Karlsruher Institut für Technologie

Testitems

in MO|RE data

Published by Team RDC Motor Performance / MO|RE data

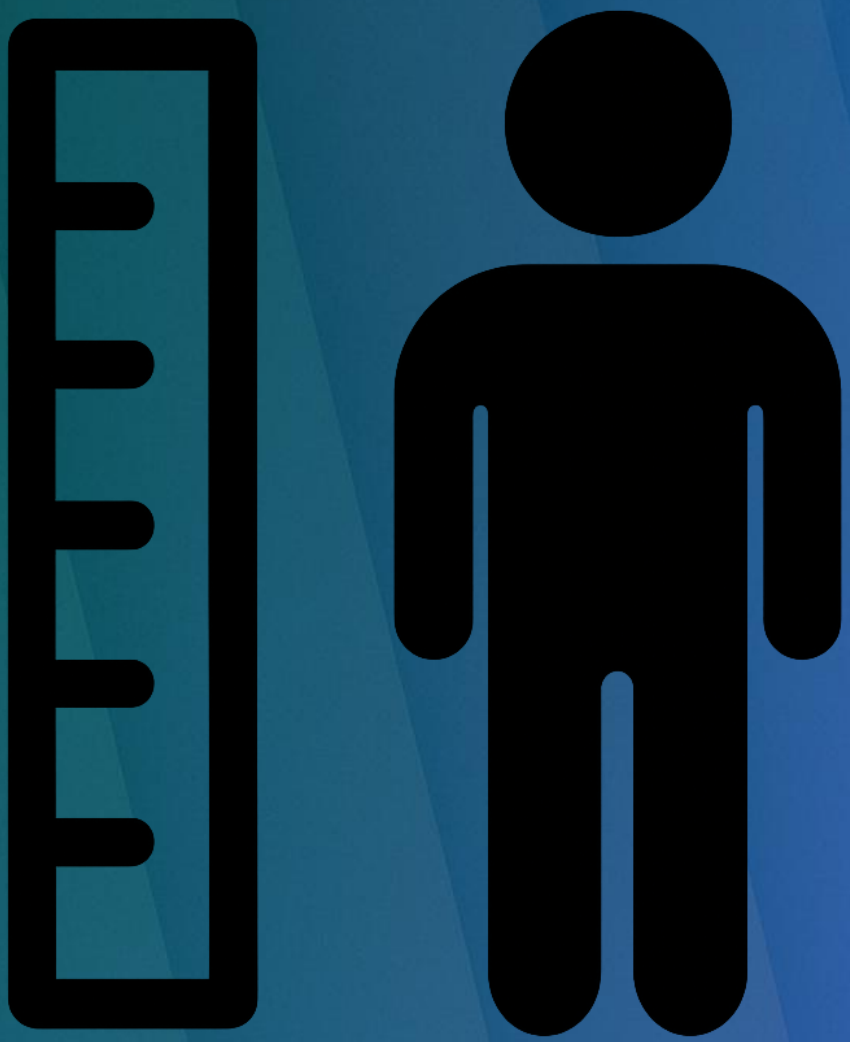
Status 2025

RDC ResearchDataCenter | Motor Performance

MO|RE data

Content

Anthropometrie



Height

1. Test objective

Registration of the body height in centimeters.

2. Description of the task

The test person is asked to take off shoes and heavy outer clothing (coat, jacket) and stand on the floor plate. While doing so, the back faces the measuring rod and the heels touch the back wall of the floor plate. Make sure that the back of the head and the buttocks also touch the measuring rod and that the measuring rod remains straight. The test person should let the arms hang down loosely at the sides, push the knees through and look straight ahead. The measuring board is then pushed down until it rests on the subject's head. Before reading, check the head position and make sure that the knees are straight.

3. Test materials

Space requirement: 1 m2
Time and person requirements: 1 test leader can test 1 test subject within 1 minute
Equipment and material: Seca 213 stadiometer or a tape measure (2 m)

4. Test setup

The components of the Seca 213 stadiometer are plugged together and attached to the base plate. It is then set up in a non-slip manner in a free space in the room.

Alternatively, a meter tape can be attached vertically to the wall so that the zero point is on the floor.

5. Measurement recording

The test leader pushes the measuring board down until it touches the head. Now the size can be read off the measuring board to the nearest 0.1 cm and noted on the recording sheet.

6. Test instruction

Here we measure your height. Please take off your shoes and stand on this measuring plate. Your heels should touch the back wall of the plate. Stretch your knees and keep your head straight so that it slightly touches the measuring rod. Your arms should hang loosely at your sides.

7. Special notes

The measurement takes place without shoes.

Sources of error

The test person is not standing upright

The knees are not pushed through

Wrong head position

Weight

1. Test objective

Recording of the body weight in kilograms.

2. Description of the task

The test person stands on the scale without shoes and heavy clothing. It is pointed out that one must not hold on, lean against or touch anything. The result is read when the display no longer changes.

3. Test materials

Space requirement: 1 m2
Time and person requirements: 1 test leader can test 1 test subject within 1 minute
Equipment and material: a body scale with an accuracy of 0.1 kg

4. Test setup

The body scale is set up in a non-slip manner on a free and level place so that the test subjects cannot hold on to anything.

5. Measurement recording

The test person stands quietly on the scale without holding on. When the value no longer changes, it is read to the nearest 0.1 kg and entered on the recording sheet.

6. Test instruction

Here we measure your body weight. Please take off your shoes. Also take off your heavier clothes (jeans, sweater) and stand on the scale. Do not hold on to anything and stand still. I will tell you when you can come down again.

7. Special notes

Before the measurement, shoes should be taken off and also heavy clothes such as jackets, sweaters and jeans.

Sources of error

The test person does not stand still.

The test person is still wearing heavy clothing.

Waist size

1. Test objective

Messung des Taillenumfangs

2. Description of the task

The test subject stands upright without wearing loose or thick clothing. Then, the narrowest point between the chest and hips is measured using a measuring tape. This point is usually located at the level of the navel.

3. Test materials

Space requirement: 1 m2
Time and person requirements: 1 test leader can test 1 test subject within 1 minute
Equipment and material: a measuring tape

4. Test setup

The measuring tape should be placed horizontally around the body and should not be pulled into the skin, but rather lie lightly against it.

