MANUAL

for the

SITTING ASSESSMENT SCALE

Ulla Myhr
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SITTING ASSESSMENT SCALE

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SITTING ASSESSMENT
SCALE

Introduction

Sitting Assessment Scale (SAS) is a standardized observational instrument designed for assessment of sitting in children with cerebral palsy (CP) from videofilm. The scale is composed of five items evaluating head, trunk and foot control and arm and hand function. Each item is assessed with a score from 1 to 4 (1 = none; 2 = poor; 3 = fair; 4 = good). Each score (1, 2, 3, 4) has specific descriptors of each item of the SAS. The children are videofilmed during 5-minute sequences in each position studied. Five minute periods are considered the necessary time to perform the standardized tasks.

Sitting Assessment Scale is designed to be responsive to change, easily administered and simple to learn. The SAS should be reliable and sensitive to individual changes in control of posture and arm/ hand function in sitting.

Sitting Assessment Scale is developed for use in both clinical and research settings.

Sitting Assessment Scale is designed to provide quantifiable measurements and information on qualitative aspects of movement patterns. The sitting ability may vary from being unable to hold the head upright to being able to move the upperbody (head, trunk and upper extremities) above the supporting surface and perform voluntary tasks when sitting.

Sitting Assessment Scale has been tested for reliability and the standardization of the tasks the children have to perform have been further reevaluated and developed.

During the development of this scale videofilming has been used in combination with photography in the research setting. Photographs were taken when the child reached the arm(s) forward to perform a task, when the child performed the task, and when the child reerected. From photographs the position of the upperbody relative to a vertical line through the fulcrum (marking point at the greater trochanter) was determined. The positions of the feet relative to a vertical line through the axis at the knee joint were determined likewise.

Therefore, prior to filming and photographing white adhesive paper markers were affixed as anatomical landmarks placed as follows: 1) in front of the ear; 2) at the centre of the palpable part of the humeral head; 3) on the lateral humeral epicondyle; 4) on the ulnar styloid process; 5) on the greater trochanter (if concealed by the hip belt, the marking point has to be transferred to the corresponding point at the belt); 6) on the convexity of the lateral epicondyle of the femur; 7) on the lateral malleolus. These landmarks may be of additional value for the analysis by SAS.
SITTING ASSESSMENT SCALE

General Administration Guidelines

1. Examiner Qualifications

Sitting Assessment Scale was developed and tested for reliability by physiotherapists. However, other professionals may benefit from using the scale.

Users should familiarize themselves with the Sitting Assessment Scale, the Specific Administration Guidelines and Score Sheet, prior to assessing children to ensure accuracy and consistency. Prior to the use of the scale it is recommended that at least two children with CP should be tested as a practice exercise.

2. Testing Environment

The environment should encourage the child to demonstrate the best possible effort for each item attempted. The room should be large enough to comfortably accommodate the required equipment, child, assistant (video recorder and time keeper) and evaluator. It should be warm enough for the child to be comfortable. The child should feel at ease during the testing and if appropriate should be accompanied by a parent or a caregiver. However, the caregiver should not help the child with any items. The evaluator should ensure that the testing conditions are as consistent as possible in order to minimize changes in scoring resulting from variation in the environment. Any modifications to the environment should be noted on the Testing Conditions Sheet under "Comment/Notes" to be certain that these are duplicated during retesting.

Equipment

The following are needed in the experimental situation:

- a videocamera
- a flat table placed in front of the child. The table should be wide enough for the child to be able to support elbows and deep enough that a toy be placed at 1½ arm lengths. The table height should be just below the forearms when the elbows are bent 90°. The surface should not be slippery and can be covered with anti-slip material. It is of importance that there is nothing on the side of the table obstructing the child's feet from view
- a chair on the opposite side of the table, for the evaluator to sit on
- a measuring tape
- a stopwatch
- adhesive paper markers (as markers for movement axes and for marking of 1 and 1½ "arm lengths" distance at the table)
- Testing Conditions Sheet
- a Score Sheet and a pen
Test Materials

The standardized tasks the child performs include reaching, grasping, lifting and releasing objects. The materials required for the tasks include:
- a toy, that makes a sound when touching it
- a container
- a screw-lid jar
- 6 dice
- small toys (to grasp and place in the container) e.g. a small car or doll, or other toy of interest which the child will be able to grasp.

If any of this material is not available choose material that is as close as possible to the specifications. Note any substitutions in equipment on the Testing Conditions Sheet under "Comments/Notes". Replicate the substitutions on subsequent testing.

