively influence participation in productive work after injury. Many experiences that individuals with SCI have, are based on known barriers and supports that all individuals perceived uniquely (Treneman et. al., 2015). These experiences reflect the fact that employment outcomes post SCI can be the result of personal and environmental factors (Moreno et. al., 2017). To improve employment outcomes for individuals with SCI, it can be beneficial to investigate and understand the experiences of this population and how they influence the decision to return to work post injury (Treneman et. al., 2015).

This scoping review derived five common themes from the 11 qualitative studies included. These themes represent the recurring similarities in reported experiences as well as descriptions of those experiences that were highlighted as being predominate by the participants. Themes included: (1) Persons who engage in Productive Employment After SCI Report Positive Benefits on Social and Emotional Health, (2) Successful Participation in Work Starts with a Strong Desire, (3) The work environment is significant, (4) Access to financial and educational resources influences return to work post SCI, and (5) External work supports and services positively impacts return-to-work post SCI.

Persons Who Engage in Productive Employment after SCI Report Positive Benefits on Social and Emotional Health

This scoping review had findings similar to previous studies, with participants expressing their belief that work can prevent social isolation (Hilton et. al., 2018). Social and emotional satisfaction post SCI has been linked to satisfaction with performing usual social activities and fulfilling social roles including successful productivity and completion of employment tasks (Eskola, 2022). Further, being socially connected is identified as meaningful to those with SCI and is considered a benefit of working after injury (Halvorsen et. al., 2023). Work is meaningful in a way that reintegrates SCI individuals into the community not only by connecting individuals but also by enabling SCI individuals to contribute to society in a way that is respected by others (Ullah et. al., 2018). Being socially interactive in the workplace helped individuals with SCI identify as contributing members of society leading to improved mental and emotional health (Hilton et. al., 2018). One major benefit of having a job as identified by previous literature is social interaction which leads to purpose, sense of belonging, and structure in everyday life for individuals with SCI (Ullah et. al., 2018). Employment has also been described as something that gives individuals with SCI satisfaction and recognition as well as makes them feel appreciated positively influencing general emotional health (Ullah et. al., 2018). This scoping review further highlighted the role that work can play in social and emotional health for persons with SCI.

Successful Participation in Work Starts with a Strong Desire

Unemployed and job-seeking individuals with SCI were noted to have self-generated hope and desire for future employment, identified as a primary facilitator for obtaining

employment post injury. Hope has been identified by similar research as an important facilitator of adjustment post SCI and suggests that it is vital for individuals with spinal cord injury to accept their limitations and maximize the outcomes of rehabilitation (Dorstyn et. al, 2017). While hope has been recognized as an important coping strength post SCI and a target for clinical intervention, research regarding this characteristic in regard to return to work after SCI is limited (Dorstyn et. al., 2017). The desire to engage in productive employment post SCI was further described as being embedded in the wider hope for fulfilling life with improved quality post SCI by these individuals (Tran, 2019). This review further addressed the value of hope post SCI and it's influences on the decision to return to work post SCI.

The Work Environment is Significant

One key facilitator for successful return to work post SCI is the work environment (Escorpizo et. al., 2018). Similar research has noted that individuals with SCI who reengage in productive employment often require adaptations and modifications to the workplace as well as work schedules (Borg et. al., 2021). A supportive work environment includes the physical workspace of an individual with SCI as well as the interactions they experience with employers and colleagues and has been identified by similar research as even being a part of interventions for return-to-work post SCI (Holmlund et al., 2018). Previous studies identified the work environment as being a beneficial resource for successfully maintaining employment (Borg et. al., 2021). The work environment can serve as a vital part of long-term support resources as well as medical care for SCI individuals (Escorpizo et. al., 2018). Particularly for individuals with SCI an adjusted work environment including an accessible workplace as well as modified work tasks was identified as an essential facilitator for sustaining employment (Ullah et. al., 2018). This review further highlights the importance of workplace adaptions and the influences of a

supportive work environment on return to work as well as the ability of SCI individuals to maintain productive employment long term.