5. Measurement recording

The circumference is then read off. It is advisable to repeat the measurement quickly afterward to avoid errors.

6. Test instruction

We are measuring waist circumference here. Please stand upright and let your arms hang loosely at your sides.

7. Special notes

The abdomen should neither be pushed out nor pulled in.

Sources of error

The test subject does not remain still.

The test subject is still wearing thick clothing.

The measuring tape is misaligned or pulled too tightly or too loosely.

BMI

1. Test objective

Assessment of Body Mass Index (BMI).

2. Test materials

None.

3. Measurement recording

BMI is calculated using body weight and body height.

4. Special notes

None.

Sources of error

The underlying values were recorded incorrectly.

Unit error (e.g., cm instead of m).

Coordination

Single Leg Stand (1LegSt)

1. Test objective

Determination of sensorimotor regulation in precision tasks.

2. Description of the task

In the Single Leg Stand Test, the subject is asked to try to stand with one foot on the balance rail for one minute. They stand with the preferred foot on the T-rail. The game leg is held freely in the air and is not to be applied to the standing leg. The arms may be used for balancing. If the free foot touches the ground, the single leg stand should be resumed immediately. The clock continues to run during this brief contact with the ground. If, however, the test person completely descends from the rail, the stopwatch is stopped until the test person has returned to the same starting position. Before the test task begins, a demonstration is given by the test leader. The test person is then allowed to try on which foot he or she stands more securely. A test is performed. The test task is completed perfectly if the playing leg does not touch the floor at all for one minute.

3. Test materials

Space requirement: 1 m^2
Time and person requirements: 1 test leader can test 1 test subject within 2 minutes
Equipment and material: Mat, stopwatch or timer

4. Test setup

-

5. Measurement recording

The ground contacts with the playing leg during one minute are counted and entered in the evaluation sheet. If there are more than 30 contacts, the test attempt is aborted and the test is not repeated. The stand may not be changed during the test. In the event of prolonged contact with the ground with the game leg or in the event of a complete descent, the time is stopped until the test person has resumed the single-leg stance with the same leg. Then the experimenter allows the time to continue. The game leg must not touch the rail during the entire execution.

Standard values

Studies are available with comparative values in childhood and adolescence (MoMo study, Bös et al., 2009) and in adulthood (Bad Schönborn study, Woll, Tittlbach, Schott & Bös, 2004).

6. Test instruction

In this test you have to keep your balance on one foot for one minute. To do this, place one foot on the T-rail. You can try out which foot you use and decide for yourself. The foot on the balance rail should remain on the rail for the entire minute. If you touch the floor with the other foot because you lose your balance, try to quickly stand on one foot again. But try to touch the floor with the other foot as seldom as possible. Do not touch the rail with your free foot. Try not to touch your standing leg with your free foot either.

7. Special notes

The exercise is performed with sports shoes.

If possible, place the T-rail at a safe distance from the wall to prevent bracing.

Sources of error

The playing leg is repeatedly placed against the standing leg. Here an immediate hint to refrain from this.

8. Quelle

Bös, K., Worth, A., Heel, J., Opper, E., Romahn, N., Tittlbach, S., Wank, V. & Woll, A. (2004). Testmanual des Motorik-Moduls im Rahmen des Kinder- und Jugendgesundheitssurveys des Robert Koch Instituts. Haltung und Bewegung, 24, 6–41.

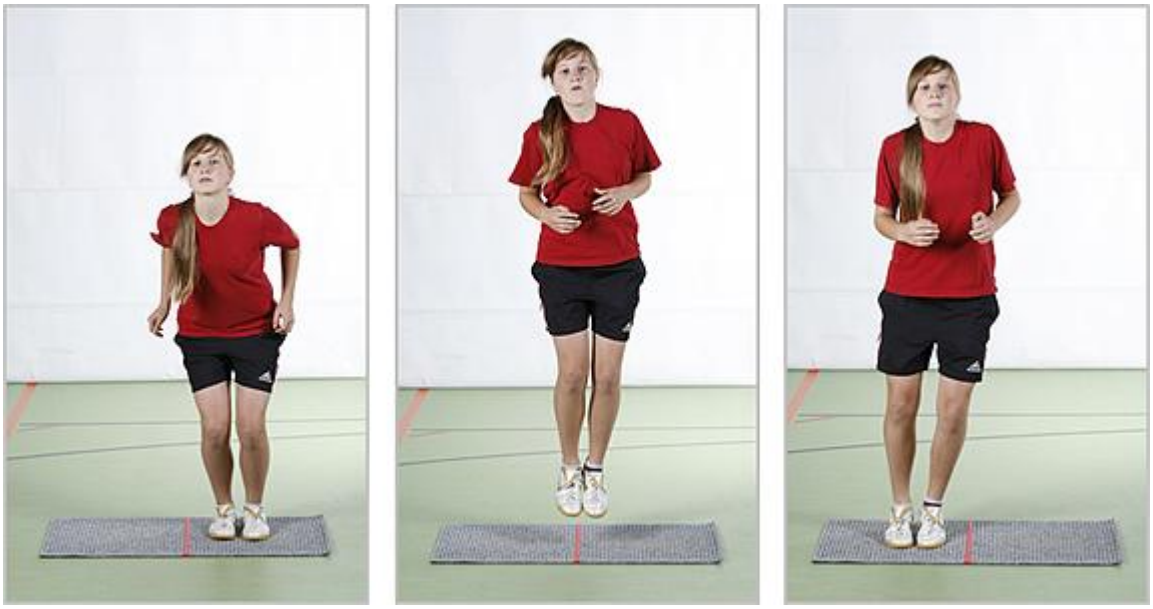
Tittlbach, S., Kolb, H., Woll, A. & Bös, K. (2005). Karlsruher gesundheitsorientierter Koordinationstest (KGKT). Bewegungstherapie und Gesundheitssport, 21 (6), 253–258.

Jumping Sideways (JumpSW)

1. Test objective

Determination of whole-body coordination under time pressure, as well as action speed.

2. Description of the task



The object of this test is to jump back and forth sideways across the center line of a carpet mat with both legs at the same time as quickly as possible within 15 seconds. The center line is not to be touched or crossed. Five trial jumps will be allowed prior to the start of the test. The test person has two test attempts. There is a break of one minute between the test attempts.

