



# Approaches and Models in Special Education and Rehabilitation



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## INTERVENTIONS FOR RETURN TO WORK OF PERSONS WITH SPINAL CORD INJURY

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### SUMMARY

*The return to work of persons with spinal cord injuries is very important for their mental and physical health, economic status, social integration and quality of life. The process of return to work or employment is complex and involves considering many personal factors, injury-related and contextual factors that can make predicting return to work success difficult. On the other hand, there are factors that can contribute to the success of this process. The purpose of this paper is summarizing scientific knowledge on return to work of persons who experienced spinal cord injury based on literature review. Analyzing of the recent research, it was discussed of the effectiveness of interventions for return to work in persons with spinal cord injury. Consideration was focused on vocational rehabilitation intervention as general and on early vocational rehabilitation, multidisciplinary team approach, coordination return to work and workplace intervention as specific intervention in frame of vocational rehabilitation. It can be concluded that all the mentioned interventions have a positive impact on the return to work of persons after spinal cord injury, directly by shortening the time of return to work, and on indirectly way leading to better mental health, social integration, self-confidence and motivation.*

Key words: intervention, spinal cord injury, workplace, multidisciplinary team, return to work coordination

### INTRODUCTION

The primary goal for working age persons with acquire disabilities is job retention and for those who have left their jobs due to their disability is return to work. Many will be able to achieve this goal, but for someone it will be impossible. Return to work is important for them because work gives them meaning and purpose.

The International Labour Organization adopted the Code of Practice on Managing Disability in the Workplace in 2001 and return to work is defined as “the process by which a worker is supported to resume work after being absent due to injury or illness” (p.5).

The phenomenon of return to work or employment involves many personal, injury-related factors, workplace factors and contextual factors that make predicting return to work success difficult.

In generally, there is evidence on the benefits of employment for persons with disabilities concerning better physical and psychological health, financial, an increased social integration, improved quality of life, enhanced self-confidence, expanded social network, and a sense of community as well (Lindsay, Cagliostro, Abarico, Mortaji, &

Karon, 2018; Murphy, 2009; The Royal Australasian College of Physicians & The Australasian Faculty of Occupational and Environmental Medicine, 2011).

Literature points on the benefits of hiring people with disabilities for employer by increase attention paid to the role of people with disabilities in the workplace. In summary, benefits included improvements in profitability, competitive advantage, inclusive work culture, and ability awareness (Lindsay et al., 2018).

On the other hand, worker disability and absence from the workforce is associated with significantly diminished economic, health-related and psychosocial wellbeing (Waddell & Burton, 2006).

Higher levels of industry development have led to increase in the number of persons with spinal cord injuries. Every year, around the world, between 250 000 and 500 000 people suffer a spinal cord injury (WHO, 2013). Traffic accidents are the most common cause of injuries, but including high-altitude crashes, work-related accidents, sports injuries, stabbing with sharp objects, or bullet wounds (Bogdanov, 2009). All previous injuries are traumatic in nature, and more of 90% of spinal cord injuries are in this group (WHO, 2013). Other group includes non-traumatic injuries as causative agents like cancer, infections, vascular diseases of the spinal cord, and diseases of the intervertebral disc (Van den Berg, Castellote, Pedro-Cuesta, & Mahillo-Fernandez, 2010).

Spinal cord injuries are more common in adults than in children, and when compared to sex, they are more common in men than in women, with a 2:1 ratio (WHO, 2013).

This type of injury occurs unexpectedly and the person faces major changes in all areas of life in the physical, emotional and spiritual sphere (Carvalho, 2002 cited in Mendonça Pinto Amaral, 2009). The person begins to live in a new reality where roles and activities need to change.

Meaning of work after spinal cord injury in existing literature is described in terms of re-developing a sense of self, re-establishing place in the community and regaining economic self-sufficiency. In addition, the varied meanings of work after spinal cord injury may be used in rehabilitation programs to explore ideas about work, the types of work they wish to pursue, and the ways in which work may be meaningful for persons with spinal cord injury (Ullah, Fossey, & Stuckey, 2018).

Chapin and Holbert (2010) found that employed persons after spinal cord injury have more positive feelings, greater life satisfaction and a higher subjective quality of life than their unemployed counterparts. Furthermore, engaging in paid work is a way to be productive and because of that reinforcing self-efficacy and self-esteem (Clifton, 2010).

