

# Clinical assessments designed to measure body alignment posture in children

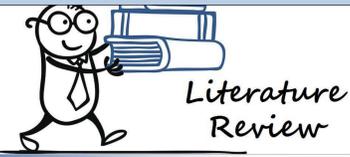
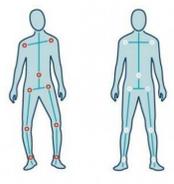
## with cerebral palsy – a systematised review

Frances George (1,3), Alex Benham (2), Lynne Gabriel (1)

(1) York St John University; georgef@hpark.org.uk; (2) University of Cumbria; (3) Humberstone park School

Est.  
1841

YORK  
ST JOHN  
UNIVERSITY



### Research purpose and aim .....

- To critically review the clinical assessments used by HCP's to assess and measure body alignment posture in children with CP.
- To determine if assessments have psychometric properties specifically measured for this population.
- To identify the assessments main characteristics.

### Method of systematic search

- Search across 5 electronic databases along with hand searching.
- The search included articles in English from inception to March 2019
- Key terms included: Cerebral palsy, posture, body alignment, assessment(s) measure(s), outcome(s), child(ren).
- Screening of titles, reviewed abstracts and identified full-text articles that met the inclusion criteria.
- Data extraction included study design, tool description and psychometric properties.

#### Chailey Levels of Ability Scale (Pountney et al 1999)

- Primary purpose is the measurement of motor and postural ability in relation to function.
- Measures body alignment as a sub-section of the assessment.

#### The Goldsmith Index of Windswept Deformity (Goldsmith et al 1992)

- Three measurements of pelvis, hips and leg position in supine crook lying.
- Measures are repeated 4 times with an average calculated for the overall score.

#### The Goldsmith Indices (Goldsmith et al 2009)

- Development of the goldsmith index of windswept deformity assessment.
- Three measurements at chest proportion, symmetry of knee movements, symmetry of hip range of movement.

#### The Mansfield Checklist (Goldsmith 2000)

- Five 'yes' 'no' questions asking if the body stays in a limited number of positions.

#### Posture and Postural Ability Scale (Rodby-Bousquet et al 2016)

- A score of 1 given for midline/symmetrical or a score of 0 for asymmetry.
- Six body items are scored: head, trunk, pelvis, legs, arms and weight distribution, in sitting, standing, supine.

#### Spinal Alignment and Range Of Motion Measure (Bartlett and Purdie 2005)

- Has 26 items; 4 items for spinal alignment and 11 for range of motion.
- Items are scored on a five point ordinal scale - 0 (no passive limitations) to 4 (severe deviations).

#### Seated Postural Control Measure (Fife et al 1991)

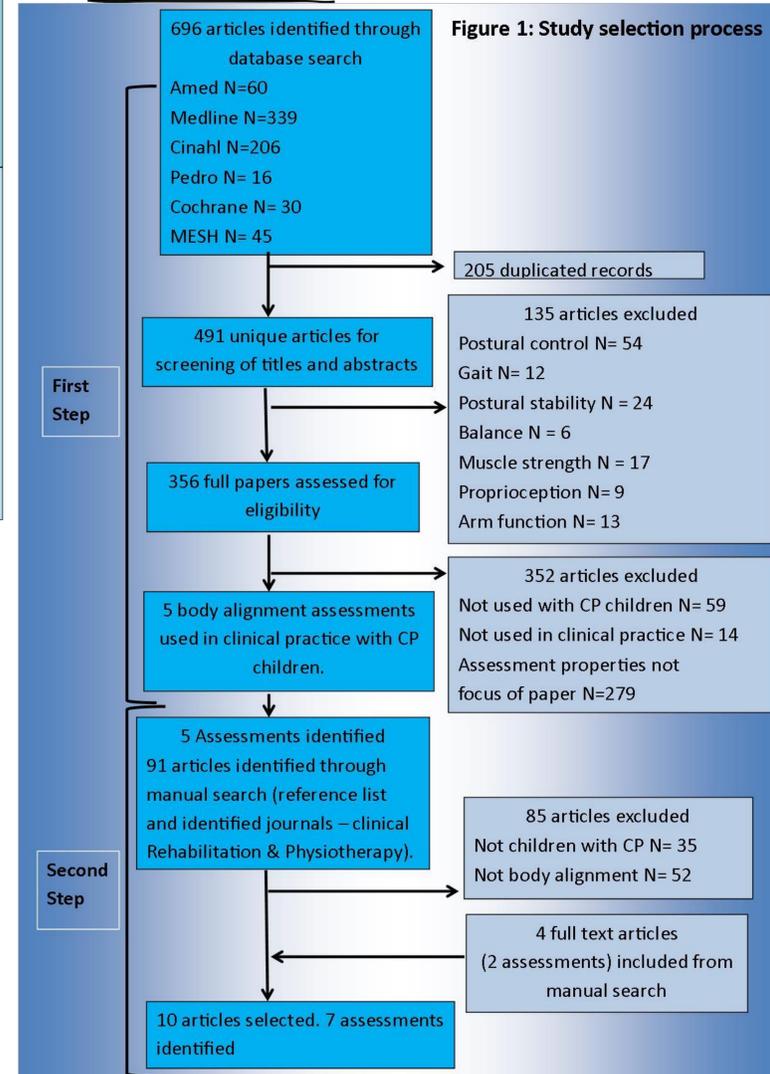
- Section one measures posture alignment and consists of 22 items.
- Items are scored on a four point ordinal scale 0 (No misalignment) 1-3 (mild, moderate and severe alignment).

