

Cold feet in children with neurological disorders

AKADEMISK AVHANDLING

som för avläggande av doktorsexamen i fysioterapi vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal 2119, Arvid Wallgrens backe, hus 2, fredagen den 2 oktober 2009 kl 13.00.

av

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Avhandlingen baseras på följande delarbeten:

- I. Svedberg LE, Nordahl G, Lundeberg T. (2001) Effects of acupuncture on skin temperature in children with neurological disorders and cold feet: an exploratory study. *Complementary Therapies in Medicine* 9: 89-97.
- II. Svedberg LE, Stener-Victorin E, Nordahl G, Lundeberg T. (2005) Skin temperature in the extremities of healthy and neurologically impaired children. *European Journal of Paediatric Neurology* 9(5):347-54.
- III. Svedberg LE, Englund E, Malker H, Stener-Victorin E. (2007) Parental perception of cold extremities and other accompanying symptoms in children with cerebral palsy. *European Journal of Paediatric Neurology* 12(2): 89-96.
- IV. Svedberg LE, Englund E, Malker H, Stener-Victorin E. (2009) Comparison of impact on mood, health, and daily living experiences of primary caregivers of walking and non-walking children with cerebral palsy and provided community services support. *European Journal of Paediatric neurology* Jul 21. [Epub ahead of print] PMID:19628416

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COLD FEET IN CHILDREN WITH NEUROLOGICAL DISORDERS

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Abstract

These studies focused on presence of cold feet in children with neurological disorders and raised the questions: Does acupuncture affect skin temperature? Are cold feet a general symptom in children with neurological disorders? Are cold feet associated with other symptoms? What are the moods, health, and daily life experiences of these children's parents?

Study I assessed effects of acupuncture on skin temperature in children with neurological disorders. The study was of pilot character, to determine if further investigation in a larger, well-characterised group could be worthwhile.

Study II analysed skin temperature variation between pre-school children with and without neurological disorders to determine if skin temperature and walking ability were correlated.

Study III investigated accompanying symptoms, such as cold extremities, constipation, pain, sleeping disorders, and well-being, and their treatment to determine (i) whether cold extremities is a general problem, (ii) what symptom treatment the children had received, (iii) associations between cold extremities and gross-motor function, and (iv) associations between cold extremities and other symptoms borne by the child.

Study IV described mood, health, and daily life experiences of the children's parents to investigate (i) impact that the child's impairments and symptoms have on the family and (ii) community services support.

Study I (single subject design; each child was its own control) comprised 6 children with neurological disorders. Study II (hypothesis refinement study) comprised 25 healthy children recruited from a community pre-school and 15 children with cerebral or spinal cord disorders from Child and youth neurohabilitation in Örnsköldsvik. Studies III and IV (postal survey, descriptive hypothesis-generating studies) comprised 107 children with cerebral palsy (Study III) and parents of 106 of these (Study IV) from 8 habilitation centres in the northern region of Sweden.

Conclusions:

- Acupuncture may increase skin temperature in some children with neurological disorders and cold extremities.
- Non-walking children with cerebral damage had significantly lower mean hand and foot skin temperature compared to healthy controls.
- Of the 5 symptoms – cold extremities, pain, sleeping disorders, constipation, and impaired well-being – (i) most of the children with CP had had 1 or several symptoms for more than 1 year and (ii) symptom frequency was generally higher in non-walking children than in walkers. Of the children who had had symptoms for more than 1 year, a surprisingly large number had received no treatment for them.
- Care-giving for a child with CP may affect parents' moods, health, and daily living – especially if the child has several impairments and symptoms. Frequent parental anxiousness regarding the child's physical and psychological health might be associated with affected parental health.

Key words: Skin temperature/Acupuncture/Autonomic dysfunction/Cerebral palsy/Spinal cord disorders/ Pain/
Constipation/Sleeping disorders/Well-being/ Parental health/Parental mood/Restricted time/Services
support

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