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# мовАк-5-6 

Basic motor competencies in fifth and sixth grade


## Imprint

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## M O B A K - 5-6

## Basic motor competencies in fifth and sixth grade

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## Executive Summary MOBAK-5-6

## Initial situation

In the course of systematic quality assurance, increasingly the question to which extent learning outcomes are achieved by children in sports and sports education arises. The central learning objectives of physical education are the curriculum-based basic motor competencies that enable children to play an active part in the culture of sports and exercise.

Targeted diagnostics are an indispensable prerequisite for the systematic promotion of basic motor competencies. By describing the children's level of motor competencies, information is gained that helps teachers to adapt their methodical and didactical behaviour to the children's requirements. In order to assess and measure basic motor competencies, valid and practicable survey tools are needed.

## Test setup and content

MOBAK-5-6 is designed for 10- to 12-year-old children. Thus, questions about the status and development of basic motor competencies in late childhood can be dealt with.

The basic motor competencies of self-movement are covered with four tasks (balancing, rolling, jumping, running) and object movement with four tasks (throwing, catching, bouncing, dribbling). The difficulty and complexity of the requirements set in the MOBAK items are adapted to the children's age.


## Test implementation

The MOBAK-5-6 enables a standardized and economical assessment of basic motor competencies for scientific testing as well as sports teaching practice testing. The implementation of the instructional MOBAK items is quickly and easily achieved in a sports hall. Each test task is explained and demonstrated once by the test leader.

For scientific testing, a supervised station operation is recommended, in which a test leader completes each of the eight tasks with three or four children one after another. The full testing cycle takes about 35 minutes and can comfortably be done within a 45-minute physical education lesson.

For tests concerning sports teaching practice, it is recommended for items to be divided into several sports lessons and evaluated individually. This approach renders the use of the MOBAK-5-6 feasible for individual teachers.

## Test assessment

The assessment of the MOBAK items is easily feasible due to dichotomous coding (pass vs. fail) and clear standardization criteria.

- MOBAK test items „throwing" and „catching": The children have six attempts each (no trial), with the number of hits or failed attempts being noted. Afterwards $0-2$ hits or passed attempts are to be rated with 0 points, 3-4 hits or passed attempts with 1 point and 5-6 hits or passed attempts with 2 points.
- MOBAK test items „bouncing", „dribbling", „balancing", „rolling", „jumping" and „running": the children have two attempts to complete the test items (no trial). These items are dichotomously scaled ( $0=$ failed, $1=$ passed), with the number of successful attempts noted (never passed $=0$ points, once passed $=1$ point, passed twice $=$ 2 points).

The criteria of passing / failing can be found in the descriptions of the test items.

## Test evaluation

Through the formation of totals, the evaluation of the individual MOBAK test items and the two MOBAK competence areas object movement and self-movement can easily be done.

- Based on the scores 0 to 2, the MOBAK test items provide specific information on which child passed which test item and in which area there is need for support. This allows the content of lessons to be adapted to the current level of the children's performance.
- The MOBAK competence areas object movement and self-movement are calculated by the addition of the four MOBAK test items, respectively. A maximum of 8 points ( 4 test items $\times 2$ points) can be achieved for each area:
object movement = „throwing" + „catching" + „bouncing" + „dribbling"
self-movement = „balancing" + „rolling" + „jumping" + „running"

The MOBAK competence areas provide information on a broader range of tasks than the MOBAK test items. Through the scoring system ( 0 to 8 points), the determination of the level of the basic motor competencies is made possible.

## Test quality criteria

To ensure content validity, the design and selection of MOBAK-5-6 items were closely linked to the objectives in the German curricula. In a validation study ( $\mathrm{N}=438$ children, $48 \%$ male, $\mathrm{M}=11.25$ years, $\mathrm{SD}=0.49$, range: 10.50 12.50 years), the construct validity of the MOBAK-5-6 was confirmed by confirmatory factor analyses. Reliability testing was also carried out with the help of confirmatory factor analyses, which enable assessment of reliability on construct measurement. The associated factor reliabilities (self-movement: FR = .59; object movement: FR = .85) are consistently satisfactory (Herrmann \& Seelig, 2017) ${ }^{1}$.

