Measuring children motor skills with MOBAK-1: descriptive data from Wallonia and critical analysis

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Introduction

The development of motor skills competencies is critical during childhood should be considered as the central learning outcome in PE.

Assessing motor competencies of the children make sense for teachers, trainers and researchers.

The MOBAK-1 testing battery has been recently developed with the aim of assessing a wide panel of motor skills in relationship with body movement and object-control abilities (1).

This battery is based on a success/failure scoring system.
Aim of the study

- to collect descriptive data from Wallonian children with MOBAK-1
- to compare with previous study
- to analyse the discrimination of the tests and the failure reasons

Methods: MOBAK-1

166 children (7.2 ± 0.6 YO) from Wallonia

Object-control

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Throwing (1)</th>
<th>Catching (2)</th>
<th>Bouncing (3)</th>
<th>Orbiting (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test task</td>
<td>Hitting a small target</td>
<td>Catching a ball</td>
<td>Bouncing a ball without throwing control</td>
<td>Orbiting a ball without throwing control</td>
</tr>
<tr>
<td>Criteria</td>
<td>Hitting the target counts as a point</td>
<td>The ball must be caught when still in the air</td>
<td>The ball can be bounced with both hands. The child has to look straight ahead. The ball may not be missed or lost. The child may not leave the corner.</td>
<td>The ball may not be lost. At least 3 contacts with the ball. The child must not stop. The child has to look straight ahead. No side steps. The ball can be dodged with both feet. The child may not leave the corner.</td>
</tr>
<tr>
<td>Evaluation</td>
<td>6 attempts, amount of balls is recorded</td>
<td>6 attempts, amount of balls caught is recorded</td>
<td>2 attempts, amount of incorrect attempts is recorded</td>
<td>2 attempts, amount of incorrect attempts is recorded</td>
</tr>
<tr>
<td>Test setup</td>
<td>A target is placed at 1.50 m distance. A scratch line is placed 2 m away from the target.</td>
<td>The test leader drops the ball from 2 m height and 1.50 m distance so that the ball reaches a height of at least 1.50 m after it has touched the ground.</td>
<td>Marking a comfort using tape (5 m x 1 m)</td>
<td>Marking a comfort using tape (3 m x 1 m)</td>
</tr>
<tr>
<td>Materials</td>
<td>6 juggling balls</td>
<td>1 small rubber ball or limes ball</td>
<td>1 small basketball (size 3, diameter 15 cm)</td>
<td>1 soft ball (diameter 21 cm)</td>
</tr>
<tr>
<td></td>
<td>1 target (diameter: 40 cm)</td>
<td>1 juggle line</td>
<td>Ground markings</td>
<td>Ground markings</td>
</tr>
</tbody>
</table>
### Methods: MOBAK-1

#### Body movement

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Test task</th>
<th>Criteria</th>
<th>Evaluation</th>
<th>Test set-up</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balancing</td>
<td>Crossing a see-saw</td>
<td>Hands can be used for support, no rolling off the sides.</td>
<td>2 attempts, amount of successful attempts is recorded.</td>
<td>A long bench is placed sideways on a springboard, forming a see-saw secured with gymnastic mats.</td>
<td>1 long bench, 1 spring board, 4 gymnastics mats</td>
</tr>
<tr>
<td>Rolling</td>
<td>Rolling forward</td>
<td>Hands can be used for support, no rolling off the sides.</td>
<td>2 attempts, amount of successful attempts is recorded.</td>
<td>2 gymnastics mats are placed in a row with a 40 cm gap between them.</td>
<td>2 gymnastics mats</td>
</tr>
<tr>
<td>Jumping</td>
<td>Jumping forward continuously</td>
<td>The carpet tiles are not to be too thick. The child must jump fluidly without stopping for more than 1 second. The takeoff leg between the tiles can be chosen freely.</td>
<td>2 attempts, amount of successful attempts is recorded.</td>
<td>4 carpet tiles (40 cm x 40 cm) are placed in a row at a distance of 3 m from each other.</td>
<td>4 carpet tiles, Ground markings</td>
</tr>
<tr>
<td>Moving sideways</td>
<td>Moving variable</td>
<td></td>
<td></td>
<td></td>
<td>2 masking cones</td>
</tr>
</tbody>
</table>

#### Measure

<table>
<thead>
<tr>
<th>Object control</th>
<th>Body movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throwing</td>
<td>6 attempts</td>
</tr>
<tr>
<td>Catching</td>
<td>6 attempts</td>
</tr>
<tr>
<td>Bouncing</td>
<td>2 attempts</td>
</tr>
<tr>
<td>Dribbling</td>
<td>2 attempts</td>
</tr>
<tr>
<td>Balancing</td>
<td>2 attempts</td>
</tr>
<tr>
<td>Rolling</td>
<td>2 attempts</td>
</tr>
<tr>
<td>Jumping</td>
<td>2 attempts</td>
</tr>
<tr>
<td>Moving sideways</td>
<td>2 attempts</td>
</tr>
</tbody>
</table>

#### Scoring

- Throwing: 5-6 success = 2 points, 3-4 success = 1 point, 0-2 success = 0 point
- Catching: 5-6 success = 2 points, 3-4 success = 1 point, 0-2 success = 0 point
- Bouncing: 2 attempts
- Dribbling: 2 attempts
- Balancing: 2 attempts
- Rolling: 2 attempts
- Jumping: 2 attempts
- Moving sideways: 2 attempts

#### Failure analysis
Results: throwing

Bench in place of a line

Scoring system too severe?

0-2 hits => 0 point 0-1 hits
3-4 hits => 1 point 2-4 hits
5-6 hits => 2 points 5-6 hits

Results: catching

Is the test discriminant? => Increase task difficulty?
Any technical information about the catching
Results: bouncing

- 10% failed for reasons not linked to their ability
- Any technical information about the bouncing

Results: dribbling

- 46% fail because they had less than 5 contacts with the ball
- 7% fail because they don’t respect the end of exercise criteria and not because their level of competence
Results: balancing

- Is the test discriminant? => Increase task difficulty?
- Any technical information about steps on the beam

Results: rolling

- Any technical information about the rolling
Results: jumping

- Very different results in comparison with Herrmann et al.
- Tiles dimension should be adapted to children morphology

Results: moving sideways

- Is the test discriminant? => Increase task difficulty?
Conclusion

- MOBAK-1 testing battery was successful to assess children motor skills for 6 to 8 YO children.
- Simple and quick to use.
- Adaptation of some criteria could improve the quality of the assessment.
- Increase difficulty to increase discrimination (catching, balancing, moving sideways, …)
- Children should have additional attempt when it is obvious that they failed because of instruction misunderstanding.
- Limit: scoring system fails to inform about the situation of the children in the learning process.
- Interest in three level scale system including « not able », « in progress » and « able » situations.

Not able  In progress  Able

Thanks for your attention

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