Some authors looked at the factors that positively affect return to work/employment after a spinal cord injury focusing on demographic variables, functional independence, pre-injury occupation and vocational training after injury.

Jang, Wang, & Wang (2005) found that education and functional independence were associated with employment. Persons with a high school education had higher chance of returning to work. Further, significantly associated with employment included marital status, with marriage having a favorable influence, age at injury, with age below 25 years being favorable. Persons with greater degree of functional independence and ability to use public or private transport independently had a 2.7-fold higher chance of returning to work than those unable to travel independently. Other factors significantly

associated with employment included pre-injury occupation and vocational training after injury.

Based on the above, the importance of returning to work of persons with spinal cord injury is indisputable, so the purpose of this paper is summarizing scientific knowledge on the return to work of persons with spinal cord injury based on literature review. Through the analysis of the results of recent researches, the effectiveness of interventions for return to work in persons with spinal cord injury was discussed. The consideration is focused on vocational rehabilitation interventions, early vocational rehabilitation intervention, multidisciplinary team approach in vocational rehabilitation, coordination return to work and workplace intervention.

### **Interventions associated with return to work**

In generally, return to work interventions require the work environment and concerted action by the various partners, the health care services, the welfare system and employer (OECD, 2010). Several intervention components are found to be essential for facilitating return to work, including centralized coordination of the employees return to work, formal individual psychological and occupational interventions, workplace-based interventions, work accommodations, contact between various stakeholders and interventions to foster concerted action (Briand, Durand, St-Arnaud, & Corbiere, 2008).

### **Vocational rehabilitation intervention**

Vocational rehabilitation including set of activities focused on return to work or employment of persons with disabilities. The definition of vocational rehabilitation that includes all these elements though not explicitly provided by Chan, Reid, Kaskel, Roldan, Rahimi, & Mpofu (1997) and defined it as a dynamic process consisting of a series of actions and activities that follow the logical, sequential progression of services related to the total needs of the persons with disability. The process begins with the initial case finding or referral, and ends with the successful placement of the individual in employment. Many activities and developments occur concurrently and overlapping in time frames during this process (p. 312).

Vocational rehabilitation is process and includes series of services:

- assessment, program evaluation, and research,
- goal setting and intervention planning,
- health advice and promotion, in support of returning to work,
- self-management of health conditions,
- adjustments to the impact of a disability,
- case management, and service co-ordination,
- psychosocial interventions,
- career counseling, job analysis, job development, and placement services,
- functional and work capacity evaluations (Vocational Rehabilitation Association of the UK, 2016).

While general rehabilitation focuses on facilitating the functional recovery from injury or illness, to its original state as possible, vocational rehabilitation objective is restoring capacity for work and consists of a range of techniques which could effectively help disabled workers return to work, job retention, or to find a new employment. The benefits of vocational rehabilitation for injured people are mitigating work disability, expedite return to meaningful employment, minimizing lost workdays, increasing the person's productivity, reducing early retirement, and restrict the welfare cost (Disler, 2001).

Arango-Lasprilla, Cardoso, Wilson, Romero, Chan, & Sung (2011) examined effect of receiving services from state vocational rehabilitation agencies on employment outcomes of person with spinal cord injury. Observational analyses of vocational rehabilitation interventions have found that on-the-job training, job search assistance, job placement assistance, on-the-job support, maintenance services, assistive technology and 'other services' were significant predictors of successful employment outcomes.

There is evidence on vocational services that actively engage persons with spinal cord injury in job seeking and providing on-the-job support that are more effective than general vocational counseling that involves only job preparation. Ottomanelli, Barnett, Goetz, & Toscano (2015) examined the association of specific vocational service activities as predictors of employment that actively engage persons with spinal cord injury. Primary activities recorded were vocational counseling (23.9%) and vocational case management (23.8%). Research included 81 veterans with spinal cord injury. As expected, job development and employment supports were the most time-consuming activities. Though the amount of time spent in weekly appointments did not differ by employment outcome, participants obtained competitive employment averaged significantly more individual activities per appointment. Further, participants who received job development or placement and employment follow-along or support services are more likely to be employed but if they received only vocational counseling was less likely to occur it. Community-based employment services, including job development or placement and employment follow-along or supports as part of a supported employment model, were associated with competitive employment outcomes. Office-based vocational counseling services, which are common to general models of vocational rehabilitation, were associated with a lack of employment.