Access to Financial and Educational Resources Influences Return to Work Post SCI

Education has been found to be an important factor for individuals with SCI who wish to return to work after injury (Ramakrishnan et. al., 2011). In previous studies, individuals with SCI shared perceptions of higher formal education as a facilitator which made it easier to obtain and sustain employment post injury and was also associated with decreased time to return to work (Ramakrishnan et. al., 2011). In fact, it was identified that SCI individuals who do not have a higher education seem vulnerable in return to work and find it much more difficult to obtain employment (Nowrouzi-Kia et. al., 2021). Often, SCI individuals pursued further education and training to qualify for a particular job (Bezuidenhout et. al., 2022). The findings of previous studies indicate that although difficult to some, pursuing education was perceived to be viable post SCI (Holmlund et. al., 2018). Socio economic status has also been noted to be an influencing factor of return-to-work post SCI (Ramakrishnan et. al., 2011). In fact, literature shows that spinal cord injury individuals with higher socio-economic status prior to injury are more likely to return to employment post injury and sustain employment long term (Nowrouzi-Kia et. al., 2021).

External Work Supports and Services Positively Impacts Return-to-Work Post SCI

The return-to-work process post SCI can be strongly influenced by the presence of a strong support system (Farias et. al., 2023). Services such as vocational rehabilitation can enable individuals with SCI by providing assistance in the job search process (Nowrouzi-Kia et. al., 2021).

Vocational rehabilitation has been noted by SCI participants in previous studies as being very helpful in return to work by providing initiation, support, and direction towards achieving goals and increasing confidence (Ramakrishnan et. al., 2016). Family, friends, and partners can also serve as emotional and psychological support to individuals with SCI during the return-to-work process as well as during adaptation and adjustment in the work environment (Nowrouzi-Kia et. al., 2021). Insight to the job market can be provided by social and peer networks enabling individuals with SCI to find employment that is meaningful and suitable for the individual (Farias et. al., 2023).

Many experiences that individuals with SCI have been based on known barriers and supports that all individuals perceived uniquely (Treneman et. al., 2015). These experiences reflect the fact that employment outcomes post SCI can be the result of personal and environmental factors (Moreno et. al., 2017). To improve employment outcomes for individuals with SCI, it can be beneficial to investigate and understand the experiences of this population and how they influence the decision to return to work post injury (Treneman et. al., 2015).

Implications for Occupational Therapy Practice

Employment outcomes can often be based on unfavorable experiences that reflect difficulty (Heller-Ono 2021). To overcome this difficulty another support for this population and those who wish to return to work is occupational therapy (OT) services (American Occupational Therapy Association [AOTA], 2014). OT is often part of the multidisciplinary team for vocational rehabilitation for persons with SCI and work to help this population explore potential vocational opportunities as well as gain employment (Arsh et. al., 2022). Once a person with SCI can achieve productive employment, OTs work to enable their success in the workplace by creating a safe and accessible environment (Denslow, 2020). OT's also work to establish and

manage expectations of both employer and employee to enable patient success in the workplace (Arsh et. al., 2022). OTs understand that the physical and mental health of a patient suffering from SCI can be very much connected to their ability to work, be productive and provide for their families (AOTA, 2014). According to the AOTA Vision 2025, OTs recognize and agree that occupational engagement and activities that allow people with SCI to achieve their goals and desired outcomes have better physical and mental health (AOTA, 2014b, 2015b).

Future Research

The findings of this review may be beneficial to this population, care takers, and healthcare providers, specifically rehabilitation professionals who are directly engaged in the rehab of this population post injury. This review may give insights to strategies and interventions that may help enhance experiences of SCI individuals in the return-to-work process. If more positive experiences occur for these individuals there may be more who would consider or actually return to productive employment post SCI (Leiulsfrud et. al., 2014). Priorities for further research are recommended to begin with further development of the topic with direct interaction with SCI individuals and comprehensive tracking of their experiences of return-to-work post injury over a 2-year period of time to gain an extensive understanding of experiences both positive and negative in order to establish if enhancing these experiences could result in better outcomes (Arksey & O'Malley, 2005). Also, investigating the influence of gender on the return-to-work process and sustainability of work post SCI to gain insights on the differing work patterns and level of participation of males and females post SCI (Nolan, 2015).