[^0]
## Application areas

MOBAK-5-6 allows for the assessment of the following questions on the status and the development of basic motor competencies:

- Screening: What is the current status of basic motor competencies?
- Monitoring: Are basic motor competencies achieved by children in physical education and how can physical education be optimized in this area?
- Characterization of subpopulations: What are differences between groups (e.g., gender, age) regarding basic motor competencies?
- Diagnostics of special needs: Which basic motor competencies should be specifically promoted (for the weaker ones)?
- Description of the course of development: How do basic motor competencies change in the course of children's development?
- Intervention evaluation: Do basic motor competencies change after a targeted intervention?


## Summary

The MOBAK-5-6 enables a standardized and economic assessment of basic motor competencies in 10- to 12-year-old children. The implementation of the instructional MOBAK items is quickly and easily achieved in a sports hall. Due to the dichotomous coding (passed vs. failed) and clear standardization criteria, the assessment of the items is easily and comprehensibly carried out. The evaluation is significantly facilitated by the formation of total values.



| Evaluation table MOBAK-5-6 test instrument |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Area: |  |  | Object movement |  |  |  |  |  |  | Self-movement |  |  |  |  |
| Item: |  |  | (1) Throwing |  | (2) Catching |  | (3) Bouncing | (4) Dribbling |  | (5) Balancing | (6) Rolling | (7) Jumping | (8) Running |  |
| Trials: |  |  |  |  |  |  | 20 passed attempts $=0$ pts.1 passed attempts $=1 \mathrm{pt}$.2 passed attempts $=2$ pts. |  |  | 2 | 2 | 2 | 2 |  |
| Valuation: |  |  | $0-2$ hits / passed attempts $=0$ pts. <br> $3-4$ hits / passed attempts $=1$ pt. <br> 5-6 hits / passed attempts $=2$ pts. |  |  |  |  |  |  | $\begin{aligned} 0 \text { passed attempts } & =0 \text { pts. } \\ 1 \text { passed attempt } & =1 \mathrm{pt.} \\ 2 \text { passed attempts } & =2 \mathrm{pts} . \end{aligned}$ |  |  |  |  |
| No. | Name | f/m | (Hits) | Pts. | $\begin{aligned} & \text { (passed } \\ & \text { att- } \\ & \text { empts) } \end{aligned}$ | Pts. | Points | Points | Total points | Points | Points | Points | Points | Total points |
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| Item average: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Class average: |  |  | Object movement: |  |  |  |  |  |  | Self-movement: |  |  |  |  |


