Reviews of effectiveness of training after spinal cord or traumatic brain injury

Spinal cord injury (SCI) and traumatic brain injury (TBI) have a devastating impact on those who sustain such injuries, as well as on communities and families. Ensuring that post-injury treatment is as effective as possible is crucial to the successful rehabilitation and quality of life of those who sustain such injuries.

Two new reviews have recently been published in the Cochrane Library (www.cochrane.org) examining training options after SCI and TBI. The first of these reviews examines the effectiveness of approaches to regaining walking function after SCI. The extent of disability after SCI varies greatly, depending on the severity and location of the injury and which nerve fibers are damaged. The resulting neurological deficit can be temporary or permanent, complete or incomplete; one of the primary goals for people with SCI is to improve locomotor function—that is, the ability to walk. Traditional treatments, compensation-based strategies (such as brace walking), are commonly used to facilitate walking, but do not result in the recovery of walking ability as was known before the injury.

Newer treatment options have been introduced in recent years for locomotor rehabilitation of people with some motor function. Such options may involve treadmill training with and without body weight support, robotic-assisted gait training, and functional electrical stimulation. These treatments aim to achieve restoration and recovery of walking.

The review examines the effectiveness and acceptability of locomotor training (defined as the repetitive practice of complex gait cycles—for example, treadmill-based walking) after SCI. The reviewers included randomized controlled trials (RCT) that compared locomotor training with any other exercise that has the goal of improving walking function after SCI, or with a no-treatment control group. Four RCTs involving 222 patients were included. Two studies investigated the robotic-assisted device “Lokomat” as one of the experimental interventions, and all four studies investigated body-weight-supported treadmill training with manual guidance without any robotic device.

The review authors found that there were no significant differences between the different types of locomotor training for improving walking function in people with SCI. They commented that the insufficient evidence was mostly due to the small number of trials and small sample sizes of participants. A key recommendation of the review was that further multicenter RCTs with larger sample sizes be undertaken. Furthermore, the reviewers concluded that research should define subpopulations of people with SCI to find out who is benefiting most from which locomotor training approaches and at which recovery stage. Importantly, the reviewers stated that there was a need for research reports to describe the complete intervention strategy rather than just the modality of treatment, progression of therapy, and the role of the therapist.

Fitness training for cardiorespiratory conditioning after TBI was the focus of another recent review published in the Cochrane Library from the Injuries Group. TBI is the leading cause of long-term disability in children and young adults. As it typically occurs in the younger population, people who have sustained such an injury will be expected to survive for many years, and it is therefore important to optimize the health of people with TBI throughout their life. Reduced fitness is a common problem after TBI. Clinically, fitness training is used to address this problem. This review aimed to examine fitness training as an intervention for cardiorespiratory fitness in people who have sustained a TBI.

The Cochrane Injuries Group completes reviews on effectiveness of interventions for the prevention, treatment, and rehabilitation of traumatic injury. If you are interested in learning more about the group contact the review group coordinator, Emma Sydenham, at Emma.Sydenham@lshtm.ac.uk or see the Cochrane Injuries Group website at http://injuries.cochrane.org. Reviews are published in the Cochrane Library, available at www.cochrane.org.

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REFERENCES