3. Test materials

Space requirement: 2 m2
Time and person requirements: 1 test leader can test 1 test subject within 2 minutes
Equipment and material: stopwatch, non-slip carpet mat (2 cm x 50 cm x 50 cm) with center line, double-sided tape or armor tape to attach the carpet mat.

4. Test setup

The carpet mat is attached to the hall floor with adhesive tape to prevent slipping. Care must be taken to ensure a safe distance from the wall and other objects. The place should be chosen so that the test person has a fixed point of orientation in the room and is not distracted by other test procedures.

5. Measurement recording

The number of jumps performed in two valid attempts, each lasting 15 seconds, is recorded. The average of both attempts is evaluated. There is a one-minute break between the test attempts.

Jumps in which the test person steps onto or off the center line are not counted. Jumps in which one of the side lines is crossed or jumps that are not performed with both legs are also not counted.

Standard values

Gender- and age-specific norms (N = 1472) are available from 1974 (Kiphard & Schilling) as well as from 2009 (Bös et al.).

6. Test instruction

In this test, you stand on the carpet mat next to the center line with your feet closed. At my signal, you start jumping back and forth sideways across the line as quickly as possible. You do this until I say "Stop!". When you step on the center line or next to the carpet mat, you do not stop, but keep jumping. Do not turn your body during the test, as you are only supposed to jump the line sideways.

7. Special notes

The exercise is performed with sports shoes.

Tape the jumping mat well, since heavier participants exert high forces on the mat.

Sources of error
The test person does not remain laterally aligned with the center line during the jump, but jumps over the line forwards and backwards.

There is no simultaneous jumping off with both legs, but only one leg is jumped off.

Balancing Backw (BalBw)

1. Test objective

Determination of coordination performance in precision tasks.

2. Description of the task

Backward balancing involves balancing backward over the individual bars of different widths in 2 valid attempts each.

This is done in the following order: 6 cm wide bar, 4.5 cm wide bar and 3 cm wide bar. The test attempt always starts from a starting board. Before the two test attempts per beam, one trial attempt is performed forward and one backward over the entire length of the bar. If the test person leaves the bar during the trial, balancing is continued at the same point. Each beam is thus balanced 1x forward and 1x backward as a preliminary exercise, and then 2x backward for performance measurement. In total, 6 valid attempts are scored. The test leader demonstrates the test task before the test begins. The number of steps is counted. The first foot touching down is not yet counted. Only when the second foot leaves the starting board and touches the bar, the steps (points) are counted. A maximum of 8 points can be achieved per attempt. The speed can be chosen by the test person (there is no time limit).

3. Test materials

Space requirement: 4 m x 3 m
Time and person requirements: 1 test leader can test 1 test person within 6 minutes
Equipment and material: tape, balance bars in bar widths of 3 cm, 4.5 cm and 6 cm with a bar height of 5 cm each and a bar length of 300 cm each. Starting board: Length = 40 cm, width = 40 cm, height = 5 cm.

4. Test setup

The 3 bars and the start board are attached to the floor in a non-slip manner with adhesive tape. The start board is always placed at the current test beam for the test participant. There should be no objects in the immediate area of the bars.

5. Measurement recording

The number of times the foot touches down while walking backwards over the bar is counted. The first foot touchdown is not yet counted. Only when the second foot leaves the starting board and touches the bar, the test leader counts the points (steps) aloud. The number of steps is scored until one foot touches the floor or 8 points are reached. If the distance is covered with less than 8 steps, 8 points are to be credited. The sum of the steps from the total of 6 runs is entered on the evaluation sheet (max. 48 steps).

Standard values

Gender- and age-specific norms (N = 1472) are available from both 1974 (KTK) and 2009 (DMT).

6. Test instruction

In this test you have to balance backwards on the bar. You must not step next to the bar while doing this. Let's practice balancing first. You walk forward over this bar until you reach this board. There you stand for a moment with both feet next to each other. Then you carefully walk backwards, not stepping next to the bar. After we have practiced this, you stand on the board again and then walk backwards. I count how many steps you manage. I only start counting when both feet have left the starting board. When one foot touches the floor next to the bar, the attempt is over. You then go right back to the board and start again.

7. Special notes

The exercise is performed with sports shoes.

The bars should be placed sufficiently far away from the wall or other objects so that the test person cannot support himself and there is no risk of injury.

Sources of error
The test person does not want to perform the trial tests or aborts them prematurely. This is bad for the standardization of the test task and should be prevented.

The test person taps or steps again with one foot on the initial board for stabilization in case of initial difficulties.

Walk-Back (time) (WalkB-t)

1. Test objective

To assess dynamic balance (coordination under time pressure).

2. Description of the task

The test person must walk a distance of 6 m backwards as fast as possible. The toes of one foot must touch the heel of the other foot. There should be no gap between the toes and the heel. Both feet must be above the 6 meter line for the time to be stopped. The test subject has three attempts. Within the three attempts, the test person should pay attention to correct execution in the first attempt. In the second and third attempts, the test person can then try to increase the speed.

If the movement is not performed correctly in all three attempts or if the 6 m mark is **not reached**, the **furthest distance** achieved is measured. Then the distance counts as the result of this test task.

3. Test materials

Stopwatch, 6 m tape, measuring tape

4. Test setup

A 6 m long track is marked with tape, on which the test person has to walk backwards.

5. Measurement recording

The time in seconds required for 6 m is measured. If less than 6 m is achieved, the furthest distance is measured in meters.

6. Test instruction

"Please walk backwards along the 6 meter line as fast as possible . You have three attempts. In the first attempt you should concentrate on a correct execution. After this safe attempt you can increase the speed. While walking backwards, your feet should always touch each other. The toe of the playing leg touches the heel of the standing leg during each step. There should be no gap between your feet. Both feet must be above the 6-meter line, and only then will the time be stopped. If the execution is not correct, the test will be stopped and time and length will be noted at that point."

7. Special notes

Sources of error:

- Feet do not touch each other

- Test person does not walk on the line

A tape measure should always be within reach. If the 6 meters are not completed, the farthest attempt (in m X,XX) must be noted.

Rückwärts gehen (Strecke) (Walk-rw-s)

1. Test objective

To assess dynamic balance (coordination under time pressure).