|  | Object movement |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Throwing (1) | Catching (2) | Bouncing (3) | Dribbling (4) |
|  |  |  |  |  |
| Qualification | Can hit a target with a ball. | Can catch a ball in motion. | Can bounce a ball around obstacles. | Can dribble a ball around obstacles. |
| Test set-up | The target is suspended at 1.3 m (lower edge) height on a wall. 3.5 m in front of the target a scratch line is marked. The long side of the top part of a vaulting box is applied to the scratch line. | An approximately 1.5 m long scratch line is marked parallel to the wall at a distance of 4.0 m using tape. | Using tape, a corridor ( $8.0 \mathrm{~m} \times 1.1 \mathrm{~m}$ internal dimensions) is created with four 0.7 m wide obstacles ( 2 poles with t -shirt above) marked at a distance of $1.5 \mathrm{~m} ; 0.5 \mathrm{~m} ; 4.0 \mathrm{~m}$ and 0.5 m . A cone is placed 0.5 m behind the end of the corridor as a turning point. | Using tape, a corridor ( $8.0 \times 1.1 \mathrm{~m}$ internal dimensions) is created with four 0.7 m wide obstacles ( 2 marking cones connected with tape) at a distance of $1.0 \mathrm{~m} ; 1.5 \mathrm{~m} ; 3.0 \mathrm{~m}$ and 1.5 m . A cone is placed 0.5 m behind the corridor as a turning point. |
| Test item | The child throws six rounders from a scratch line at a target. | The child throws a tennis ball at the wall and catches it directly when still in the air. | The child bounces the ball through the corridor and around the obstacles to the turning point and back. | The child dribbles the ball through the corridor and around the vaulting box parts to the turning point and back. |
| Criteria | The child has to stand behind the vaulting box. Hitting the target counts as a point. | While throwing, the scratch line may not be overstepped. The ball must be caught directly after the rebound on the wall. The ball must be kept under control for at least 1 sec after catching. | The ball may be bounced with the left or the right hand. The ball may not be held, lost or leave the corridor. The obstacles may not be touched. Max. 25 sec per trial. | The ball may not be lost or leave the sides of the corridor. The obstacles may not be touched. The ball may not roll over the marking tape between the cones. Max. 25 sec per trial. |
| Valuation | 6 attempts, the amount of successful attempts is recorded. | 6 attempts, the amount of successful attempts is recorded. | 2 attempts, the amount of successful attempts is recorded. | 2 attempts, the amount of successful attempts is recorded. |
| Materials | - 6 rounders <br> (diameter: 65 mm ; weight: 80 g ) <br> - 1 round target (diameter: 40 cm ) <br> - Top part of a vaulting box <br> - Tape (approx. 30 mm wide) | - 1 tennis ball <br> - Tape (approx. 3.0 cm wide | - 1 basketball (size 6, weight: 520 g ) <br> - 8 poles (height: approx. 1.4 m ) <br> - 4 t-shirts (width: 70 cm , size: XL) <br> - 1 marking cone <br> - Stopwatch <br> - Tape (approx. 3.0 cm wide) | - 1 futsal (size 4, weight: 350 g ) <br> - 9 marking cones <br> ( 23 cm high, 13 cm wide) <br> - Stopwatch <br> - Tape (approx. 3.0 cm wide) |



## Throwing (1)

| Test battery <br> Area | MOBAK-5-6 <br> Object movement |
| :---: | :---: |
| Qualification | Can hit a target with a ball. |
| Test set-up | The target is suspended at 1.3 m (lower edge) height on a wall. 3.5 m in front of the target a scratch line is marked. The long side of the top part of a vaulting box is applied to the scratch line. |
| Test item | The child throws six rounders from a scratch line at a target. |
| Criteria | - The child stands behind the vaulting box. <br> - Hitting the target counts as a point. |
| Valuation | 6 attempts, amount of hits is recorded. |
| Materials | - 6 rounders (diameter: 65 mm ; weight: 80 g ) <br> - 1 round target (diameter: 40 cm ) <br> - Top part of a vaulting box <br> - Tape (approx. 3.0 cm wide) |
| Instruction/ Demonstration | „Stand behind the vaulting box and throw the balls at the target. You have six attempts in total. Have a look, l'll show it once." (demonstration) |
| Information for the test leader | - The type of throwing is selected freely (pushing the ball is allowed). <br> - Demonstration of an impact throw |



| Test battery MOBAK-5-6 |  |
| :--- | :--- |
| Area | Object movement |

## Qualification Can catch a ball in motion.

Test set-up An approximately 1.5 m long scratch line is marked parallel to the wall at a distance of 4.0 m using tape.

## Test item

The child throws a tennis ball against the wall and catches it directly in the air.
Criteria - While throwing, the scratch line may not be overstepped.

- The ball must be caught directly after the rebound on the wall.
- The ball must be kept under control for at least 1 sec after catching.

Valuation 6 attempts, amount of hits is recorded.