The interest of some authors was focused on examining the relationship between components of vocational rehabilitation services, demographic factors and work disincentives employment outcomes.

Marini, Lee, Chan, Chapin, & Romero (2008) examined this relationship in over 10 901 persons with spinal cord injury whose cases were closed either as employed (54%) or not employed (46%) by state vocational rehabilitation agencies. They found that job placement assistance, work disincentives, and case expenditures as the most important predictors of employment outcomes. In addition, physical restoration, substantial counseling, and assistive technology services all led to positive employment outcomes. Importantly analysis indicated that demographic variables interacted with rehabilitation services to affect employment outcomes. Authors concluded substantial counseling, assistive technology, and job placement and support services are important to the return-to-work success of persons with spinal cord injury.

### **Multidisciplinary team approach**

The success of vocational rehabilitation does not depend only on the application of various interventions, but also the experts who participate in their performance have a significant role. Therefore, Escorpizo, Reneman, Ekholm, Fritz, Krupa, Marnetoft et al., (2011) defined it as

multi-professional evidence-based approach that is provided in different settings, services, and activities to working age individuals with health-related impairments, limitations, or restrictions with work functioning, and whose primary aim is to optimise work participation (p. 130).

Injury outcomes are different and experts must have basic knowledge related to injury consequences, necessary rehabilitation provision and other kind of help adapted to time and stages of injuries (Odović & Ilić-Stošović, 2016).

Multidisciplinary team involve many professionals and may differ depending on the individual programs but many include physician, nurse, physiotherapists, occupational therapists, psychologists, social worker, vocational trainers, job counselors, teachers, case-managers, job placement agencies (Cobble, 1990; Gobelet, Luthi, Al-Khodairy, & Chamberlain, 2007). Multidisciplinary teams are used both as a working model and a model of collaboration in vocational rehabilitation. There are different teams in vocational rehabilitation, for example clinical teams and intervention teams. These teams may be multi-professional or inter-professional and sometimes even trans-professional, depending on the intensity of the contacts between the members and how dependent they are on each other (Andersson, Ahgren, Axelsson, Eriksson, & Axelsson, 2011).

The different professionals have complementary competences and they bring their expertise to the team. Team has many benefits for both patients and the health professionals working in the team. Some of them are improving health outcomes and increasing customer satisfaction as well as more efficient use of resources and greater job satisfaction of team members. Earlier literature cites the three principal benefits of the multidisciplinary team approach that make it more effective than other processes for persons with disabilities and these are:

1. Allows persons with disabilities to participate in a goal oriented comprehensive interdisciplinary and coordinated rehabilitation process.
2. Helps ensure that person's rehabilitation plans will be individually tailored and coordinated.
3. Persons with disabilities are involved in the planning and implementation of their own individual programs (Hope et al., 1986).

Evidence of the benefits of applying a multidisciplinary rehabilitation program in vocational rehabilitation compared with treatment as usual is also available in recent literature. Braathen, Veiersted, & Heggenes (2007) conducted study to evaluate potential effects of a vocational multidisciplinary rehabilitation program on group of 183 patients on long-term sick leave (average 12.2 months). The effects of the treatment were compared with a 96 persons recruited from the national sickness insurance record of patients on sick leave of 6 – 12 months duration (average 11.5 months). Perceived work ability, return to work, background factors and psychosocial



aspects of work were assessed at the start and after 4 months. The multidisciplinary rehabilitation programme included physical activity, education, cognitive behavioural modification and workplace-based interventions. Work ability of the intervention group after 4 months improved significantly (80% achieved return to work) compared with the control group (66%). Regardless of group, individuals with a concrete goal of return to work at baseline showed a significant increase in work ability after 4 months. Patients with mainly psychological work demands showed higher work ability after 4 months. The return to work after 4 months was predicted by good work ability at baseline, improved work ability at follow-up, improved work motivation at follow-up and increased rumours of change in the workplace all predicted return to work. The improved work ability in the intervention group supports the use of the multidisciplinary rehabilitation programme.

