Is it possible to measure the quality of our patients’ movement? The development of the Leeds Movement Performance Index (LMPI)

Denise Ross, MCSP PhD

Background

Within neurological physiotherapy, clinicians work with adults who have complex movement difficulties, delivering equally complex interventions that are individualised according to each person’s impairment and functional need. There is a clinical need to be able to measure a patient’s quality of movement at impairment level, there are no available outcome measures within the field of adult neurological rehabilitation that can do this. The aim of this research was to conceptualise a suitable outcome measure, then to establish its reliability, validity and clinical utility within neurological physiotherapy.

Methods

A multi-centre, three-part, mixed-methods study

Study 1: The conceptualisation, development and initial field testing of the LMPI

Phase 1: Nominal group and Delphi techniques with senior physiotherapists (centre 1), conceptualise then refine the LMPI.

Phase 2: Neurological physiotherapists recruited (n=20)(centre 1), trained to use the LMPI, used within clinical practice; i.e., semi-structured interviews analysed using thematic analysis.

Study 2: Testing the measurement properties of the LMPI

Phase 1: Preparation of the research tools (centre 1). Videos of patients (n=9) with neurological deficit, performing a simple functional task were recorded. Training and testing package prepared.

Phase 2: 12 senior neurological physiotherapists (centres 2, 3 & 4), trained to use the LMPI, rated videoed patient’s movement; 2 weeks later re-rated the same videos. Analysed using SPSS.

Phase 3: Same physiotherapists recruited 28 patients from their caseload. Tested with the LMPI and the Berg Balance Scale (BBS) (Berg et al 1989) pre and post course of treatment.

Study 3: Testing the clinical utility, face and content validity of the LMPI

Phase 1: 12 national experts (centre 5). Members of the British Bobath Tutors Association (BBTA) (BBTA 2014), trained to use the LMPI, used it within their clinical practice for 6 months, then attended 1 of 2 focus groups to discuss their experiences.

Phase 2: Physiotherapists recruited within Study 2 Phase 2, completed semi-structured reflexive questionnaires after they had completed Study 2 Phase 3. A cross case Template Analysis (King 2014) used to analyse the results.

Results - Study 1

Phase 1:
Definition of movement quality:
“Good quality movement is efficient, effective and seemingly effortless. It is performed in a controlled and timely manner to achieve a precise outcome. Quality of movement must be evaluated within the context of the individual; i.e., their age, the environment, and is dependant on the task”

Identification of 5 key ‘parameters’ within movement quality:
- Alignment
- Interaction
- Timing
- Speed
- Selective movement

Results - Study 2

- **Internal consistency:** Chronbach’s alpha all items = 0.862, individual items= 0.795 to 0.892 (strong)
- **Inter-rater reliability:** ICC total scores = 0.959, individual items 0.874 to 0.968 (strong)

Results - Study 3

"aids analysis and observation of movement. It is quick and easy to use and adaptable and sensitive"

"a strength of it is it breaks movement down into components"

"helped tailor analysis and treatment plan"

"the LMPI does recognise the individual nature of patient’s movement. It makes you look more specifically"

"if you were working with junior staff it could be really useful because you could actually be very specific you would say "when we are looking at alignment of the leg these are the things we are look for"

"we need as many tools on the course as we can to get the course participants to be able to see what we see and understand what we understand"

Conclusion

**Strengths:** The use of mixed methods, content validity, measurement properties, clinical utility.

**Limitations:** Rasch analysis was not used to determine ordinal scale structure; sample sizes were small; for ethical reasons, videos could not be a true reflection of the patient population; the LMPI cannot be generalisable outside the senior neurological physiotherapist population.

**Recommendations for future study:** Further testing of measurement properties, tested with different populations of physiotherapists (e.g. grade / speciality), investigate the use of the LMPI as an educational tool and as a clinical support tool.