2. Description of the task

The test person must walk a distance of 6 m backwards as fast as possible. The toes of one foot must touch the heel of the other foot. There should be no gap between the toes and the heel. Both feet must be above the 6 meter line for the time to be stopped. The test subject has three attempts. Within the three attempts, the test person should pay attention to correct execution in the first attempt. In the second and third attempts, the test person can then try to increase the speed.

If the movement is not performed correctly in all three attempts or if the 6 m mark is **not reached**, the **furthest distance** achieved is measured. Then the distance counts as the result of this test task.

3. Test materials

Stopwatch, 6 m tape, measuring tape

4. Test setup

A 6 m long track is marked with tape, on which the test person has to walk backwards.

5. Measurement recording

The time in seconds required for 6 m is measured. If less than 6 m is achieved, the furthest distance is measured in meters.

6. Test instruction

"Please walk backwards along the 6 meter line as fast as possible . You have three attempts. In the first attempt you should concentrate on a correct execution. After this safe attempt you can increase the speed. While walking backwards, your feet should always touch each other. The toe of the playing leg touches the heel of the standing leg during each step. There should be no gap between your feet. Both feet must be above the 6-meter line, and only then will the time be stopped. If the execution is not correct, the test will be stopped and time and length will be noted at that point."

7. Special notes

Sources of error:

- Feet do not touch each other

- Test person does not walk on the line

A tape measure should always be within reach. If the 6 meters are not completed, the farthest attempt (in m X,XX) must be noted.

Slalom Run (SlRun)

1. Test objective

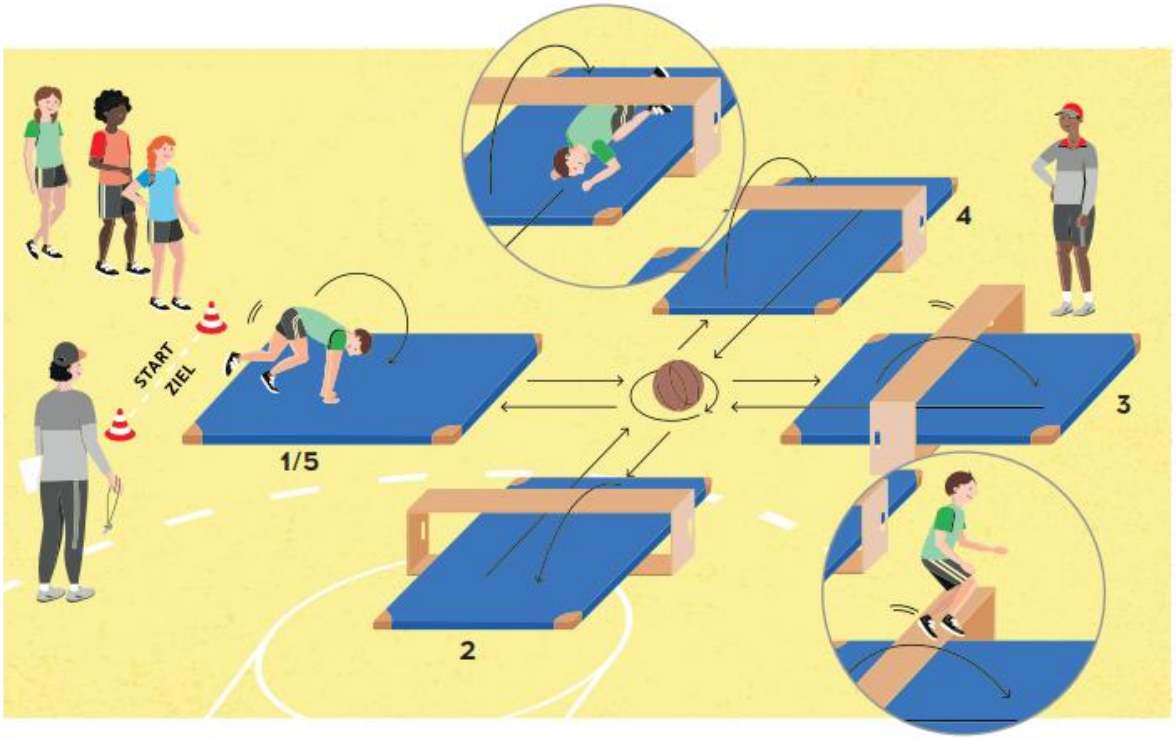
Assessment of orientation ability, adaptability, and speed.

2. Test materials

Space requirement: Flat movement area (e.g., gymnasium, auditorium, foyer)
Time and person requirements: 1–2 test administrators to supervise correct task execution, give start commands, measure time, and record results
Equipment and material: 3 vaulting box elements, 4 gym mats, 1 medicine ball

3. Test setup

The box boomerang run is carried out on a cross-shaped course. The vaulting box elements are placed lengthwise, and the gym mats are inserted through them so that the opening is centered in the middle of the mat. The stations are positioned evenly at a distance of 2.50 m around the centrally placed medicine ball.



4. Measurement recording

The time taken to complete the entire course is recorded. A time penalty of 3 seconds is added if...

... the forward roll on the first mat is skipped.

... the medicine ball is not circled during a station change.

... the jump over or movement through the box element is performed in the wrong order.

... the jump over or movement through the box element is skipped.

5. Test instruction

After the start command, the child begins with a forward roll on the first gym mat (1). The remaining stations are completed in a counterclockwise direction. The medicine ball must be circled at every transition. At stations 2, 3, and 4, the child jumps over the vaulting box element, turns, and then moves back through the same element. Finally, the child circles the medicine ball one last time and returns across the starting mat (5).

Target Throw (TargT)

1. Test objective

Assessment of partial body coordination in precision tasks (aiming accuracy).

2. Description of the task

The subject has to throw a tennis ball at the target and hit it as close to the center as possible.

3. Test materials

Measuring tape, tennis balls, Tesakrepp, target (three-colored, pre-colored cardboard).

4. Test setup

A target is placed on the wall with the center at a height of 150 cm. The target is prefabricated from cardboard, and each target area should have a different color. The three squares lying inside each other have side lengths of 60 cm, 30 cm and 10 cm. A drop line is marked on the ground at a distance of 3 m from the wall.

5. Measurement recording

Depending on the point of impact of the tennis ball on the target, 3, 2, 1 and 0 points are awarded per throw from the center outwards. A subtotal is calculated for each series based on the points scored from the individual attempts. The total sum of all 10 throws from both series counts as the test value. When recording the measured value, it must be noted that the boundary line to the outside is part of the respective target area.