Summary

Overall, the findings of this scoping review have provided information to understand the experiences of individuals with SCI as they consider return to work post injury and actually engage in employment. Adapting the biopsychosocial model for this review to study the interaction of biological, sociological, and psychological factors that lead to positive or negative experiences for individuals with SCI provides insights on how all experiences can be unique or similar (Marschall, 2023). The findings of this review may indicate the continued need to examine experiences of these individuals and assess if there is a need to enhance these experiences and if so, the best method to enhance (Treneman et. al., 2014).

Strengths and Limitations of the Study

The strength of this study can be found in the qualitative rigor of the study as justified by the methodology and quality assessment used and completed. Because credibility, dependability, transferability, and reflexivity of all articles studied were confirmed, the rigor of this study can be noted to be consistent with the included literature and transparent, accurately reflecting the topic and the findings of the review, that the findings can be used by others, and that the process and results of the review are open to enquiry and validation (Stenfors et. al., 2020). Another strength of this study is the use of multiple reviewers to review literature, extract and process data, and cross-check findings which can all decrease the likelihood of researcher bias influencing the findings (Stenfors et. al., 2020).

There may be limitations of this review. First, the search phrases used for research were broad and generated many articles that did not meet the inclusion criteria, consequently limiting the level of comprehensiveness of this review as well. Database searches can be complemented by other methods such as manual scanning or hand-searching and/or citation analysis in order to

increase comprehensiveness of the review (Saunders et. al., 2014). Second, only qualitative studies/articles were included in this review which means that any other evidence such as quantitative studies that may have enhanced this review were excluded. Third, all studies included in this review were not gender specific rather included both male and female participants which means that the influence of gender on the experiences of individuals with SCI could not be studied. Further study on the effects of gender on this topic could provide valuable insights on the differing work patterns and level of participation of males and females post SCI (Nolan, 2015). Fourth, direct formal discussions or meetings with spinal cord injury individuals could have been beneficial in learning more about their return-to-work experiences as is suggested by Arksey and O'Malley and would have served to be a good comparison to current evidence (Arksey & O'Malley 2005).

Conclusion

This scoping review evaluated the current literature and what is known about the experiences of individuals with SCI who have engaged in productive employment post SCI. Common themes were derived from the included studies which described positive and negative experiences of individuals with SCI as related to return-to-work post injury including involvements such as social supports, the work environment, education, and the strong desire for employment post injury. The results of this scoping review could be beneficial for rehabilitation professionals who design interventions for individuals with SCI by giving them insights on how to help make the occupational engagement experiences especially for work successful. This review can also be insightful for family, friends, and caregivers of SCI individuals. By helping create successful outcomes for persons with SCI, there may be an increase in the low employment rate of this population.

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Appendices

Appendix A: Overview of Studies

Overview of Included Studies

Author(s)/year	*Purpose or Research Question*	*Data Collection Methods*	*Participants*	*Synthesis*
Dorsett et. al., 2019	What is the return-to-work rate of individuals with SCI and the culture revolving around return to work following SCI prior to vocational rehab interventions.	Digital surveys were distributed and received by the Griffith University research team electronically and anonymously via Survey Monkey. To further expand the sample received, a hardcopy survey was mailed to potential participants from the Spinal Life Australia member network, including return paid postage.	19 electronic responses, 18 written responses from SCI individuals who had injury in the preceding three years, over the age of 18, not retired from work at time of injury. Total sample size was 34 due to three responses being rejected because inclusion criteria was not met.	The findings of this study indicated that many individuals with SCI did not experience RTW as part of their rehab. The focus of rehab was not RTW. A smaller number of individuals felt that they did get some exposure to RTW process in their rehab initially after SCI through general fitness, stamina building, mobility, and skills for daily activities (ADL's). Participants reported that these skills were skills were both physical and functional and motivated RTW. In rehab, participants reported that they experienced staff who were interested in the RTW process for their patients, however, did not have the skills to implement intervention. The overall opinion of whether voc. rehab should have been introduced early in the rehab process, some reported that it would not have been appropriate to implement voc. rehab early as that was the time, they were more focused on their health and getting better, others reported that intro of voc. rehab and initiation of the RTW process helped them maintain a positive attitude to move forward in life. The results of this study highlighted a need for individualized early VR interventions integrated in primary rehab post SCI.