3. Clothing

The child should be clothed in underwear or shorts, with a sleeveless shirt. We recommend that the child first be tested without shoes or orthoses, then if desirable retested with them on at the same occasion using the same guidelines. Note on the Testing Conditions Sheet which orthoses were used and in which order they were used.

4. Testing Preliminaries

1. The videocamera should be leveled, aligned at a right angle to record posture and movement in the sagittal plane, and height adjusted to the level of the testing table. The focal length of the lens should be adjusted to allow maximum image of the whole child on the video monitor, and to maximize measurement precision.
2. Mark the midpoint under the videocamera with a cross on the floor.
3. Remove if possible pillow or pelvic supports fixed onto the armrest at the cameraside, obstructing the child's pelvis from view.
4. Place tape markers on the humeral head and at the ulnar styloid process.
5. Measure the child's arm length - the distance between the marked points - and note the length measured on Testing Conditions Sheet. This is "an armlength."
6. Calculate 1½ times "arm lengths" and note it on Testing Conditions Sheet.
7. Place the child sitting in the chair, in front of the table.
8. The midpoint under the child's chair should be marked with a cross on the floor.
9. The distance between the crosses at the camera and the child should be decided, measured and noted on Testing Conditions Sheet.
10. Mark on the table measurements one and 1,5 arm lengths from a point anterior to the trunk midline at the level of the table.
Testing Procedure:

The evaluator sits in front of the child across the table, videofilming starts and continues during 5 minutes in each tested position. It is recommended that the tasks are tested in the order given. It is acceptable to change the order if it appears more conducive to the child. It is imperative that the time be allotted between the six tasks so that progression is appropriate for the child, the testing situation should be as unstressful as possible for the child. A maximum of 1 minute for motivating the child and completing each item is recommended.

The evaluator sitting in front of the child asks the child to
1) look to one side at a time, to look at something in the room or a thing held in the air by the evaluator.
2) lean forward, touch a toy, which makes a sound, placed at the marking point at the table for 1½ "arm length" distance; then asks the child to re-erects;
3 ) reach forward, grasp 2-3 toys, one at a time, at an "arm length", and release the toy into a container placed conveniently on the table;
4) remove and replace the lid of a screw-lid jar, placed anterior to the child's midline at any location that accommodates the child's attempts to grasp the jar;
5) place 6 dice in the jar, one at a time, using one hand;
6) lift the jar with the use of both hands.

Repetition of tasks or additional appropriate tasks can be done during the remaining time up to 5-minutes. On the other hand, tasks can be omitted if they are considered impossible for the child to perform. If it is too difficult for the child to perform some of the tasks above when the toys are placed at the table, the evaluator can hold the toy (e.g. tasks 2 and 3) in front of the child in the air, conveniently within reach for the child, and ask the child to try to reach the different toys, one at a time, and perform the tasks as stipulated above. Note any modifications on Testing Conditions Sheet.

Complete the page of Testing Conditions and replicate the substitutions on subsequent testing. Retest in the alternative positions using the same guidelines and tasks for the children to perform.
References:


SITTING ASSESSMENT SCALE

Testing Conditions

Child's name:  
Date of birth:  
Diagnosis:  
Severity:  
Mild  Moderate  Severe

Evaluator's Name:  
Date for Videofilming:  

Sitting position A:  
Type of chair:  
Seat inclination:  
Backrest inclination:  

Sitting position B:  
Type of chair:  
Seat inclination:  
Backrest inclination:  

1 "arm length" = 1½ "arm lengths"  
Distance videocamera - child's chair:  

COMMENTS / NOTES:
Specific Administration Guidelines

Scoring single items:

1. View the videotapes once without noting any score, but follow the specific descriptors for each of the items of Sitting Assessment Scale, and acquaint yourself with the instrument.

2. Use the Sitting Assessment Scale and assess one variable at a time in the position(s) tested. If SAS is used for assessment of two or more sitting positions, it is recommended to assess one variable at a time in all positions tested - i.e. head control first in all positions, then trunk control in each position, etc. using the included specific scoring criteria.

