Concurrent Validity of the Head Control Scale and Alberta Infant Motor Scales

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INTRODUCTION

- Head control development is important for overall motor control in infants.
- Delays in head control can slow an infant's progression towards developmental milestones.[1]
- Currently no assessment tool measures head control independently.
- The Head Control Scale (HCS) was designed to be useful for assessing head control in both clinical and research settings.[2]
- **Purpose:** to examine the concurrent validity of the Head Control Scale with the Alberta Infant Motor Scales (AIMS).

METHODS

PARTICIPANTS

Thirty-five infants were recruited through the Physical Therapy department at Franciscan Children's Hospital in Boston, Massachusetts.

Outcomes	N
Prematurity	12
Cardiopulmonary	6
Brain Injury	7
Other	4

TEST PROCEDURE

The Head Control Scale measures head control in prone, supine, pull to sit, and supported sitting. Each dimension of the scale is measured on an ordinal scale of 0-4.

Position	Grade	Description
Prone	0	Does not lift head at all. Rests on one cheek only.
	1	Lifts head <45 degrees from the surface for <5 seconds. Arms cannot be brought forward for weight bearing.
	2	Lifts head in prone <45 degrees for >5 seconds, but <10 seconds. Brings arms actively to weight bearing.
	3	Lifts head in prone, >45 degrees, sustains for 10 seconds or less
	4	Able to lift head >45 degrees, sustains for more than 10 seconds, keeps head steady with UE use; movement of head is possible in all planes.
Supine	0	Unable to keep head in midline, with no evidence of attempts to do so
	1	Unable to keep head in midline, but attempts to approach midline
	2	Is able to keep head in midline for up to 5 seconds
	3	Is able to keep head in midline for >5 seconds, but <15 seconds
	4	Is able to actively rotate head freely in both directions
Pull to Sit	0	Complete head lag
	1	Attempts to lift head
	2	Head in midline during the last 25% of the pull to sit cycle
	3	Head in midline during 50-75% of the pull to sit cycle
	4	Head in midline at all times, with chin tucked
Supported Sitting	0	Head falls in to full cervical flexion; head position unsteady in all planes and no attempt made to right head
	1	Makes attempt to right head, but is unable
	2	Assumes and maintains head in less than 45 degrees of cervical flexion for 10 seconds
	3	Assumes and maintains head in midline for 10 seconds or less
	4	Able to maintain head in neutral for greater than 10 seconds; is able to look in all directions

Each participant was evaluated by one of eight staff PTs who received training on use of the HCS. The AIMS was already a standard part of the evaluation for new patients. Each participant was evaluated using the HCS and AIMS upon admission to a post-acute children's hospital.

DATA ANALYSIS

Statistical Test: Data was collected from 35 participants to calculate a Pearson Correlation Coefficient for the total scores of the HCS and AIMS. Cronbach's alpha was utilized to assess the internal consistency of test items.

RESULTS

Participant age ranged from 3.65 days to 15 months and there were 65.7% females and 34.3% males. SPSS was used to determine the Pearson correlation indicating a high correlation between the total scores of the AIMS and HCS. The Cronbach alpha value indicates a good level of internal reliability.

Item	Pearson Correlation Coefficient [95%CI]	Cronbach's alpha
Total Scale Score	.85	.88
Item	Mean	
Age in months	6.2	

DISCUSSION

- The strong correlation between the AIMS and HCS indicates HCS is a reliable means to assess head control.
- Limitations include a small sample size and data from only one hospital
- Future research should include:
  1. Expand the participant population with a wide range of ages and diagnoses
  2. Collect data from multiple hospital institutions
  3. Analyze correlation between other assessment tools that look at head control.

ACKNOWLEDGEMENT

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