### Conclusion

- This review identified 7 assessments used by health-care professionals to assess body alignment changes in children with cerebral palsy (CP)
- The search identified 10 publications of which five papers examined the assessment's psychometric properties .
- Evidence supporting the use for measures of body alignment is limited, as is the evidence supporting the strength of the assessment properties.
- Informed the direction of future research as part of a PhD project.

### Clinical Implications.....

- In children with CP, many of the clinical assessments used to measure body alignment have limited psychometric properties.
- Assessments which demonstrate validity, reliability and responsiveness are required to support therapists in their assessment of body alignment.



**Table I: Reliability data for selected body alignment posture assessments**

Instrument	Internal consistency (Cronbach's alpha)	Test-retest reliability	Intrarater reliability	Interrater reliability
Chailey Levels of Ability Scale	Not reported	Not reported	Not reported	Not reported
Goldsmith index of windswept deformity.	Not reported	Not reported	Not reported	Not reported
Goldsmith indices	Not reported	Not reported	Not reported	Not reported
Mansfield checklist	Not reported	Not reported	Not reported	Not reported
Posture and Posture ability Scale	0.95-0.96	Not reported	0.85-0.99	Weighted Kappa: 0.77-0.99
Spinal Alignment and Range of Motion Measure	Not reported	ICC:0.93 SEM:3.09	Not reported	ICC: 0.89
Seated Postural Control Measure	Not reported	Kappa coefficient Alignment = 0.35 Function = 0.29	Not reported	Kappa coefficient Alignment = 0.45 Function = 0.85

**Table II: Validity data for selected body alignment posture assessments**

Instrument	Content validity	Criterion validity	Construct Validity
Chailey Levels of Ability Scale	Expert panel review (n=2). Field testing among CP children (n=85).	Pearson Product Moment correlations score: Gross Motor Function Measure GMFM = 0.85 Alberta Infant Motor Scale AIMS = 0.90.	Not reported
Goldsmith index of windswept deformity.	Not reported	Not reported	Not reported
Goldsmith indices	Not reported	Not reported	Not reported
Mansfield checklist	Not reported	Not reported	Not reported
Posture and Posture ability Scale	Not reported	Not reported	Ability to detect gradations in disability compared with GMFCS (p<0.01). (Gross motor function classification Scale)
Spinal Alignment and Range of Motion Measure	Not reported	Not reported	Ability to detect gradations in disability compared with GMFCS (r <sup>2</sup> =0.44). (Gross motor function classification Scale)
Seated Postural Control Measure	Expert panel review (n=7)	Not reported	Not reported

Table Key:

Green = Good evidence Yellow = Adequate evidence Red = Poor evidence Blue = not reported

### References:

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