3. If these criteria do not correlate with the observations made, score using the "none", "poor," "fair", "good" items.

4. Note on the Score Sheet any modifications or adaptations that differ from the standardization's included here.

5. Note the results on the Score Sheet.

Precautions should be taken to ensure that the scores assigned reflect the child's true functional level as accurately as possible.
<table>
<thead>
<tr>
<th><strong>Sitting Assessment Scale</strong></th>
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<tbody>
<tr>
<td><strong>Head control</strong></td>
</tr>
<tr>
<td>1. None: unable to hold head erect, or needs neck support</td>
</tr>
<tr>
<td>2. Poor: holds head erect for ( \leq 2 \text{ minutes}^* ) - easily loses control</td>
</tr>
<tr>
<td>3. Fair: holds head erect but displaces with acceleration /rotation</td>
</tr>
<tr>
<td>4. Good: holds head upright and able to rotate</td>
</tr>
<tr>
<td><strong>Trunk control</strong></td>
</tr>
<tr>
<td>1. None: lacks control of trunk or needs back support</td>
</tr>
<tr>
<td>2. Poor: holds trunk erect only when supported by forearms or hands</td>
</tr>
<tr>
<td>3. Fair: holds trunk erect supported by one forearm or hand, some degree of lateral flexion can occur</td>
</tr>
<tr>
<td>4. Good: holds trunk erect with and without forearm or hand support, with pelvis supported or unsupported</td>
</tr>
<tr>
<td><strong>Foot control</strong></td>
</tr>
<tr>
<td>1. None: unable to hold feet against underlying surface without fixation</td>
</tr>
<tr>
<td>2. Poor: holds feet against underlying surface for ( \leq 2 \text{ minutes}^* )</td>
</tr>
<tr>
<td>3. Fair: good control of one foot - poorer of the other</td>
</tr>
<tr>
<td>4. Good: holds feet against underlying surface for entire period</td>
</tr>
<tr>
<td><strong>Arm function</strong></td>
</tr>
<tr>
<td>1. None: unable to control arms by will</td>
</tr>
<tr>
<td>2. Poor: uses arms for support, but easily loses control; stretches arms towards objects, but in uncontrolled movements</td>
</tr>
<tr>
<td>3. Fair: uses one arm for support and stretches other towards objects intentionally</td>
</tr>
<tr>
<td>4. Good: uses one or both arms for support, stretches arms towards objects intentionally or uses arms for functional movements</td>
</tr>
<tr>
<td><strong>Hand function</strong></td>
</tr>
<tr>
<td>1. None: unable to grasp objects, knocks object with one hand</td>
</tr>
<tr>
<td>2. Poor: grasps and holds objects, but very uncontrolled movements</td>
</tr>
<tr>
<td>3. Fair: good function in one hand, poorer in the other</td>
</tr>
<tr>
<td>4. Good: good function in both hands or able to consciously grasp, hold and release objects.</td>
</tr>
</tbody>
</table>

* Accumulation duration, maximum two minutes out of five.
SCORE SHEET

SITTING ASSESSMENT SCALE

Child's name:
Evaluator's name:
Date for Assessment:

Note the appropriate score for the sitting positions evaluated:

RESULT

<table>
<thead>
<tr>
<th>Sitting Position</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Head control</td>
<td></td>
</tr>
<tr>
<td>Trunk control</td>
<td></td>
</tr>
<tr>
<td>Foot control</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Hand function</td>
<td></td>
</tr>
</tbody>
</table>

Total:

COMMENTS / NOTES:
**SITTING ASSESSMENT SCALE**  
**QUICK - MANUAL**

**Equipment**
- a videocamera
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- Testing Conditions Sheet, a Score Sheet and a pen
- the General Administration Guidelines

**Test Materials**
- a toy, that makes a sound when touching it
  - a box
  - a screw-lid jar
  - 6 dice
  - small toys (to grasp and place in the container) e.g. a small car or doll, or other toy of interest which the child will be able to grasp.

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3) reach forward, grasp 2-3 toys, one at a time, at an "arm length", and release the toy into a container placed conveniently on the table
4) remove and replace the lid of a screw-lid jar, placed anterior to the child's midline at any location that accommodates the child's attempts to grasp the jar
5) place 6 dice in the jar, one at a time, using one hand
6) lift the jar with the use of both hands.

If time remains (of the 5-minutes), ask the child to repeat some of the above tasks or perform additional appropriate tasks. If, on the other hand, it is too difficult for the child to perform some of the tasks above when the toys are placed at the table, the evaluator can hold the toy (tasks 2 and 3) in front of the child in the air, conveniently within reach for the child, and ask the child to try to reach the different toys, one at a time, and perform the tasks as stipulated above. Note any modifications on Testing Conditions Sheet.

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