6. Test instruction

The test person stands behind the drop line in a stride position and is to throw at the target with a percussion throw. The drop line must not be crossed. The test is performed in two series of five attempts each.

Throw and Catch (T&C)

1. Test objective

Determination of coordination performance in precision tasks.

2. Description of the task

The child stands with his back to the wall behind a drop line and holds a gymnastic ball in both hands. After the direct throw through the straddled legs to the wall, he straightens up as quickly as possible and performs a 180° turn towards the wall. The ball bouncing back from the wall is to be caught with both hands or at least touched without touching the ground. There are different scores depending on the execution.

3. Test materials

Gym ball, tape measure, tape for marking the floor, free wall, marking sheet DIN A4.

4. Test setup

A drop line is marked on the floor at a distance of 3m from the wall. The wall must have a smooth surface up to a height of at least 3m. At a height of 120 cm, a marking sheet (DIN A4) is glued to the wall as a guide only.

5. Measurement recording

The test is fulfilled if the child achieves at least 17 points in 10 attempts. The test should not be declared as such. The task contains three sub-elements: Throwing the ball through the legs to the wall, body rotation and catching the ball.

The following points are awarded:

0 points: The ball does not hit the wall directly after being thrown

1 point: The ball hits the wall after being thrown, but is then neither caught nor touched. There is no body rotation in time.

2 points: The ball hits the wall after the throw, but is then neither caught nor touched. There is a timely body rotation.

3 points: The ball hits the wall after being thrown and is then actively touched or caught after making contact with the ground once. There is no timely body rotation.

4 points: The ball hits the wall after being thrown and is caught without contact with the ground (possibly with a change of location by the child or an unsafe catch). There is no timely body rotation.

5 points: The ball hits the wall after being thrown and is then actively touched or caught after single contact with the ground. There is a timely body rotation in which the child does not leave the court.

6. Test instruction

"At this station, you will initially stand with your back to the wall. Then throw the exercise ball at the wall through your spread legs, quickly turn around and catch it again with both hands without it touching the floor. Look between your legs before you throw and aim at the leaf on the wall. Make sure the ball touches the wall first and doesn't bounce on the ground beforehand. Try to catch the ball after throwing it without leaving your place. If you can't catch the ball, at least try to touch it

before it hits the ground or catch it after it hits the ground once. You will have 10 attempts at this feat."

7. Special notes

The following sources of error should be noted:

The child...

...closes his eyes or looks away while catching.

...tenses his hands and shows excess mass movements.

...does not orient himself towards the wall or the ball after the turn.

Endurance

Shuttle Run (SRun)

1. Test objective

To assess general aerobic endurance by determining Vo2max and anaerobic threshold.

2. Description of the task

The shuttle run test is a shuttle run between two parallel lines 20 m apart. It consists of a series of steps, each lasting one minute. To start, all athletes take their places at the starting line and start on the acoustic signal of the test leader. The athletes then run back and forth between the two outer lines, with the running speed dictated by the intervals between the beeps. The speed of the 20 m Shuttle Run is determined by signal tones via a tape or CD. The athlete must touch the respective line with at least one foot. With each step, the required speed increases until the participant has failed to reach the 20-meter line in time three times in succession.

3. Test materials

Space requirement: sport hall/sports field/tartan track
Time and person requirements: 1 test leader can test approx. 30 subjects in 15 min. test
Equipment and material: stopwatch and heart rate monitor, cones, possibly a tape measure, an MP3 player, boom box or CD player.

4. Test setup

Starting from the center, tape one line on each side of the field at 10 meter intervals. These are the "20 m lines", between which you run back and forth during the test. Turning is done at the height of these lines.

5. Measurement recording

The highest speed at which the 20 m were completely run through is measured.

What is measured?

The shuttle run test is a multi-stage fitness test. A normalized number of run distances (shuttles) results in a next higher level (stage) each time. The number of minutes run (=stages) is measured with an accuracy of half minutes, rounded down in each case.

Standard values
Age- and sex-specific norm values are available. Normal values from 8 to 19 years were published by Léger and colleagues (1988). Further norm values are published by Beck and Bös (1995).

6. Test instruction

The object of this test is to maintain a set and increasing pace for as long as possible. You start at the first beep at a relaxed pace (8 km/h) at the start line and must be at the other line by the next beep. So you have 9 seconds for the twenty meters. If you arrive at the line before the beep, you must wait until the next beep before running back. After every one minute, the speed increases by 0.5 km/h, so the interval between the beeps becomes shorter. The speed must then be maintained for one

minute. The current speed is announced in the audio file. The test is over if you fail to get to the line in time three times in a row.

7. Special notes

A powerful audio system (preferably with CD player) is required to perform the test. The system must ensure the transmission of clear audio signals (consider the size of the hall if necessary).

If the available handball field is not 20 m wide (plus sufficient safety zones), the test setup is carried out with analog dimensions to the right and left of the center line.

Sources of error
The test participants already turn before the line.

The test participants do not wait until the signal before they start running again.

2 km-Walking-Test (2kmWalk)

1. Test objective

Acquisition of aerobic endurance by determining cardiopulmonary exercise capacity.

2. Description of the task

The 2km walking test involves completing a flat 2km route as quickly as possible using the walking technique. The pulse rate is displayed via a pulse rate monitor or counted manually during the test. A walking index is calculated using the pulse rate, time required for the 2 km route, age, gender and body mass index. This index provides information about the health-oriented cardiopulmonary performance and allows conclusions about the maximum oxygen uptake (VO2max) of the test person. The use of the walking time allows an estimation of performance.

3. Test materials

Space requirement: a running track or a marked 2 km outdoor track
Time and person requirements: 2 test leaders can test 20 test subjects within 30 minutes
Equipment and material: stopwatch, heart rate monitor

4. Test setup

If the test is not performed on a 400 m running track, a 2 km course must first be measured and marked out. Before the start of the test, the test participants are handed out and put on suitable pulse belts and pulse watches. These should be checked immediately for proper function.

5. Measurement recording

The stopwatch is used to measure the required time in minutes and seconds. In addition to the time, the pulse is also recorded. For this purpose, the pulse is recorded shortly before the load, directly after the load and 2 min afterwards.
With the help of evaluation software, a walking index can be calculated, which can be used to compare the data.