Dorstyn et. al., 2023	To examine perspectives of persons with SCI and their experiences with the job search process to determine service gaps and return-to-work solutions.	Interviews were conducted over a 4-month period via zoom or telephone. All participants were asked the same questions which addressed their backgrounds and the experiences they had with employment, services for employment support, and their own recommendations. Interviews ranged from 23-59 minutes and were recorded and transcribed.	8 participants (6 male and 2 female); average age of 45 years (range 37-58 years); most had sustained traumatic paraplegia; varied work histories (four employed on contract or part time basis and four unemployed since their injury however wanted to return to work. Four rehab professionals; average age of 60 years (range 15-40 years) with neuro rehab experience, post graduate qualifications in OT, social work, nursing and management.	Identified Themes: Personal Domain Incentive and Motivation Individual Expectations and attitude Individuals outlook on disability Extrinsic Factors Good Wage Workplace Conditions Environment Domain Employer attitude towards disability. Discrimination Occupational Domain Individual anxieties. Secondary Health Issues Empowerment for self-care Social Support Preexisting Social Networks Vocational Counselor Job Person Fit Organization person fit Functional capacity assessment Work roles Employment support Continued Education and Skills Training Competitive job market. Need for promoting employability skills. PEOP Model Identifying solutions in RTW process.
Hilton et. al., 2018	What are the experiences and pathways of individuals with SCI toward employment post injury.	Semi structured interviews with open-ended questions were used to gain information regarding the individual's vocational pathway pre and post injury; questions were posed to elicit responses about the experiences of seeking, gaining, or maintaining employment based on enablers or challengers. The study was advertised via local state spinal cord injury services and a member-based community support organization as well as websites, newsletters, and notice boards. Interested individuals reached out to researchers via phone or email. Interviews lasted 45-90minutes. Interviews were recorded and transcribed verbatim.	30 participants (10 for each group) stable, unstable, and without employment. Participants had sustained SCI and were in the workforce at the time of recruitment, spoke English.	Three groups or pathways were identified in this study with four super ordinate themes **Groups/Pathways** **(1)** Stable employment outcome: two main pathways = (1) from preinjury study to study and then post injury employment. (2) from study and then employment preinjury and return back to same employment post injury. **(2)** Unstable employment: studied and worked preinjury to then achieving unstable employment post injury. This pathway was less clear and was complicated by major comorbidities, mental health issues, or loss of insurance benefits. **(3)** Without employment: variable outcomes, employment achieve post injury however at the time of this study were unemployed. **Super ordinate themes:** **(1)** Expectations about employment after SCI: Paid employment was an accepted part of the journey post SCI, strong desire to work. **(2)** Comprehension and navigation of systems and rights: majority participants understood their rights and legislation/regulation. Those participants who did not have this awareness struggled with insurance claims and the general welfare system. **(3)** Impact of worker identity on motivating employment: Motivated by employment goals to overcome barriers, shift in role validation post injury; having to find a new

				worker identity by some participants, process of exploration and trialing different things gave a sense of satisfaction when a new skill or role was discovered. **(4)** The importance of social support and their contribution to employment outcomes: social support provides physical and emotional assistance if needed.
Holmlund et. al., 2017	The aim of this study is to explore the experiences of return to work of SCI individuals in the context of everyday life 7-11 years after injury.	Narrative approach, using both interviews and observations. Open-ended questions are used to trigger responses about situations including who, what, when, where, and how in order to elicit detailed descriptions. Most interviews were in person lastly 45-120 minutes, one interview was completed via phone.	8 participants (6 male, 2 female). Ages were 20-34, 1-5 years post injury and not having returned to work. Participants represented diversity in gender, injury level and ethnicity, having similar education backgrounds and born in Sweden.	Five main themes extracted from data: (1) Negotiating the possibilities of working; the ongoing negotiation about the possibility of working due to everyday life priorities and daily life issues such as pain, fatigue, UTI, and time-consuming self-care had to be considered. (2) Hope for future work tempered with concern; for those participants not working, this described their anticipation and hope for work later in life. (3) Education as a possible path to employment; important along the path to employment, pursuing education was found to be challenging but viable to help increase options in labor market. (4) Paths toward return to work in the light of unmet support; ineligibility of benefits, some participants experienced return to work initiatives through agencies after SCI rehab, others were granted sick compensation without any work trial or support. (5) Unpaid occupations ground in interest and competence; participants who did not work used that time to pursue hobbies or passions.