## Materials

Instruction/
Demonstration

Information for
the test leader

- 1 tennis ball
- Tape (approx. 3.0 cm wide)
„Stand directly behind the scratch line with the ball. Throw the ball against the wall so you can catch it again. After the ball jumps back from the wall, catch it directly in the air. You must throw the ball behind the line, but you are allowed to catch it in front of it. Have a look, l'll show it once." (demonstration)
- Overhead throw.
- The line may be crossed when catching the ball.


| Test battery Area | MOBAK-5-6 <br> Object movement 4MOBAK 56 |
| :---: | :---: |
| Qualification | Can bounce a ball around obstacles. |
| Test set-up | Using tape, a corridor ( $8.0 \mathrm{~m} \times 1.1 \mathrm{~m}$ internal dimensions) is created with four 0.7 m wide obstacles ( 2 poles with a t-shirt above) marked at a distance of $1.5 \mathrm{~m} ; 0.5 \mathrm{~m} ; 4.0 \mathrm{~m}$ and 0.5 m between each other. The first obstacle is on the left side of the corridor, the following ones are always on the opposite site of the prior obstacle. A cone is placed 0.5 m behind the end of the corridor as a turning point. |
| Test item | The child bounces the ball around the obstacles to the turning point and back, without losing the ball. |
| Criteria | - The child has to walk forward smoothly and continuously (no stopping for more than 1 sec ). <br> - The ball must not be lost. <br> - The ball may be bounced with the left or the right hand. <br> - The ball may not be held or be bounced with both hands at the same time. <br> - The ball my not be guided or bounced from below. <br> - The ball may be touched with the foot, but there must not be any movement of the foot towards the ball. <br> - The sides of the corridor may not be left by the ball. <br> - The obstacles may not be touched. <br> - Max. 25 sec per trial. |
| Valuation | 2 attempts, the amount of successful attempts is recorded. |
| Materials | - 1 basketball (size 6 , circumference: 72 cm , weight: 520 g ) <br> - 7 poles (height: approx. 1.4 m ) <br> - 4 t-shirts (shoulder width: 70 cm , size: approx. XL) <br> - 1 marking cone <br> - Stopwatch <br> - Tape (approx. 3.0 cm wide) |

## Instruction/ <br> Demonstration

Information for the test leader
"Stand in front of the starting line with the ball in your hand. Bounce the ball around the obstacles, then around the pole at the turning point and back to the starting line. You are only allowed to bounce with one hand, but you may change your hand as often as you like. The ball should always stay in the corridor and it should not touch the obstacles. Once the ball enters the corridor the attempt starts. You have 25 seconds to complete the task. Have a look, Illl show it to you once." (demonstration)

- The lines may be overstepped.
- The turn around the cone at the turning point may be carried out from the left or the right.
- Contests between the children, which lead to improper execution of the item, should be stopped early.
- If no poles are available, they may be replaced by marking cones.

Test battery MOBAK-5-6 Object movement MOBAK 5 -6.


## Qualification

## Test set-up

## Test item

## Criteria

Valuation

Materials

## Instruction/

Demonstration

## Information for

 the test leaderCan dribble a ball around obstacles.

Using tape, a corridor ( $8.0 \times 1.1 \mathrm{~m}$ internal dimensions) is created with four 0.7 m wide obstacles ( 2 marking cones connected with tape) marked at a distance of $1.0 \mathrm{~m} ; 1.5 \mathrm{~m}$; 3.0 m and 1.5 m between each other. The first obstacle is on the left side of the corridor, the following ones are always on the opposite site of the prior obstacle. A cone is placed 0.5 m behind the corridor to mark the end.

The child dribbles the ball through the corridor, around the obstacles to the turning point and back, without losing the ball.

- The child has to walk forward smoothly and continuously (no stopping for more than 1 sec ).
- The ball may not be touched with the hands.
- The ball may not be lost.
- The sides of the corridor may not be left by the ball.
- The obstacles may not be touched.
- The ball may not roll over the marking tape between the cones.
- Max. 25 sec per trial.

2 attempts, the amount of successful attempts is recorded.