Standard values
Normal values exist on the basis of Z-values and percentile ranks. Data basis are approx. 3000 German women aged 20 to 70 years.

6. Test instruction

In this test task, we want to measure aerobic endurance performance. The task is to cover a 2 km flat distance in as short a time as possible. Make sure not to run, i.e. both feet must not be lifted off the ground at the same time. We note the time used as well as the pulse at the beginning, immediately after the end of the load and 2 minutes after the load.

7. Special notes

The functionality of the heart rate monitors must be given. Accurate application of the heart rate monitors prevents monitor problems during running.

Sources of error
Wrong position of the heart rate belt can falsify the result of the heart rate measurement.

6-minute Run (6min)

1. Test objective

Determination of general aerobic endurance.

2. Description of the task

In the 6-minute run, the goal is to cover as long a distance as possible in the given time. Normally, the 6-minute run takes place in a hall around the volleyball court (54 m per lap), but it can also take place outdoors on a 400-m running track (cf. Bös et al., 2009). The test can take place with 6-15 runners at the same time. The run is started and finished centrally by the main test leader. During the test, the time still to run is indicated in 1-minute intervals. During the 6 minutes, a speed as constant as possible should be run. In case of exhaustion, walking is also allowed, but subjects should not stop. At the end of the 6 minutes, each test subject remains standing on the spot.

For younger children, the use of a pacemaker for the first two laps has proven effective, so that the younger test subjects have a guideline speed. The pacemaker must not be overtaken.

3. Test materials

Space requirement: a hall with a volleyball court or a 400 m track
Time and person requirements: 2 test leaders can test up to 15 subjects within 10 minutes (for a better overview it is advisable to use several test leaders)
Equipment and material: 6 cones (1 cone per corner and 1 cone each on the left and right at the level of the center line), stopwatch, start numbers according to the number of participants are suitable for better overview

4. Test setup

The running track leads around the boundary lines of the volleyball court or around the 400 m running track.

In the case of the volleyball court, marking pylons (cones) are placed at the corners and on the center line. The cones are moved 50 cm along the line and 50 cm inwards.

5. Measurement recording

The reading for each subject is the distance traveled in meters in 6 minutes. Each test leader watches several test subjects and notes down each round. After the final whistle, the distance covered in meters for the last lap started is also noted. The total distance covered in the hall is then calculated as: Number of laps x 54 m + distance of the last lap.

Standard values
Age- and gender-specific norm values are available. The norm values were first published by Beck and Bös (1995) and later by Bös et. al (2009) in the DMT Manual.

6. Test instruction

In this test you have to run for 6 minutes. You have to cover as long a distance as possible. We will assign you to one of the 4 corners where you should line up. At the start command you start running. You will run around the volleyball court (or the 400 m track), but you must not run past the little huts on the inside. You run counterclockwise at a steady pace, so don't run to make it through the 6 minutes. If you get exhausted, just keep going and don't stop.

Every minute the time left to run is announced and the last 10 seconds are counted down loudly, i.e. 10-9-8-...-1-0. At "zero" you stop immediately and sit on the ground where you are until a test leader tells you that you can get up.

7. Special notes

Before the test starts, the test subjects are asked to check their shoelaces again. Test subjects are motivated again and again during the 6 minutes.

After the test, the test subjects are asked to walk one more lap to recover.

The test task is performed with sports shoes.

Sources of error
Test participants do not have a constant pace, but keep running, which leads to premature exhaustion. A constant pace must be emphasized.

Test participants may cut short and run past the little huts on the inside.

Cooper-Test (12min)

1. Test objective

Determines general aerobic endurance.

2. Description of the task

In the 12-minute run, the test subjects have to cover the greatest possible distance within the specified time. As standard, they run on a 400 m track. If a 400 m track is not available, an oval field with a fixed route can be marked out indoors or outdoors. A timekeeper stands in the middle of the field and starts the test centrally and ends it after 12 minutes. The 100 m line is suitable as a starting line. After the start signal, the participants should run for 12 minutes without stopping. At the stop signal, they should immediately sit down on the spot and wait until a test leader tells them that they can get up. During the run, the test leaders note down the laps completed by the individual test subjects and, after the end signal, also note down the distance covered in the last lap started. Since up to 15 people can run in one run, the test subjects should wear start numbers to make it easier to note down the lap runs.

3. Test materials

Space requirement: 400 m running track
Time and person requirements: 2 test leaders can test up to 15 test persons within 10 minutes (for a better overview it is advisable to use several test leaders)
Equipment and material: stopwatch, whistle, start numbers according to the number of participants are suitable for a better overview, possibly cones for marking partial distances.

4. Test setup

The reading for each subject is the distance completed in meters in 12 minutes to the nearest 25 meters. Each test leader watches several test persons and notes down each round. After the final whistle, the distance covered in the last lap started is also noted in meters. The total distance covered is then calculated from: Number of laps x 400 m + distance of the last lap.

5. Measurement recording

-

Standard values
Cooper proposes a classification of test scores for adults into five performance groups ranging from "very poor" to "very good." Comparative results from empirical studies are available for age- and gender-specific samples. A proposed evaluation with validity for the Federal Republic was published in the journal "Der Übungsleiter" (1973, p. 9). The tables are valid for ages 11 and older and are separate for male and female subjects.

A revision of the norm values for school sports was made by Schneider (2002). Assessment tables for the 12-minute run are also available for the Abitur level in Baden-Württemberg.

6. Test instruction

In this test you have to run for 12 minutes. You have to cover as long a distance as possible. You will line up at your assigned starting line. At the start command, start running counterclockwise at a

steady pace. Don't run too fast right away so you can last the 12 minutes. If you get exhausted, just keep going and don't stop.

After each minute, the time left to run is announced and the last 10 seconds are counted down loudly, i.e. 10-9-8-...-1-0. At "zero", you stop immediately and sit on the ground where you are until a test leader tells you that you can get up.

7. Special notes

Before the start, subjects are asked to check their shoelaces again.

Participants are motivated again and again during the 12 minutes.

After the test, the test subjects should walk one more lap to recover.

Any deviation from the prescribed lap length will not lead to comparable results.

The test task is performed with sports shoes.

Sources of error
Test participants do not have a constant pace, but run again and again, which leads to premature exhaustion, or run in groups and not according to individual pace. An individual constant pace must be pointed out.