Jean et. al., 2013	To explore the experiences of people with SCI and VR professionals who work for VR programs in their pursuit to return to work in New Zealand.	Semi structured interviews (based on existing literature and prior study results). Interview questions were reviewed by experienced VR professionals and SCI consumer advocacy group representatives. One researcher interviewed all participants at a location that was mutually agreed upon, often being the participants' home. Interviews lasted 45-90 minutes each and were then transcribed and recorded.	12 participants (male and female) who were between 2-3 years post injury at the time of the study. Participants were employed, job seeking or not employed and represented both complete and incomplete injuries.	Three themes were identified: Living a normal life, barriers and facilitators, role of the VR Professional. In each group there was no pattern that related type of preinjury work, time elapsed since injury, or the time between injury and return to work. Each group had representation of full upper limb function, users of manual and powered wheelchairs, and one participant in the employed and unemployed groups. Living a normal life: all participants mentioned that resuming employment was a sign of returning to what they felt was a normal life. Barriers and facilitators: facilitators include the desire to return to work, familiar job, hope for return to work. Barriers included health issues, difficulties adjusting to new life with SCI, misconceptions of others about the ability to perform on the job. The role of VR professionals: main support for individuals with SCI to return to work; serve as a bridge that connects the gaps between the SCI individual and the employer, problem solver; partnership with SCI individual.
Karcz et. al., 2022	To examine facilitators and barriers that influence sustainable employment from the perspective of individuals with SCI.	Focus groups were formed (14) and individual interviews were conducted (4) and then thematically analyzed.	29 individuals with SCI and 22 individuals with ABI, 40 out of 52 participants were engaged in paid employment at the time of the interviews.	Facilitators and barriers organized into three biopsychosocial areas of personal (perceived benefits of having a job, personality characteristics, and skills and strategies), impairment-related (injury-related impairments and secondary health conditions, limitations in work functioning, additional impairment-related challenges at work) and environmental factors (social environment and goodwill of others, work environment, services, system and policies).Personal: Perceived benefits of having a job include: social interactions, purpose in life, sense of belonging, structure in life, sense of satisfaction and recognition. Personality Characteristics: positive attitude toward work, persistence, high motivation to work or sustain a job, high self-expectations, ambition. [barrier-self-doubt]. Skills and Strategies: higher formal education, sufficient work experience, ability to communicate and self-advocate, self-acceptance and reconciliation with injury-related limitations in daily living and reduce career opportunities, sense of humor and openness to others about one's own injury and its consequences, getting to know medical and legal procedures and being aware of one's own rights and capabilities of living with disability, managing one's own health and preventing secondary complications. Impairment-Related Factors: Injury-related impairments and secondary health conditions include injury-related impairments and secondary health conditions. Limitations in work functioning: lower work performance due to longer time needed to complete work tasks. Additional impairment-related challenges at work: additional time required for managing health and disability. Environmental Factors: Social/Goodwill of others: social environment, emotional support from partners, family, and friends. Work Environment (Workplace): adjusted work environment, accessible workplace, adapted work tasks were identified as vital; working conditions or flexible hours and possibility to work from home were identified as very helpful; employer and colleagues or a supportive and understanding team, it was noted that the lack of understanding of the disability by employers and colleagues created great challenges. Services: Rehab and Integration; individuals reported that during the

