



GUIDELINES FOR STRETCHES & PASSIVE MOVEMENTS

Stretches and passive movements have historically been an integral part of the physiotherapy management of patients with spinal cord injury. Anecdotally, these interventions can assist in the management of spasticity, pain, joint range of motion (ROM) and function. Recent research however, has not been able to demonstrate the benefits of these interventions, with one study indicating that stretches in weight-bearing standing may assist ankle ROM of people with acute SCI (Ben et al 2005), but therapist applied stretches to ankles (Harvey et al 2000) and hamstrings (Harvey et al 2003) of people with recently acquired SCI are ineffective at altering joint ROM. One study looking at shoulder positioning was inconclusive on the effects on shoulder pain and ROM (Crowe et al 2000). Passive movements to the ankle in people with chronic SCI over 6 months have a small, clinically meaningless effect on ankle ROM (Harvey et al 2009). There are large areas regarding the most effective management of people with SCI yet to be investigated, and in lieu of available evidence, clinical reasoning and expert opinion regarding techniques to address areas of function or quality of life are the best methods of determining physiotherapy management for individual patients.

The guidelines below were developed to address the gap between our EBP document and clinical practice. We sought advice from experts in SCI physiotherapy management and applied clinical reasoning principles. The guideline regarding the management of patients with long term SCI, receiving inpatient care for skin management was developed by seeking direction from Principal Physiotherapist, HRC and Principal Physiotherapist, Spinal Injury Rehabilitation, HRC, as well as liaising with ward nurses, orderlies and patients.

Passive movements

In the early stages of rehabilitation, therapist-applied passive movements to paralysed limbs are indicated as part of a thorough assessment. This time can be spent examining joints and muscle tone, but also is useful in establishing rapport with the patient, and can be spent educating the patient about the role of physiotherapy, the likely goals of treatment, and supporting the patient as he/she learns to cope with an adjusted level of function following SCI.

Once the patient has an established rehabilitation plan, the therapist should assess the further requirements of passive movements by conducting a baseline assessment of ROM, pain levels, oedema and function at a particular intensity of passive movements, and then reducing the frequency of the passive movements and monitoring whether any changes occur. This process should be clearly documented in the patient's medical record. **The therapist should aim to do the minimum frequency of passive movements while still maintaining comfort, ROM and function levels.** Some patients may require daily passive movements, while some patients with similar level lesions may receive passive movements weekly or fortnightly just to confirm that joint ROM is being maintained, therefore, the management plan should be assessed on an individual basis.

Follow-up care packages from community agencies can be difficult to source for our clients, as the agencies have limited funds and limited staff numbers. Any interventions we prescribe need to demonstrate clear effectiveness, and ideally will have a sustained beneficial treatment effect so it is important to show that we have investigated suitable types and frequency of therapy for each patient we refer. The medical record should clearly document this process and can be used as evidence when care packages are being determined.

Range Of Movement

When assessing joints of new patients, particular attention should be applied to hip ROM - 100° flexion is required for ease of positioning in wheelchair, hamstring extensibility is required for the ability to sit in long-sit for dressing and other tasks, and hip external rotation is also required for dressing activities. Any asymmetry should be investigated, as this can lead to potential problems with seating, scoliosis, and pressure ulcers. Pre-existing conditions such as arthritis or prior joint surgery are thought to pre-dispose joints to further loss of ROM, which can lead to negative functional implications. An unexplained loss of ROM affecting hip flexion/external rotation could be due to heterotopic ossification, which requires immediate assessment and management by medical staff. Ankles should reach plantargrade with knee flexed for optimal seating, and further range (with knee extended) is required for functional gait.

For inactive upper limbs, a minimum 100° flexion/abduction at the shoulder is ideal to allow ease of dressing and personal hygiene. For active upper limbs, further ROM can allow greater options of upper limb function.

When patients are participating in active rehabilitation, the therapist should monitor joint ROM as part of the comprehensive management plan. In cases where lack of joint ROM is likely to inhibit function or severely affect aesthetics, techniques can be tailored specifically to address ROM. Education regarding the patient role and responsibility in maintaining or increasing his/her ROM is paramount. Patients may be required to do self-stretches, or in cases where this is not possible, to remind ward staff or carers to assist with positioning in bed or in wheelchair, apply splints and so on.

Whenever possible, muscle lengthening techniques should be combined with the relevant functional tasks eg performing sitting balance exercises in long sit provides a long stretch to hamstring muscles so is a more effective use of therapist time than a therapist-applied straight-leg-raise stretch. In cases where the therapist considers prolonged stretch is indicated, patients should be taught to apply their own stretches independent of their therapist when possible. Joints with unopposed muscle activity are at risk of contracture formation. Stretches (applied by the patient whenever possible), splinting and education about joint positioning are common interventions considered to prevent contracture formation.

Dependent oedema

Patients with reduced hand function post SCI can experience dependent oedema. Positioning in bed can be organised with ward staff to allow passive drainage of fluid, and occupational therapy staff may prescribe compression garments. The oedema can lead to loss of passive joint ROM which can

affect aesthetics and/or function, so in these patients, therapists should assess joint ROM frequently and intervene as appropriate, again documenting this process clearly in the medical record.

Pain

Pain can be from musculoskeletal or neuropathic sources, or can be a combination of both. A thorough assessment should indicate the source of the pain, and this can suggest the most appropriate method of therapy. Shoulder pain in particular, is very common in the SCI population.

Neuropathic pain should be flagged to medical staff who can prescribe suitable medication. Joint ROM should be maintained as much as possible to allow future function, through regularly applied movements through full ROM, positioning and education. Techniques which may assist in neuropathic pain reduction include gentle passive movements eg on Motomed or applied by the therapy staff. Again, gauging with patients the effects and sustainability of the interventions will assist in determining the management plan.

Spasticity

Spasticity need not be a problem in itself, but can have negative ramifications on comfort levels, function, seating and joint ROM (which can also affect function), in which case it should be addressed. Spasticity requiring intervention should be flagged to medical staff who can prescribe suitable medication. Spasticity-directed physiotherapy interventions (for example weight-bearing exercise, prolonged stretch, passive movements) should measure their effectiveness in terms of patient comfort levels, function or joint ROM. Therapists should assess the frequency of spasticity-directed intervention required to optimise or maintain comfort, function or ROM as well as the sustainability of the treatment effect as described in previous sections.

Long term skin-management patients

Patients with pressure ulcers unable to be managed in the community may be admitted to the ward for skin management. Some patients have stayed as inpatients at HRC for over a year. These patients rest in bed until their skin healing allows a graduated sitting program. Patients may not be having the joints of their upper limbs moved for dressing or self-propelling in their chairs, and the joints of their lower limbs are not being positioned in hip F/knee F/ankle DF in the wheelchair. Some of these patients do not leave their room for extremely long periods of time and therefore are socially isolated.

Physiotherapy staff should assess joint ROM by performing full ROM of relevant joints. The frequency that these movements are required should be investigated and documented (as in ROM section). Due to staffing constraints and therapy priorities the maximum physiotherapy input for these patients should be three times/week, with ROM sessions lasting around 10 to 20 minutes. Some patients will only require regular joint ROM assessment and this can be conducted at fortnightly intervals. The social contact of each session is also a valuable part of this aspect of the physiotherapy service but should not be the sole basis of continuing frequent PROM/stretching.

References

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