Shortcutting at course markings in the hall or on the running track.

Danish Step Test (DStep)

1. Test objective

To determine cardiorespiratory endurance (maximal oxygen uptake).

2. Description of the task

The test consists of a stepwise increasing exercise, in which a step is used as well as a computer program, which sets the tempo. At the beginning, stepping is done every 5 seconds until it increases to stepping once per second. The subject follows the tempo as long as possible. This means that this test is a test of VO2max.

The subject should wear sports shoes. It is possible to test the step sequence two to three times next to the step to make sure that the subject knows how to follow the commands. It is important to stretch the legs each time when stepping up. The subject should always alternate between the right and left foot. Nevertheless, in the final phase, the subject may continue the test without alternating between the left and right feet. The subject should stand close to the step and the movement should be done without jumping. The test must end when the subject is at least four commands behind the sequence. The test goes for a maximum of six minutes.

3. Test materials

Time requirement: max. six minutes
Material requirements: computer, step sequence (download on online platform of EFB), step/bench (30-40 cm high), loudspeaker, stopwatch

4. Measurement recording

The time in which the sequence can be followed is measured.

5. Special notes

The recommendation of the step height is 30 cm for women and 35 cm for men.

Sources of error:

- the rhythm cannot be followed correctly

- the weight is not equally distributed on the whole foot

- the legs are not fully extended on the step (this is okay towards the end of the test)

- if the test person has difficulties with the coordination of the step up and down or feels dizziness and stops before the step out, the result is not comparable.

Strength

Medizinballstoßen (MED)

1. Test objective

Determines the explosive strength of the upper extremities.

2. Description of the task

The object of the medicine ball push is to throw a 1 kg medicine ball forward as far as possible in a linear fashion. The ball must be held in front of the chest with bent arms and pushed from a standing position.

3. Test materials

Space requirement: approx. 15 m x 5 m
Time and person requirements: 1 test leader can test 1 test subject within 2 minutes
Equipment and material: meter, medicine balls (1 kg), tape, cones

4. Test setup

A free space of about 15 m x 5 m is required in which no objects or persons are present during the test. A drop line is taped to the floor or marked with cones.

5. Measurement recording

The shock distance is measured in meters and centimeters with a maximum deviation of 1 cm.

Standard values
Numerous studies are available with information on mean values and standard deviations (see Beck & Bös, 1995).

6. Test instruction

The objective of this test is to throw a 1 kg medicine ball as far forward as possible. When throwing, you must make sure that you hold the ball in front of your chest with your arms bent, that you always keep both feet on the ground and that you do not step over the line.

7. Special notes

In medicine ball throwing, there are partly different variants regarding the weight of the ball. The weight varies in part between 1 kg, 2 kg and 3 kg. This leads to different test results.

Sources of error
Using medicine balls with a different weight leads to different test results and therefore cannot be compared with the standard values.

Standing Long Jump (SLJ)

1. Test objective

Determination of the explosive strength of the lower extremities.

2. Description of the task



In the standing long jump, the test person is to jump as far as possible with a double-leg takeoff. The test person stands in a parallel stance with bent legs at the jump line. Swinging with the arms is allowed. The jump is done with both legs and the landing on both feet. During the landing, the hand must not reach backwards. The test person has two attempts. In case of two invalid attempts, the test person gets a maximum of three more attempts. If the test person has five failed attempts, the test is stopped.

3. Test materials

Space requirement: approx. 2 m x 4 m
Time and person requirements: a test administrator can test 2 jumps of a test person within 2 minutes
Equipment and material: measuring tape, adhesive tape, tartan granulate mat (80 cm x 300 cm), L-rail

4. Test setup

The test is performed on a tartan granulate mat to standardize the take-off conditions. The mat is attached to the floor in a non-slip manner. A take-off line is attached to the mat and a measuring tape is attached along the edge of the mat.

5. Measurement recording

The distance from the take-off line to the heel of the rear foot is measured during landing. For a better reading of the measured value on the measuring tape, an L-rail or a rod which can be placed

against the heel is suitable. The measurement is taken to an accuracy of 0.1 centimeter. The better distance from the two tests is scored.

Standard values
Numerous studies are available with information on mean values and standard deviations (see Beck & Bös, 1995, p. 118 ff). Comparative values for children and adults are also available for the standing long jump in the test literature (Fetz & Kornexl, 1993; Grosser & Starischka, 1981). Normal values for children and adolescents from 6-18 are published in the DMT Manual (Bös et al. 2009).

6. Test instruction

This test is about jumping as far as possible from a standing position. Stand on the line. Now use your arms to gain momentum and jump forward with both legs as far as you can. When you land, make sure that you don't fall backwards, grab or step backwards after the jump. You have 2 attempts.

7. Special notes

The exercise should be performed with sports shoes. Falling forward is allowed as long as the heel stays on the landing position.

Sources of error
Stepping over the starting line or jumping with one leg.

Falling backwards or reaching backwards on landing.

Heel of the back leg moving away from the landing position.

Jump and Reach (J&R)

1. Test objective

Determination of the explosive strength of the lower extremities.

2. Description of the task

In the Jump & Reach Test, the test person stands in the starting position to the side of the wall and directly next to the jump mark. Before jumping, the test person's reach height is determined by marking the maximum extension height of the fingertips on the wall with chalk. The test person faces the wall, the tips of the feet touch the wall and the test leader fixes the shoulder blades. Is it okay to stand on tiptoe?

The test person now jumps upwards from the parallel stance with both legs without an upward step and taps the wall with the fingers at the highest point. Momentum is allowed and is done by bending the knee and upper body and extending the arms. The test leader reads the jump height using the L-rail.

3. Test materials

Space requirement: approx. 3 m2 on one wall
Time and person requirements: 2 test leaders can test 20 subjects within 30 minutes
Equipment and material: chalk, magnesia, 4-m measuring tape, small boxes, L-rail

4. Test setup

A meter tape measure is attached to a free wall. A box is placed near the tape measure for a test leader to facilitate reading off the jump height achieved. A container of magnesia is provided at the test station for test participants to apply to their fingers to later leave a mark on the wall. The jump height can be read off the measuring tape with the aid of an L-bar applied to the mark left behind.

5. Measurement recording

The measured value is recorded metrically (step height). It is recorded with an accuracy of 0.1 cm. Standard tables are available for processing the measured values.