- 1 futsal (size 4, circumference 62 cm , weight approx. 350 g )
- 9 marking cones ( 23 cm high, 13 cm wide)
- Stopwatch
- Tape (approx. 3.0 cm wide)
„Stand behind the starting line with the ball on your foot. Dribble the ball around the obstacles, then around the last cone and back to the starting line. The ball always needs to stay between the lines of the corridor and has to be guided around the cones. As soon as you move the ball into the corridor, the time starts. You have 25 secs to complete this task. Have a look, l'll show it once." (demonstration)
- The line may be overstepped.
- The turn around the last cone at the turning point may take place from the left or right.
- Contests between the children, which lead to improper execution of the item, should be stopped early.



## Balancing (5)

Test battery
Area
Qualification

Test set-up

Test item

Criteria

Valuation

Materials

## Instruction/ <br> Demonstration

Information for the test leader

MOBAK-5-6

Self-movement


Can balance across a long bench with obstacles.
A long bench is placed upside-down on a springboard, creating a seesaw. Two wooden blocks on top of each other (wide side facing down) are put onto the long bench twice. They are to be fastened 1.0 m from the beginning and 1.0 m from the end of the long bench with suitcase straps.

The child balances forward and backwards on the long bench and over the obstacles placed upon.

- The child balances without stopping.
- Fluent forward movement has to be visible.
- The long bench may not be left.
- Balancing sideways is not allowed.
- The hip of the child (body transverse axis) must be perpendicular to the long bench.
- Step-to-step technique is not allowed.
- Before crossing the wooden blocks, individual readjustments are allowed.
- The wooden blocks may only be touched on the sides.

2 attempts, the amount of successful attempts is recorded.

- 1 long bench ( 38 cm high, 10 cm wide at the bottom, at least. 3.7 m long,)
- Springboard (18-21 cm high)
- 4 wooden blocks ( $18 \mathrm{~cm} \times 6 \mathrm{~cm} \times 10 \mathrm{~cm}$ [corresponds to 1 liter tetrapacks])
- 2 suitcase straps for fastening
- possibly tape (approx. 3.0 cm wide)
"Step onto the bench and balance across. Step over the wooden blocks without touching them. When you get to the end of the bench, balance back backwards. Step over the wooden blocks again, without touching them. Have a look, l'll show it once." (demonstration)
- The child may not stop for more than 1 sec.
- Corrections to keep in balance are allowed.


Test battery
Area

Qualification
Test set-up

## Test item

## Criteria

Valuation

Materials

## Instruction/

Demonstration

Information for
the test leader

MOBAK-5-6
Self-movement


Can roll forward starting with a jump.
3 gymnastics mats are placed in a row. Parallel to the transition of the first and the second mat, a banana box is placed on its long side.

The child performs a diving forward roll starting with a jump over a set up banana box.

- The child performs a two-legged jump start from a standing position.
- Jumping movement must be visible (hands don't touch the mat until the feet have left the floor).
- The box may not be touched.
- The rolling movement is straight with a rounded back.
- The landing has to be completely on the mat.
- The child may not roll or stand up with crossed legs.

2 attempts, the amount of successful attempts is recorded.

- 3 gymnastic mats ( $1.6 \mathrm{~m} \times 1.1 \mathrm{~m}$, approx. 7.0 cm thick)
- 1 banana box (length 52.5 cm , width 39 cm , height 23 cm )
„Stand in front of the banana box, the feet next to each other and the chin placed on your chest. Jump off with both legs at the same time and perform a diving forward roll over the box. The box may not be touched or fall over. First, you have to touch the floor behind the box with your hands and then roll off. You must not cross your legs. After the role you should come directly into a two-legged stand. Have a look, l'll show it to you once." (demonstration with indication of chin on the chest)
- The chin is placed on the chest.
- The test leader provides an example of a safe position. If intervening is necessary, the attempt counts as failed.


Test battery

Area

Qualification

Test set-up

Test item

Criteria

Valuation

Materials

## Instruction/ <br> Demonstration

Information for the test leader

MOBAK-5-6

Self-movement


Can skip rope on the spot with changing rhythms.