Barriers to the multidisciplinary team approach can be passive, domineering, or unprepared team members who inhibit the overall team process, as can personality conflicts and biases among team members. Unless there is good communication between all team members, benefits are lost through misunderstandings and mixed messages that go into the ultimate decisions regarding the client's future (Hope et al., 1986).

Further, with all of these different actors, there is an obvious risk of service fragmentation in vocational rehabilitation or there may be a costly duplication of services. In order to avoid fragmentation, there have been initiatives to improve collaboration between organizations involved in vocational rehabilitation (Andersson, Ahgren, Axelsson, Eriksson, & Axelsson, 2011).

In addition to these barriers that can cause inadequate functionality of a multidisciplinary team, there is the question of team size when it comes to persons with spinal cord injuries and the effect of team size on patients' active participation in their treatment sessions. Dijkers and Faotto (2012) considered the size of teams and the its effect on patients' active participation during treatment sessions. They concluded the large size of the rehabilitation team should be reason for concern about continuity of care, unless it can be shown that formal and informal mechanisms of communication between staff members are available that counteract the problems inherent in conveying information on a patient's status, progress, and needs to a team numbering in the dozens. Treatment of a single patient by dozens of clinicians may not mean lack of familiarity of patient and therapist with one another or the possibly weak therapeutic alliance does not affect the patients' active participation in their sessions.

Odović (1998) believes that the accompanying difficulties that occur after spinal cord injury and paraplegia lead to a certain degree of social disintegration, which is one of the reasons for the multidisciplinary approach in the rehabilitation of these persons.

Barclay, Lator, Migliorini, & Robins (2019) conducted qualitative study to describe and compare models of service delivery intended to support community integration in the immediate period following inpatient rehabilitation for spinal cord injury. A variety of models aimed at supporting community integration in the immediate period following inpatient rehabilitation for spinal cord injury were found. Multidisciplinary staffing and involvement of peer mentors was common to all services. The importance of vocational rehabilitation was acknowledged by all participants, although the approaches taken to

this varied. Telehealth has the potential to assist in self-management, particularly for patients who live a long distance from the spinal unit or are confined to the home for health reasons, and could be further developed.

### **Early vocational rehabilitation**

Vocational rehabilitation programs can be involved, parallel, throughout the process of returning to the labour market after an injury and should be an integral part of all good clinical and workplace management and is not necessarily a separate, second-stage intervention (Waddell, Burton, & Kendall, 2008). Therefore, vocational rehabilitation may be used synonymously with either clinical rehabilitation services or any other types of interventions involved in the community settings such as work disability prevention, prevention of job loss, or work reintegration (Hou, Chi, Lo, Chou, Kuo, & Chuang, 2017).

There are still opinions that vocational intervention is inappropriate in the primary rehabilitation phase due to the significant physical and psychological adjustments of person after injury. Thus vocational intervention is typically delivered post-discharge through referral to disability services (Bloom, Dorsett, & McLennan, 2017).

Early vocational rehabilitation interventions targeting individuals soon after injury have shown potential for enhancing post-injury labour force participation (Middleton, Johnston, Murphy, Ramakrishnan, Savage, Harper et al., 2015).

Odović (2005) suggests, when it is possible, vocational rehabilitation process should be start during medical rehabilitation services. In that light it is important ensure cooperation between institution for medical rehabilitation services and vocational rehabilitation institution. Furthermore this cooperation would allow identification of persons who need career orientation and vocational training, medical counseling during vocational rehabilitation process as well. If it is necessary in this way, it would assure purchasing of orthotic or prosthetic device.

Rate of attainment of employment has traditionally as the primary outcome measure of return to work programs for persons with spinal cord injury. Employment rate are different between countries due to various cultural, economic and legislative environments. Worldwide mean return to work rates for people with catastrophic injury are approximately 30-40%. Internationally, the best return to work rates reported for spinal cord injury in Switzerland and Sweden (Piccenna, Pattuwage, Romero, Lewis, Gruen, & Bragge, 2015). It can take years for a person to obtain new employment following a spinal cord injury, with the interval between onset of spinal cord injury and paid employment being approximately four or five years (Berkowitz, 1998; Krause, 2003; Krause, Terza, Saunders, & Dismuke, 2010).

Early intervention is among the factors frequently associated with more positive vocational outcomes, with rehabilitation services proving to be more effective when both medical and vocational rehabilitation overlap (Chamberlain, Moser, Ekholm, O'Connor, Herceg, & Ekholm, 2009; Langman, 2011).

