

Guidelines for the Provision of Dynamic Compression for people diagnosed with Multiple Sclerosis

The use of Lycra garments in patients with the diagnosis of Multiple Sclerosis has been initiated with very positive results where an improvement in quality and fluency of movement and stability has been observed as well as sensory and proprioceptive feedback. The following guidelines have been produced based on clinical experience and research gathered from other areas of clinical application.

Evidence Currently Available:

1. Gracies JM, Marosszeky JE, Renton R, et al.
Short -term effects of dynamic lycra splints on upper limb in hemiplegic patients.
Arch Phys Med Rehabil 2000;81(12): 1547-1555.

- Concludes there is a:
 - i. Positive effect on positioning
 - ii. Reduction of tone in upper limb

2. Elliott C, Reid S, Hamer P, Alderson J, Elliott B.

Lycra arm splints improve movement fluency in children with cerebral palsy.

Gait & Posture 33 (2011) 214-219

- Concludes there is:
 - i. Improved movement fluency
 - ii. Increased speed
 - iii. Increased efficiency
 - iv. Less secondary corrections

3. Blair E, Ballantyne J, Horsman S, Chauvel P.
A study of a dynamic proximal stability splint in the management of children with cerebral palsy.
Dev Med Child Neurol 1995; 37(6): 544-554.

- Concludes there is:
 - i. Improvements in postural stability and involuntary movements
 - ii. Increased confidence in carrying out motor tasks
 - iii. Improved dynamic function

4. McNair P, Heine PJ.

Trunk proprioception: enhancement through lumbar bracing.

Arch Phys Med Rehabil. 1999 Jan;80(1):96-9.

- Concludes there is:
 - i. Improved somatosensory information to central nervous system
 - ii. Less error in trunk positioning
 - iii.

Assessment Process:

1. Identify features that will benefit from dynamic compression
 - a. reduced postural control
 - b. reduced proximal stability
 - c. diminished ability to sequence and modulate movement
 - d. diminished sensory and proprioceptive feedback
 - e. ataxia/ intention tremor
 - f. weakness in dorsiflexion of the foot
 - g. reduced ankle stability
 - h. reduced isolated movements of lower and upper limbs
 - i. reduced fluency of movement of lower and upper limbs

2. Assess with ProTEM garments

It is vital baseline assessment is identified to evaluate effectiveness of dynamic compression

- a. Lumbar support/belt applied around the trunk extending from ASIS to lower ribs to assess response to increase sensory and proprioceptive feedback through trunk
 - Anticipated response: improved upright posture, improved symmetry, improved functional transfers, improved gait
- b. ProTEM sleeves applied to both upper limbs to increase sensory and proprioceptive feedback whilst providing compression
 - Anticipated response: reduced tremor, reduced ataxia, increased fluency of movement, improved accuracy in reach, improved functional use
- c. ProTEM gloves applied to the hand for increased proprioceptive and sensory feedback and joint stability
 - Anticipated response: improved grasp and release, reduced tremor, increased speed and improved fluency of movement, improved functional use

3. Decision for made to measure garment:

If any of the above responses are observed then this will be an indication for a made to measure (MTM) Lycra garment. The style option will be determined by the clinician depending on:

- Level of independence
 - Level of support available at home
 - Upper limb function
 - Lower limb function
 - Level of mobility
 - Clearly defined goals
- a. Sleeve indicated when:
 - i. Where there is ataxia
 - ii. Where there is tremor
 - iii. Where there is reduced fluency and speed of movement
 - iv. Where there is reduced coordination of movement
 - v. Where there is diminished sensory and proprioceptive feedback
 - b. Glove indicated when:
 - i. Where there is reduction in dexterity
 - ii. Where there is reduced coordination and speed of movement
 - iii. Where there is diminished isolated movement of the digits
 - iv. Where there is diminished sensory and proprioceptive feedback
 - c. Sock indicated when:
 - i. Where there is ataxia
 - ii. Where there is diminished sensory and proprioceptive feedback
 - iii. Where there is diminished postural control
 - iv. Where there is reduced trunk control
 - v. Where there is instability of the ankle

- vi. Where there is diminished isolated ankle movements and weak dorsiflexion
- d. Vest indicated when:
- i. Where there is diminished sensory and proprioceptive feedback
 - ii. Where there is diminished postural control
 - iii. Where there is reduced upper limb control
 - iv. Where there is reduced trunk control and ability to isolated upper and lower trunk movement
 - v. Where there is reduced balance
- e. Shorts indicated when:
- i. Where there is diminished sensory and proprioceptive feedback
 - ii. Where there is diminished postural control
 - iii. Where there is reduced trunk control
 - iv. Where there is diminished hip control and hip abduction
- f. Suit indicated when:
- i. Where there is diminished sensory and proprioceptive feedback
 - ii. Where there is diminished postural control
 - iii. Where there is reduced trunk control
 - iv. Where there is diminished hip control and hip abduction
 - v. Where there is reduced upper limb control
 - vi. Where there is reduced trunk control and ability to isolated upper and lower trunk movement
 - vii. Where there is reduced balance

When choosing a garment style it is important to take into consideration the ability to put the garment on and remove it and what care assistance is available

Assessments to Quantify Effectiveness:

Assessments that may be used to determine effectiveness of application of dynamic compression using a Sensory Dynamic Orthosis:

1. International Cooperative Ataxia Rating Scale (ICARS)

Trouillas P, Takayanagi T, Hallett M, et al.
 International Cooperative Ataxia Rating Scale for pharmacological assessment of the cerebellar syndrome.
 J Neurol Sci 1997; 145(2): 205-211.

2. Motor Assessment Scale

Carr JH, Shepherd RB, Nordholm L, Lynne D.
 Investigation of a new motor assessment scale for stroke patients.
 Phys Ther 1985; 65(2): 175-180.

3. Timed get up and go test

Podsiadlo D, Richardson S
The timed "up & go": A test of basic functional mobility for frail elderly persons
Journal of the American Geriatrics Society 1991; 39: 142-148

4. Nine Hole Peg Test

Wade D.
Assessment of motor function: impairment and disability.
In: Greenwood R, Barnes M, McMillan TM, Ward CD, editors.
Neurological Rehabilitation.
Hove: Psychology Press; 1997.

5. Moberg Pick up test

Ng C L, Ho D D, Chow S P
The Moberg pickup test: results of testing with a standard protocol.
Journal of hand therapy official journal of the American Society of Hand Therapists
(1999)
Volume: 12, Issue: 4, Pages: 309-312

6. Spiral Writing Test (taken from ICARS)

Trouillas P, Takayanagi T, Hallett M, et al.
International Cooperative Ataxia Rating Scale for pharmacological assessment of the
cerebellar syndrome.
J Neurol Sci 1997; 145(2); 205-211.

7. Health Status Questionnaire

8. Ware JE.
SF-36 Health Survey: manual and interpretation guide.
Boston: Nimrod Press; 1993