Skipping ropes are laid out on a free spot. A starting point is marked on the floor.

The child skips rope on the spot. It starts in a freely chosen rhythm. The test leader counts down and gives a signal after 10 seconds. Then the child has to skip for another 10 seconds in a new, freely chosen rhythm.

- The child skips rope in two different rhythms.
- Change of skipping rhythm or style is made without interruption.
- Continued skipping after the change for 10 secs in a new rhythm/style.
- The rope skipping must take place without any interruption or mistakes.
- At least one skip per second
- The child has to jump on the spot (on approx. $1 \mathrm{~m}^{2}$ ).

2 attempts, the amount of successful attempts is recorded.

- $\quad$ Skipping ropes (at least 2.0 m long)
- Stopwatch
- Tape (approx. 3.0 cm wide)
„Skip rope for 20 seconds on the marked spot. You may choose yourself how you want to skip. The difficulty of the skipping form is not of importance. After ten seconds, you either have to change the rhythm, pace or style of skipping. I'll count down and I'll give you the signal for the change. You may try for a moment how you want to hold the rope and how you want to make the change. Have a look, l'll show it once." (demonstration of different techniques)
- If there is any error (e.g. getting stuck), the children should finish the 20 seconds.
- At the beginning, the children should adjust the length of the rope (approx. chest height of the child) and try a few jumps.
- Demonstration of two skipping forms (e.g. two-legged jump with intermediate jump, horse jump).
- Forms of skipping may be chosen freely (rhythm, pace etc.).



## Running (8)

Test battery

Area

Qualification

Test set-up

Test item

## Criteria

Valuation

Materials

Instruction/
Demonstration

Information for the test leader

MOBAK-5-6

Self-movement


Can change the style of movement while running.
Two marking cones (below) and two ground markings (crosses out of tape, above) form a square ( $4.0 \mathrm{~m} \times 4.0 \mathrm{~m}$ ). The sides and diagonals are marked with tape. On both straight lines between the marking cones and the ground markings, three hoops lie directly one behind the other, touching each other.

The child runs along the markings in the shape of an eight, with changing the style of movement accordingly. It starts at the lower left marking cone and runs straight in a three-step rhythm through the hoops. After the marking it performs sidesteps on the diagonal line until the right marking cone. From there again straight through the hoops to the right ground marking and with sidesteps back to the left marking cone (start cone).

- There must be a fluid change between the running styles.
- In the hoops exactly 3 fast steps each (exactly 3 ground contacts, max. 2 secs per hoop).
- The hoops may not be touched.
- While running through the hoops, the floor outside of the hoops may not be touched.
- Side running must be done with lateral steps / sidesteps without crossing the legs.
- On the diagonal lines, the hip (body transverse axis) remains parallel to the diagonal marking.
- On the sidelines, the child must be running quickly (always one leg in the air, no walking).

2 attempts, the amount of successful attempts is recorded.

- 2 marking cones
- 6 hoops (diameter 80 cm )
- Tape (approx. 3.0 cm wide)
"Stand behind the marking cone. Run in the shape of an eight along the lines. First run straight to the cross marked on the floor, while taking three fast steps in every hoop. Arriving at the mark, run with sidesteps or lateral steps on the diagonal line to the cone without crossing the legs. When you reach the second marking cone, run around it and then straight through the hoops. Again take three fast steps in each hoop and run to the second marking on the floor. Then run back to the fist cone, again with sidesteps. While stepping through the hoops, you should actively lift up your knees. Have a look, I'll show it once." (demonstration)
- On the side markings forward steps, on the diagonal sidesteps or lateral steps.
- The child should lift up its knees while stepping through the hoops to make the steps visible and easily countable.



## Contact

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[^0]:    ${ }^{1}$ Herrmann, C. \& Seelig, H. (2017). Basic motor competencies of fifth graders. Construct validity of the MOBAK-5 test instrument and determinants. German Journal of Exercise and Sport Research, 47 (2), 110-121. https://doi.org/10.1007/s12662-016-0430-3