Hilton, Unsworth, Murphy, Browne, & Oliver (2017) explored the longitudinal outcomes for people who received early intervention in vocational rehabilitation and examined the relationships between contextual factors and employment outcomes

over time. Ninety-seven participants were recruited and 60 were available at the final time point where 33% had achieved an employment outcome. Greater social participation was strongly correlated with wellbeing and reduced anxiety, depression and pain at the final time point. Education status, relationship status and subjective wellbeing increased significantly the odds of being employed at the final time point. Early intervention in vocational rehabilitation shows promise in delivering similar return-to-work rates as those traditionally reported, but sooner.

Middleton, Johnston, Murphy, Ramakrishnan, Savage, Harper, and others (2015) conducted a longitudinal study regarding the application of new early vocational rehabilitation programme (called In-Voc) for persons with spinal cord injury and summarized early vocational outcomes. This meant vocational rehabilitation was provided in conjunction with their regular inpatient rehabilitation programs. In-Voc rehabilitation consultants worked individually with inpatients, exploring their vocational options and goals with the aim to increase psychosocial well-being and return-to-work rates. The In-Voc programme was relatively short in duration (average 11 weeks, range 3-39 weeks) with a average total of 9.1 h of service delivered per participant. The program included 100 adults with spinal cord injury. In-Voc was offered to all inpatients within the first 6 months of acquired spinal cord injury. At case closure (average 3 weeks post-discharge), 34.5% of participants were in paid employment (7% full-time, 8% part-time, 7% on sick leave, and 12% working with hours unknown), 36% were unemployed (6% seeking work, 16% not seeking work, 14% job seeking status unknown), 13% were students or in-training, and 17% were in vocational rehabilitation. Based on result authors suggests that implementing an early vocational rehabilitation programme with individuals in the hospital setting is feasible and has good potential for enhancing post-injury labour-force participation.

Considering that the results of the implementation of the In-Voc program showed a positive impact on the return to work of people with spinal cord injuries, its advantage was considered from the point of view of health professionals. Johnston, Ramakrishnan, Garth, Murphy, Middleton, & Cameron (2016) conducted a qualitative study with the determine the critical elements of the In-Voc programme, and whether it was perceived as successfully implemented in the hospital setting. Three key programme characteristics were identified: flexibility, coordinators working on the ward, and good communication between all staff. Authors concluded that early vocational rehabilitation was perceived as appropriate and successfully implemented in the spinal injury unit inpatient setting, addressing an existing gap in patient care. The In-Voc programme was seen to assist patients identify the possibility of returning to work or education.

Some evidences showed that early vocational rehabilitation intervention results in feelings of hope and encourages patients to see the possibility of returning to work or education very early after injury. Ramakrishnan, Johnston, Garth, Murphy, Middleton, & Cameron (2016) conducted pilot early-intervention vocational rehabilitation programme over a 2-year period. Thirteen participants aged from 19 to 60 years with varying levels spinal cord impairment and vocational backgrounds were interviewed from 7 to 21 months post injury about the timeliness, perceived value, and critical elements of the early intervention. From perspectives of persons with spinal cord injury, vocational rehabilitation delivered during inpatient rehabilitation appears

appropriate, important, and valuable. Emerging themes include sense of direction and distraction, advocacy, and support, with hope (early after injury) emerging as the overarching theme. Criticisms voiced about the program were that it was offered too early in the intensive care unit and there were competing interests and information overload in the early recovery phase.

### **Return to work coordination**

There is a trend in many countries towards integrating health and social services due to complaints about health system weaknesses and individual errors. One way to overcome this is to connect functions, institutions and professions to improve the health system. The drivers of reform are similar, namely demand (demographic and epidemiological changes, rising expectations of the population and patients' rights) and supply (the development of medical technology and information systems and restrictions from economic pressures) (Gröne, Garcia-Barbero, & WHO, 2001).

Models of coordinating services vary by country, and the difference is in the service integration strategy. In that sense, when activities take place in a hierarchical structure between organizational units on different levels within an organization it is vertical integration, but when activities take place in organization or units on the same hierarchical level it define as horizontal integration (Kärrholm, 2007).

