

SPMN - Postural Management Sub Group
Best Practice Group – 2006

**Positioning in standing & the role of head positioning as components of
24-hour postural management**

Positioning in standing:

The rationale for positioning individuals with physical disability in standing is to permit them the experience of upright posture. The benefits of standing are many but generally it is accepted that the main ones are:

- Instead of always being at a low level, standing raises an individual to level eye contact with peers so enhancing personal and social development.
- Improved respiratory functioning; the diaphragm is lower in standing, free from pressure of the abdominal contents, allowing greater depth of breathing.
- Assists kidney and bladder drainage and bowel emptying.
- Improved long bone growth (in children), strength and construction stimulated by gravity acting through bones in weight bearing.
- Improved joint alignment and development (in children). The greatest single problem for non-walking, physically impaired children is hip malformation with resultant joint pain and the need for hip surgery to correct this. There is evidence that use of a standing frame for at least one hour per day over 5 days a week can prevent this debilitating disorder.
- Soft tissues and muscles are kept fully extensible.

Problems associated with positioning in standing include postural hypotension, moving, handling and acceptability of equipment. The wishes of the individual and their carers should be considered as part of a client-centered approach to decision-making.

Moving and Handling Safety Legislation should be borne in mind for all those undertaking positioning and in particular when advising parents, carers and support people on how to achieve successful positioning. The use of tilt tables, sit to stand mechanisms on standing frames, sit to stand wheelchairs and hoists that are designed to enable positioning into standing should be considered for those people who cannot assist with positioning.

References:

This list is not exhaustive but provides a baseline resource to support evidence-based practice

Level of evidence

Each reference has a short descriptor following it to give an indication of the level of evidence. The Scottish Intercollegiate Guidelines Network (SIGN) guideline 'levels of evidence' categorisation is available from www.sign.ac.uk for further reading.

Key themes:

Standing as part of a 24-hour positioning programme

Poutney, TE., Green, E. Mulcahy, C., Nelham, R. (1999) The Chailey approach to postural management. *APCP Journal*. March pp15-27. **(expert opinion)**

Standing: Well-being, circulation, skin integrity, reflex activity, bowel and bladder function, digestion, sleep, pain, and fatigue

Eng, JJ., Levins, SM., Townson, AF., Mah-Jones, D., Bremner, J., Huston, G. (2001) Use of prolonged standing for individuals with spinal cord injuries. *Phys Ther*. Aug, Vol.81(8) pp.1392-9. **(n=162 user survey)**

Standing: Enhancing personal and social status

Kunel, CF., Scremin, AM., Eisenberg, B., Garcia, JF., Roberts, S., Martinez, S. (1993) Effect of "standing" on spasticity, contracture, and osteoporosis in paralyzed males. *Arch Phys Med Rehabil*. Jan; Vol.74(1), pp.73-8. **(n=6 post intervention interview)**

Standing: Respiratory functioning

There is little evidence available for any beneficial effect of standing on respiratory function *per se* however there is evidence that the diaphragm has greater room to function in standing than in sitting and in particular slumped sitting. This supposes that there is no counter pressure on the abdominal contents reducing the possibility of deeper breathing.

Standing: Kidney and bladder and bowel voiding

Walter, JS., Sola, PG., Sacks, J., Lucero, Y., Langbein, E., Weaver, F. (1999) Indications for a home standing program for individuals with spinal cord injury. *J Spinal Cord Med*. Fall; Vol. 22(3), pp.152-8. **(n=99 survey of users)**

Hoenig, H., Murphy, T., Galbraith, J., Zolkewitz, M. (2001) Case study to evaluate a standing table for managing constipation. *SCI Nursing Summer* Vol.18(2), pp74-7. **(n=1 Case report)**

Standing: Effect on bone

Caulton, JM., Ward, KA., Alsop, CW., Dunn, G., Adams, JE., Mughal, MZ. (2004) A randomised controlled trial of standing programme on bone mineral density in non-ambulant children with cerebral palsy. *Archives of Disease in Childhood*;89:131-135 **(n=26 RCT)**

Goemaere, S., Van Laere, M., DeNeve, P., Kaufman, JM. (1994) Bone mineral status in paraplegic patients who do or do not perform standing. *Osteoporosis International*. May Vol.4(3), pp.138-43. **(n=53 controlled cohort study)**

Mughal, MZ., Caulton, JM., Allsop, C., Adams, JE. (2001) A randomised controlled trial of weight-bearing standing programme on vertebral trabecular bone mineral density

in non-ambulant children with cerebral palsy. *Archives of Disease in Childhood*. Vol84(suppl 1) A1-A9. **(n=26 randomised controlled trial)**

Wilmshurst, S., Ward,K., Adams,JE., Langton,CM., Mughal, MZ. (1996) Mobility status and bone density in cerebral palsy. *Archives of Disease in Childhood*. Vol. 75, pp. 164-165 **(n=27 cohort study)**

Standing: Effect on joints, soft tissues & muscles & to provide variety of positioning