				initial phase of the RTW process they had to learn about their own disability and understand their health condition thoroughly and ultimately develop a new identity, the lack of psychological support during the RTW process also created great challenges, individuals also reported that this phase was a determining factor for their later work life. Health professionals: family physicians and psychiatrists were identified as key supporters. Insurance: rigorous verification-revisions of pension benefits posed a great stress and threat to financial security. Systems and Policies: Societal Attitudes; lack of awareness in society which led to prejudices and negative attitudes in the workplace, SCI individuals expressed the need for a more inclusive and tolerant society. Labor Market: high competition and focus on profit alone caused the labor market to lack consideration of the wellbeing of workers which caused a major barrier to employment, high pressure environments created for disabled employees which created threats to disability management and the balance between work and personal life.
Leiulfsrud et. al., 2014	What is the value of employment for people with spinal cord injury living in Norway and what motivates the people of Norway with spinal cord injury to work.	Interview guided by open-ended questions and follow up questions which lasted one to two hours. Interviews were targeted at examining the perspectives of SCI individuals about employment and everyday life. Participants communicated by given descriptions of their perspectives and understanding about participation and integration into society. All interviews were audiotaped and transcribed verbatim by the first author.	31 participants (20 male and 11 female). The average age at the time of the interview was 48 years (age range 23-68). 18 participants with paraplegia, 10 with tetraplegia, 3 with spina bifida. More than 50% of participants were injured before the age of 30. 11 participants were employed when interviewed, 3 were students, 16 received disability pension, and one person had retired and receiving pension. 20 participants were in regular jobs at the time of injury, 10 returned to employment or education within one year after being injured and 15 within a 2-year period.	50% of the participants felt that work and employment were a key factor in their ability to participate in society. Four general themes were identified: (1)Personal confidence and confirmation of identity: employment was crucial to their self-esteem and personal identity. (2) Contribution to society and duty as citizens: medical, legal, and social reasons and rights for opting out of the labor market and receive disability pension; however, some participants had a strong moral dimension and felt it was important to opt out of pension benefits and work to contribute to society. (3) Functional equivalents to full-time employment; lack of alternative models of work, alternative activities that might take the place of full-time employment in terms of integration and participation of SCI individuals in society. (4) Even if employment is less important than in the past, it continues to matter employment was important to participation and integration in general but may not be the best for every individual especially those who are receiving pension after a long employment career.

Marti et. al., 2017	The purpose of this study is to examine the long-term employment pathways that are experienced by individuals with SCI living in Switzerland.	Based on information on questionnaire, typology of employment pathways was preliminarily established. Then narrative interviews were conducted to record subjective information about the experiences of the participants with their individual employment pathways.	15 participants (male and female). Participants were individuals who experienced SCI and received vocational rehab services at a facility called "ParaWork" in 2002 or 2003 as part of the initial rehab. 7 participants were in paid employment at the time of the interview, two were retired, and six were not employed.	Three central attributes were identified that characterized the major employment pathways identified by this study. These pathways were based on central attributes including w/c accessibility at the job site prior to SCI, return to preinjury employer, and current employment status. Four employment pathways were identified (1) pathway of no paid work (2) pathway of retraining (3) pathway of job adaptation (4) pathway of continuing work. **(1)** Pathway of no paid work: five participants represent this pathway, job site pre-SCI was w/c inaccessible, and the individual could not return to pre-SCI employer, vocational retraining could not occur due to health problems and lack of motivation, generally these individuals did not have any follow up solution for initial rehab post SCI, caught up in competing responsibilities such as home and children. **(2)** Pathway of retraining: inaccessible job prior to injury (jobs such as entertainer, mechanic, electrician, forest laborer, not able to return to work after injury. Younger individuals who had to adapt to their disability and come up with a new vocational solution (developed a new employment outlook/identity); received clear vocational follow up solution during initial rehab. **(3)** The pathway of job adaptation: pre-SCI job site was not wheelchair accessible, but the employer adapted and created a new job within the organization (well established relationship with employer helped this); acquired new vocational skills in order to fulfill new job duties; these participants were open to new job opportunities and prospects. **(4)** The pathway of continuing work: worksite prior to injury was wheelchair accessible, these individuals had the opportunity to return to their previous employer; employer showed strong commitment to maintain employment with individual post injury and even committed to modifying the work space even beyond what was paid by insurance, these SCI individuals perceived their employers as having a crucial role in their RTW which not only enabled the employee post injury but also gave them confidence.