Return to work coordination run under a variety of names, such as case management, integrated care or collaborative care (Vogel et al., 2017) and other terms as shared care, transmural care, intermediate care, seamless care, disease management, continuous care, integrated care pathways and integrated delivery networks (Gröne, Garcia-Barbero, & WHO, 2001).

WHO The Regional Office for Europe (2016) use term integrated care and define as coherent set of methods and models on the funding, administrative, organizational, service delivery and clinical levels designed to create connectivity, alignment and collaboration within and between the cure and care sectors. The goal of these methods and models is to enhance quality of care and quality of life, consumer satisfaction and system efficiency for people by cutting across multiple services, providers and settings. Where the result of such multi-pronged efforts to promote integration leads to benefits for people, the outcome can be called integrated care (pp. 3-4).

The return to work coordination vary in content, duration settings and team members. Its include interventions like medical interventions, occupational therapy, physiotherapy, psychological therapy, social therapy, workplace ergonomics, and education. All interventions are adapted to the individual's needs (Vogel et al., 2017).

On the basis of data from published research there is a less of research concerning return to work coordination but there is some evidence in support of return to work coordination or case management interventions at spinal cord injury.

Some authors evaluated aggressive collaborative approach for returning clients with new spinal cord injuries (King, Emery, Warren, & Landis, 2004). It was innovative case management program, which included support while individuals returned to the community after discharge from inpatient rehabilitation. This collaborative approach integrated vocational services and the case management program to assist clients in

their plans to return to the work force. After 1 year, 17% of individuals had returned to work (approximately equal to the rate from the National Spinal Cord Injury Statistical Center) while 32% had begun educational training (compared with 15%).

Psychotherapeutic interventions appear effective interventions aimed at improving employment outcomes for physical and spinal cord injury (Trenaman, Miller, Escorpizo, & SCIRE Research Team, 2014).

Cancelliere and colleagues (2016) conducted a best evidence synthesis of systematic reviews on factors affecting return to work after injury or illness. Many interventions, especially those involving a return to work coordination, were associated with positive return to work outcomes, including multidisciplinary, occupational and care training, education, psychological, and outpatient interventions/comprehensive treatment. Stakeholder participation and communication, include supervisor and employee, worker and the workplace, and the healthcare provider and the workplace, as well as a meeting stakeholders together. Additionally, early intervention, started within the first 6 weeks, was connected to positive return to work outcomes.

Another one systematic review of studies describing a rehabilitation intervention enhancing employment following spinal cord injury was performed focusing on primary outcomes, the employment rate and duration of employment but on time of starting and the frequency of applying interventions. Roels, Aertgeerts, Ramaekers, & Peers (2016) mention that interventions can be carried out at a hospital and/or a community setting and an in-or outpatient setting. They divided interventions into: physical interventions, educational interventions, environmental interventions, vocational interventions or multidisciplinary interventions being a combination. It is noticeable that the time of starting the interventions varies extremely ranging from starting on the first day after sustaining a spinal cord injury up to a maximum of 34 years after spinal cord injury. Also the frequency of the interventions varies from daily to monthly. The team members of the different interventions are very diverse being either individuals or a multidisciplinary team and either linked to a hospital setting or a community setting. Finally included 15 studies but they took in account only one randomized controlled trials that was of sufficient quality. It included 201 patients and describing an intervention over 1 and 2 years. In this study, the employment rate was 26% after 1 and 31% after 2 years for competitive work, compared with 10% in the treatment as usual-intervention site control group and 2% in the treatment as usual observational site after 1 and 2 years. They stated that other studies were of low quality and describe higher employment rates from 36 to 100%.

### **Workplace intervention**

Workplace is all the places where people in employment need to be or to go to carry out their work and which are under the direct or indirect control of the employer (ILO, 2001). Workplace adaptation is one of the most important conditions for including persons with acquired disabilities in regular employment or return to work.

Earlier literature indicates that people with spinal cord injuries are able to engage in competitive employment if appropriate adaption are provided to meet their needs such as workplace modification. Dowler, Batiste, & Whidden (1998) state that nearly three-

quarters of individuals require some form of adaption to maintain or improve their productivity. Inge, Wehman, Strobel, Powell and Todd (1998) spoke about the use of efficient assistive technology as one of the challenges that affect employment success.