Ben,M., Harvey,L., Denis,S., Glinsky,J., Batty,J., Katte,L., Herbert,R., Chee,S. (2004) Does regular standing change ankle mobility and bone density in people with complete paralysis following spinal cord injury? *Brain Injury Association: Research Report*. Vol.6(2) December. P3 **(n=20, controlled cohort trial)**

Carter, P., Edwards, S. (2002) General principles of treatment. In: Edwards, S. (2002) *Neurological Physiotherapy* (2nd edition) Churchill Livingstone, London. Pp137-144 and p215 **(Expert opinion)**

Poutney, T., Mandy, A., Green,E., Gard, P. (2002) Management of hip dislocation with postural management. *Child: Care, Health & Development*. Vol.28(2), pp179-86. **(n=59 retrospective study)**

Leach,J. (1997) Children undergoing treatment with botulinum toxin: The role of the physical therapist. *Muscle Nerve*. Vol.20(suppl 6), pp.194-207 **(expert opinion)**

Farmer,SE., James,M. (2001) Contractures in orthopaedic and neurological conditions: a review of causes and treatment. *Disability and Rehabilitation*. Vol.23(13) pp.549-58. **(review paper)**

Scrutton, D. (1989) The early management of the hips in cerebral palsy. *Developmental Medicine & Child Neurology*. Vol. 31, pp108-116 **(Expert opinion & review of practice)**

Standing: Relief of pressure

Walter, JS., Sola, PG., Sacks, J., Lucero, Y., Langbein, E., Weaver, F. (1999) Indications for a home standing program for individuals with spinal cord injury. *J Spinal Cord Med*. Fall; Vol. 22(3), pp.152-8. **(n=99 survey of users)**

Standing: Gaps in the literature

Many clinical interventions are not underpinned by top quality research evidence; this does not necessarily mean these interventions are not valid or appropriate but there is a need for ongoing evaluation of clinical practice.

A systematic review of patient handling activities could not find any studies investigating patient handling associated with standing. This concerning and has been identified as a priority research area.

Hignett,S. (2003) Systematic review of patient handling activities starting in lying, sitting and standing positions. *Journal of Advanced Nursing*. Vol 41(6), pp.545-52. **(A systematic review of 32 studies)**

Standing: Controversies

Heels should be in contact / bearing weight - use of wedges.....

Carter, P., Edwards, S. (2002) General principles of treatment. In: Edwards, S. (2002) *Neurological Physiotherapy* (2nd edition) Churchill Livingstone, London. P138. **(Text book)**

How long should positioning / stretching be undertaken to be effective?

Farmer, S.E., James, M. (2001) Contractures in orthopaedic and neurological conditions: a review of causes and treatment. *Disability and Rehabilitation*. Vol.23(13) pp.549-58. **(Review paper)**

&

Tardieu, C., Lespargot, A., Tabary, C., Bret, M.D. (1988) For how long must the soleus muscle be stretched each day to prevent contracture? *Developmental Medicine & Child Neurology*. Vol. 30, pp.3-10. **(n=10 controlled cohort study)**

Head position:

Optimal position of the head is generally accepted as being a key precursor to optimal body posture and alignment. Maintaining the orientation of the head tilt in space and keeping eyes and ears level can improve perceptual awareness of one's environment, facilitate communication, allow upper limb function and enhance the individual's learning process.

There are a variety of pieces of equipment available to control/support an individual's head position and clinicians should use their clinical reasoning and knowledge of health and safety issues to ensure the patient's safety is fully considered.

Maintaining an adequate airway is essential at all times and this must be considered for both breathing and eating functions.

References:

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Key themes:

Control of body posture & movement

Assaiante, C. & Amblard, B. (1995) An ontogenetic model for the sensorimotor organization of balance control in humans. *Human Movement Science*. Vol.14, pp.13-43 **(Literature review)**

Hollands MA, Sorensen KL, Patla AE. (2001) Effects of head immobilization on the coordination and control of head and body reorientation and translation during steering. *Experimental Brain Research*. Vol.140, pp.223-233. **(n=5; small experimental cohort study)**

Head orientation & upper limb function

Bertenthal, B. & Von Hofsten, C. (1998) Eye, head, and trunk control: the foundation for manual development. *Neuroscience and Biobehavioural Reviews*. Vol. 22(4), pp.515–520. **(Literature review)**

Lancioni GE, O'Reilly MF, Singh NN,, et al (2005) Microswitch clusters to enhance adaptive responses and head control: A programme extension for three children with multiple disabilities. *Disability and Rehabilitation*. Vol.27(11), pp. 637 – 641 **(n=3; small cohort study)**

Head position & swallowing

Ertekin C, Keskin A, Kiylioglu N, et al (2001) The effect of head and neck positions on oropharyngeal swallowing: a clinical and electrophysiologic study. *Archives of Physical Medicine and Rehabilitation*. Vol.82, pp.1255-60. **(n=75; controlled, experimental cohort study)**

Redstone F. & West JF. (?) The importance of postural control for feeding. *Continuing Education Series*. (on-line source - accessed 10-10-05) Pediatric Nursing, Jannetti Publications Inc. USA. **(Expert opinion & review of literature)**