

Quality assessments of ADL instrument and evaluation of ADL ability in individuals with cervical spinal cord injury after reconstructive hand surgery

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal Förmaket, Sahlgrenska Sjukhuset, den 19 maj, klockan 9.00.

av Annika Dahlgren

Fakultetsopponent:

Docent Pall Ingvarsson, Landspítali Universitetsjúkhus, Island

Avhandlingen baseras på följande delarbeten

- I. Dahlgren A, Karlsson AK, Lundgren-Nilsson A, Friden J, Claesson L. Activity performance and upper extremity function in cervical spinal cord injury patients according to the Klein-Bell ADL Scale. *Spinal Cord*. 2007;45(7):475-84.
- II. Dahlgren A, Sand A, Larsson A, Karlsson AK, Claesson L. Linking the Klein-Bell Activities of Daily Living Scale to the International Classification of Functioning, Disability and Health. *Journal of Rehabilitation Medicine*. 2013;45(4):351-7.
- III. Dahlgren A, Karlsson AK, Claesson L. Long-term follow-up in ADL performance in individuals with cervical spinal cord injury after grip reconstruction. *In manuscript*.
- IV. Dahlgren A, Karlsson AK, Claesson L. ADL performance in individuals with tetraplegia after reconstructive elbow extension and hand surgery with a long term follow-up. *In manuscript*.

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Annika Dahlgren

Sektionen för Hälsa och Rehabilitering, Institutionen för Neurovetenskap och Fysiologi, Sahlgrenska akademien, Göteborgs universitet, Sverige, 2017.

Abstract

Background: A spinal cord injury (SCI) leads to dramatic changes in an individual's life and the rehabilitation after the injury is a lifelong process. For persons with cervical spinal cord injury (SCI), the loss of both sensory and motor function in the upper extremities poses a functional deficit and an impairment in activities of daily living (ADL). Reconstructive hand surgery has the potential to restore loss of motor function and can therefore influence both capacity, i.e. grip function, and activity performance. **Methods:** One cross-sectional study, one mixed study and two longitudinal studies were performed. The study participants consisted of individuals with cervical spinal cord injury with no prior reconstructive hand surgery before September 1994. Data were collected by face-to-face semi-structured interviews and by connecting the Klein-Bell ADL (KB) Scale to the ICF. **Results:** The KB Scale linkage to the ICF made it possible to interpret, detect and quantify concepts in the scale and thus highlighted and clarified the scale structure. Comparison between the KB Scale and ICF core sets and have corroborated that the scale can measure basic ADL in individuals with cervical SCI. The KB Scale can be used to assess and discriminate cervical SCI individuals' basic ADL from lesser to greater independence before surgery. Improvements in basic ADL can also be measured after reconstructive hand surgery. Individuals undergoing grip reconstruction became more independent in dimension hygiene, whereas individuals undergoing reconstructive elbow extension and grip surgery increased their independence in dimension mobility. **Conclusions:** The ICF provided an external reference to identify and quantify concepts in the KB Scale. The KB Scale linkage to ICF provided a systematic overview how the items are constructed from body movements to basic ADL activities. The KB Scale can be used to assess basic ADL, and discriminate and measure changes in self-care in cervical SCI individuals in connection with reconstructive hand surgery. To become a useful tool, selected parts of the KB Scale's structural properties must be further investigated.

Keywords: Klein-Bell ADL Scale, tetraplegia, reconstructive hand surgery outcome measurement, ADL, ICF