Monden et. al., 2019	The purpose of this study was to assess how individuals with SCI perceive two factors believed to be contributing factors towards injustice toward this population. Those two factors include irreparability/severity of loss and blame/sense of unfairness. How do individuals who have SCI conceptualize injustice?	Data was collected during inpatient rehab, with follow up interviews completed 1 year post injury and every 5 years following that. IEQ was used to assess perceptions of data followed by a telephone semi structured interview which were completed in less than 30 minutes and were recorded. The recordings were then transcribed.	15 participants; inclusion criteria included: enrollment in NSCISC and had completed 1 or 5 year SCIMS follow up interview, 18 years or older, able to provide informed consent, lived in the community, cognitive capacity sufficient enough to complete the interview, absence of mental illness or developmental disability.	According to the IEQ, more than half of the participants reported high perceptions of injustice; these participants were characterized as mainly white males who were unemployed and more likely to have cervical and motor incomplete injuries. In order to review response patterns, IEQ scores were categorized into two major categories with subcategories. Those include **(1)** Blame and Unfairness: participants felt something had been taken away from them or the injury happened due to the negligence of another person. Fate or circumstance – individuals did not blame any person or incidence rather felt their injury was due to a coincidence or fate. Internalized blame – blaming oneself. Stigmatization – experiences of SCI individuals noted by the looks they receive. **(2)** Severity/Irreparability of Loss: wanting to have life back, individuals reported that others do not understand the severity of their injury. Life with disability – the ability to cope with the physical impairment, loss of ability to engage in activities as before, issues with bowel and bladder, the inability to work, transportation and pain. Lack of understanding by others – lack of others really understanding their disability, seeing beyond the wheelchair and understanding the other issues as well such as bowel and bladder. Focus on the positive – being thankful for surviving the incident and making the best of what is at hand.
Ramakrishnan et. al., 2016	The goal of this study is to explore the perspectives of individuals with SCI about the timeliness and appropriateness of the early intervention of vocational rehabilitation during acute inpatient and rehabilitation hospital stay.	Semi structured interviews mostly took place in outpatient department of hospital. 10 interviews were in person, 3 were completed via phone. Interviews were recorded and transcribed verbatim.	13 participants (12 male, 1 female). Various injury levels and various employment backgrounds, all post SCI under 2 years. Time since injury was 7-21 months, averaging 14 months.	Two themes were extracted from this data: (1) timeliness (2) value and critical elements of the program. For timeliness of the program the majority of the participants or 8/13 felt that the introduction of vocational rehab early in the process is the best. They felt that it was a confidence booster and helped to set timelines for return to work without which participants would not have returned to work. 2/13 of the participants were indecisive and 3/13 participants felt that it was offered too early during their acute hospital phase and felt that the rehab phase would be more appropriate for the introduction of the program. The participants felt that their focus during the acute phase was just on getting better and not focusing on their career, this is the time when the patient is coming to terms with the disability. For the value and critical elements of early intervention participants reported that in the early phase of rehab, voc rehab provides a sense of hope, direction and advocacy for the patient. Overall, the introduction of vocational rehab services seems to be appropriate, important and valuable to patients.

Wilbanks, 2015	The purpose of this study is to explore the factors which facilitate and positively influence adults with spinal cord injury in rejoining the workforce. Central question of the study is what are the factors that facilitate individuals with physical disabilities to go back to work?	Personal interviews were the primary data collection method; photographs of assistive devices were used to establish how these tools helped with adaptations during return to work; face-to-face interviews were completed with each study participant which lasted 40-60 minutes. All interview questions were open-ended, and the interviews were recorded after gaining permission from the participants. The interviews were then transcribed.	Four adults (one female, three male) who acquired traumatic SCI in adulthood and were currently employed full time at the time of injury. Age ranges from 42-57 years and all had been working or the current employer for at least 2 years full time	Identified themes: (1) Regardless of resources RTW remains low (2) RTW remains low even though law and legislation support successful RTW post SCI (3) Low RTW = decreased QOL and low economic status. (4) Policy (ADA) supports disability and modifications to support RTW (5) Motivation and resources for successful RTW: family, rehab professionals who influence therapy, state agencies (6) Resources, motivation, challenges, and benefits including: Financial needs Medical care Supportive work environment Supportive employer Assistive technology Physical wellbeing. Motivating factors Rehab professionals Role models Barriers include: Schedule, Bladder and bowel control, and physical challenges. Gap: Limited number of qualitative inquiries from around the world have been made into RTW after SCI; more quantitative studies which only identify function factors (level of injury, personal factors such as personality). Current knowledge of RTW after SCI lacks narrative description of personal experience of RTW from SCI population. Lack of understanding of influencing factors.