Odović (2010b) also states that the adjustment of the workplace is one of the most important requirements for the inclusion of persons with disabilities in employment in the open economy. This includes access to assistive technology, different types of public funds, flexible working hours and adaptation of work tasks. Assistive technology tools are often used in restructuring and adapting the place where professional training and work of persons with disabilities is performed. In that sense, the author believes that the possibilities of personal independence and employment of people with disabilities, thanks to today's development of technology, are almost unlimited.

A study by Schönherr, Groothoff, Mulder, Schoppen, & Eisma (2004) suggests that for one-third of the 49 respondents (included in the survey), professional retraining was successful because they found employment. In most work situations, modifications have been made such as job adaptation and reduction of working hours.

In seeking to facilitate return to work or job retention by a employee with acquired disability, employers should be aware of the range of possible options:

- the employee may be able to return to the same job as before, with no changes,
- some adjustments may be required to the job itself, to the workstation or the working environment,
- it may be necessary for the person to move to a different job in the workplace (ILO, 2001).

Krause (2003) stated that there are two general way to employment after spinal cord injury. The first, fast way, where people return to their pre-injury job or pre-injury vocation and second, a slower way, that is generally associated with needs for further reeducation and training. Working to return the person to the pre-injury job or to a position related to their pre-injury occupation may substantially shorten the interval to return to work. In cases where this is not possible, counselors must work with individuals to understand the timeline of return to work and identify realistic educational goals that fit both the individual's interest pattern and post-injury abilities.

Physical limitations imposed on a person due to a spinal cord injury can sometimes interfere with the performance of work tasks. Job adaptation, however, can solve many problems in performing work tasks and enable these individuals to be capable and productive workers (Odović, 2012).

Workplace intervention may be required to the workplace to enable the worker with a disability to perform the job effectively, to the tools and equipment to facilitate optimal job performance, to review the job description and make changes – for example by deleting a part of the job which the person is unable to perform and replacing this with another task or tasks (ILO, 2001), to the changes in the work organization (including working relationships), to the working conditions or work environment, and occupational case management with active stakeholder involvement of (at least) the worker and the employer (Williams-Whitt, Bültmann, Amick, Munir, Tveito, Anema, & Hopkinton Conference Working Group on Workplace Disability Prevention, 2016).

Cullen, Irvin, Collie, Clay, Gensby, Jennings, and others (2018) found strong evidence for the effectiveness of workplace interventions at least in two of three different areas:

- provided with health services, either at work or in settings linked to work aimed at restoring function (physical therapy, occupational therapy, psychological therapy, medical assessments or exercises),
- support that including return to work planning and coordination for example case management, return to work plans, or improving communication between the workplace and health-care providers,
- the work modification in the form of work accommodation, ergonomics or other worksite adjustments, and supervisor training on work modification.

Authors indicate the grouping or packaging of interventions from the different domains makes them effective in a way that stand-alone interventions are not.

Recent studies have focused on specific workplace factors that impact work outcomes. Supervisor responses have consistently been shown to be an important determinant of return to work outcomes. There was strong evidence that work disability duration is significantly reduced by work accommodation offers and contact between healthcare provider and workplace; and moderate evidence that it is reduced by interventions which include early contact with worker by workplace, ergonomic work site visits, and presence of a return to work coordinator. For these five intervention components, there was moderate evidence that they reduce costs associated with work disability duration (Franche, Cullen, Clarke, Irvin, Sinclair, Frank, & The Institute for Work & Health, 2005).

### CONCLUSION

Each of the considered interventions has a positive impact on returning to work after a spinal cord injury. Effects range from direct benefits such as early return to work after a spinal cord injury to indirect effects that include better mental and physical health, improved social integration, greater self-confidence and motivation. Interventions in vocational rehabilitation, in general, have a more significant effect if two or more interventions are delivered in parallel compared to the job preparation itself. Community-based employment services are better than office-based vocational counseling and are associated with a higher employment rate. In addition, a multidisciplinary team approach contributes to a holistic view of a person's abilities and the development of a comprehensive rehabilitation program, early vocational rehabilitation services delivered in inpatient settings create a sense of perspective and recover work ability faster, while workplace intervention, especially accommodation and supervisor support have shown significant impact and more frequent return to work than usual. Coordinated work of health and social institutions with participation and direct communication between different stakeholders opens the perspective for more efficient provision of services in the returning to work process.



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