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Compensation Allows Recovery Of Functional Independence In People With Severe Motor Impairments Following Spinal Cord Injury

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LETTER TO THE EDITOR

COMPENSATION ALLOWS RECOVERY OF FUNCTIONAL INDEPENDENCE IN PEOPLE WITH SEVERE MOTOR IMPAIRMENTS FOLLOWING SPINAL CORD INJURY

Sir,

We read with interest the ongoing criticism regarding the teaching of compensatory movement strategies to people with spinal cord injury (SCI). Here is a typical example of what is being written in scientific journals:

“...the old, deep-rooted rehabilitative principles of compensation and adaptation are slowly starting to change.”(1)

Similar comments are being made at international scientific conferences. It appears that there is a move away from the teaching of compensations and adaptations for people with SCI, even though this has been a part of standard rehabilitation for the last 60 years.

Those advocating for a move away from compensations and adaptations are inspired by the increasing interest in neural plasticity and locomotor training. They suggest that the teaching of compensations and adaptations should be replaced by activity-based therapy (which has yet to be operationally defined) and intensive locomotor training in which people with SCI are walked on treadmills with overhead suspension, sometimes supplemented with electrical stimulation, and if need be, 2 or 3 therapists to control the lower extremities and trunk. They propose that these types of therapies should be supplemented with exercises designed to facilitate contraction of paralysed or partially-paralysed muscles. They claim that the potential for the spinal cord to recover will be hindered if paralysed and partially-paralysed muscles are not “asked” to contract in a normal way even if they are incapable of currently doing so. These types of therapies are being advocated in replacement of compensations and adaptations where patients are taught skills such as mobilizing in a wheelchair, grasping with a tenodesis grip, or walking with an orthosis or assistive device.

Locomotor training provides a means of enabling patients to engage in intensive, repetitious practice. This is not an issue. What is an issue is the dismissal of the importance of teaching and reinforcing compensatory strategies for people with severe motor impairments due to SCI. It is wrong and potentially detrimental to patients’ lives to suggest that we should be moving away from these strategies because compensation currently provides the only means for regaining functional independence for many individuals with motor complete SCI and severe motor impairments. For these individuals, it is misleading to suggest that they are going to regain the ability to walk as able-bodied people simply by inducing muscle contractions through electrical stimulation or afferent input stimulated by assisted stepping. No study has demonstrated that locomotor training increases the ability of people with motor-complete SCI to walk in a functional way (2–5). Moreover, many people with severe motor impairments following motor-incomplete injuries regain

only limited ambulation despite intensive locomotor training (3, 4, 6–8). Most people with extensive motor impairments following SCI will continue to require wheelchairs for functional mobility. So for now, compensations and adaptations are their only means to regain independence. To move away from teaching compensations is to deny independence and quality of life while waiting for what is currently unattainable.

One of the obvious dangers of solely focusing on walking is that when patients who have participated in these types of programs do not regain the ability to walk, they are ill-prepared to function with a wheelchair. Patients involved only in locomotor training programs are not encouraged to find suitable employment or education using a wheelchair. They are not stimulated to plan for the future with a wheelchair or adjust to the many challenges of using a wheelchair for mobility. Rather, their lives are placed on hold while all effort, attention, and resources are directed towards an unattainable goal. This limits their independence and community integration and negatively influences their quality of life.

Recent work in this area suggests that those who have severe motor impairments due to SCI and who have primarily focused on walking but not attained it, experience high levels of depression and poor quality of life one year after injury (9). This is not altogether unanticipated and probably reflects more than just the failure of health care systems to teach these patients independence using a wheelchair. It probably also reflects the psychological toll associated with being misled to believe that walking was a realistic option. Whether stated or not, if patients only receive therapy directed at walking, then the implicit message is that walking is an attainable goal. This encourages denial of the serious implications of SCI and delays mourning and adaptations to life using a wheelchair. It is not surprising that at one year post injury the patients who do not regain functional ambulation are isolated, depressed, and have a poor quality of life. In addition, solely focusing on walking conveys the errant and potentially-damaging message to patients that walking is of the utmost importance and something to be strived for at all costs. We suggest that instead of sending the message that walking is the only satisfactory outcome following SCI, patients with severe motor impairments due to SCI need to receive a message from their health care providers that life using a wheelchair is a life worth living, albeit a different life.

The current focus on locomotor training is in part consumer-driven. Understandably, patients want to walk, and their demands for programs that focus on this goal are dictating the agenda for rehabilitation program development. Many rehabilitation centers have acquired expensive equipment to

support locomotor training programs in order to improve their market appeal and portray the image that they are cutting-edge and desirable locations in which to pursue rehabilitation. In some locations, these services are being offered to patients regardless of their potential to walk and in place of standard rehabilitation. Patients are attracted by the flash of technology, the promise of walking, and the underlying message of hope. They are not attracted to rehabilitation centers that focus on preparing them for a life using a wheelchair. However, for the many patients with severe motor impairments, the sole focus on walking does them a great disservice. Patients need to be taught compensations when appropriate because the teaching of compensations is sometimes the only effective form of rehabilitation.

It is our responsibility to advocate for our patients, to encourage the performance of interventions that maximize independence and participation, to minimize the squandering of precious health care resources, and to guide practice based upon the best available evidence. It is time to put an end to the debate about compensation versus recovery. They are not mutually exclusive. Instead, functional recovery is often dependent upon compensation. We must acknowledge the limitations of what we currently have to offer patients with SCI and work to advance the science that will help us build a better future for people living with SCI.

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