Standard values
Numerous studies are available with information on mean values and standard deviation (see Beck & Bös, 1995, p. 106ff).

6. Test instruction

This test is about jumping as high as you can. Before the jump, we measure how tall you are when you stretch both arms all the way up. Then you stand parallel to the wall at the marker and jump as high as you can. During the jump you take your arms up with you. At the highest point of your jump you should touch the wall with the fingers of the arm stretched upwards.

7. Special notes

The test station is performed with sports shoes.

The test person should apply sufficient magnesia to the fingers.

Sources of error
The test person jumps off with one leg.

Push-Ups (PU)

1. Test objective

Determination of dynamic strength endurance of the arm and upper body muscles.

2. Description of the task



In the push-up test, the subject is to perform as many push-ups as possible within 40 seconds. In the starting position, the subject lies prone, hands touching on the buttocks. She releases her hands behind her back, places them next to her shoulders and pushes off the floor until her arms are extended. Then one hand is released from the floor and touches the other hand. Then the arms are bent until the body is back in the prone position and the starting position has been assumed. Before a new push-up is performed, the subject touches the hands behind the back.

3. Test materials

Space requirement: 2 m2
Time and person requirements: 1 test leader can test 1 test subject within 2 minutes
Equipment and material: stopwatch or timer, mat

4. Test setup

A gymnastics mat is laid out in a free space in the room. This should be far enough away from other objects so that the test subjects have enough space to perform their push-ups. A stopwatch or timer is placed next to the mat.

5. Measurement recording

The test leader counts the push-ups performed correctly in 40 seconds.

The hard criteria for this are:

- Only hands and feet touch the floor
- Upper body, hips and legs remain almost in one line
- One hand strikes the back of the other hand in support (crossover motion)
- On the back is "clapped off"

Standard values
Numerous studies are available with information on mean values and standard deviations (see Beck & Bös, 1995, p. 118 ff). For the push-up, there are also comparative values for children and adults in the test literature (Bös, 1996, p. 56; for test variants, see Fetz & Kornexl, 1993; Grosser & Starischka, 1981).
Normal values for children and adolescents from 6 to 18 are published in the DMT Manual (Bös et al., 2009).

6. Test instruction

This test is about performing as many pushups as you can. However, these are not normal push-ups, so I'll demonstrate it once. You lie on your stomach with your legs closed and extended. Your hands touch each other on your buttocks. Now place your hands next to your shoulders and push yourself up. Your knees should come off the floor and your back and legs should remain straight. When your arms are extended, touch one hand to the other. Then support again with both hands and bend your arms until you are back on the floor. Now touch your hands behind your back and perform the next push-up. You can now try two push-ups. Then, after the start command, try to do as many push-ups as possible in 40 seconds.

7. Special notes

The exercise should be performed with sports shoes.

Are the seconds counted aloud?

Sources of error
Incorrect posture: The test leader should pay attention to body extension (straight back, legs stretched out) during the mock test and during the performance of the test and, if necessary, point this out to the test person.

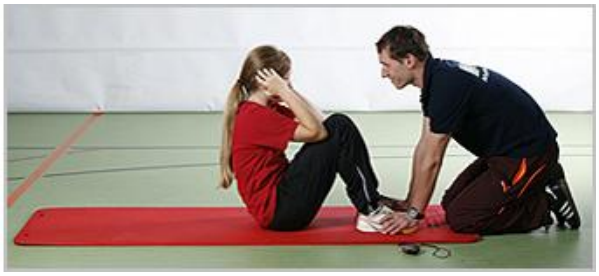
When pressing up, the test person leaves the knees on the floor.

Sit-Ups (SU)

1. Test objective

Determination of the strength endurance of the trunk muscles.

2. Description of the task



In the sit-up test, the test person is to complete as many sit-ups as possible in 40 seconds. During the performance, the feet are fixed by the test leader and the legs are bent at the knee joint by approx. 80°. The fingers are placed at the temples. During a sit-up from a lying position, the test subject must raise the upper body and touch both knees with both elbows. The upper body must then be lowered again so that both shoulders touch the floor.

3. Test materials

Space requirement: 2 m2
Time and person requirements: 1 test leader can test 1 test subject within 2 minutes
Equipment and material: Stopwatch, T-rail: 20x40 cm board with an attachment 5 cm high and 2 cm wide

4. Test setup

The T-rail is attached to the floor in a non-slip manner at a safe distance from the wall or other objects. The place is chosen so that the test person has a fixed orientation point available and is not distracted by other test procedures.

5. Measurement recording

All correctly performed sit-ups within 40 seconds are counted.

Hard criteria for this are:

- Fingertips to temple and thumbs behind earlobes
- Hand position must not be changed during performance
- Shoulders must be in contact with the mat when lowering the upper body

- Both elbows must touch one knee

Standard values
Numerous studies are available with information on mean values and standard deviations (see Beck & Bös, 1995, p. 118ff). For the push-up there are also comparative values for children and adults in the test literature (Bös, 1996, p. 56), for other test variants in Bös (2004), Fetz and Kornexl (1993), Grosser and Starischka (1981; cf. also chapter 3.1.2). Normal values for children and adolescents 6-18 are published in the DMT Manual (Bös et al., 2009).

6. Test instruction

This test is about doing as many sit-ups as possible in 40 seconds. You'll lie on your back and place your feet as I'll show you in a moment. Then I'll hold you by your feet. You put your fingertips to your temples and your thumbs behind your earlobes. Then you roll up until your elbows touch your knees. Then roll back down until your shoulder blades touch the ground. Then roll your upper body back up. You begin with my start command.

7. Special notes

Check that the correct starting position is assumed, and ensure that the elbows touch the knees each time they are raised. The subject's pelvis must not leave the floor during performance. The loads on the spine that occur during straightening are not problematic for healthy subjects.

The legs of the test subjects are held in place by the test administrator during the test.

The task is performed with sports shoes.

Sources of error
The participants do not touch the knees correctly and go back down too soon.

The hands do not remain at the temples.

The shoulder is not put down correctly.

20m Dash (20m)

1. Test objective

Determination of action speed.

2. Description of the task

In the 20m sprint, the test subjects must cover a distance of 20 m in the shortest possible time. At the start of the test task, the test subject stands upright and in a walking position behind the starting line. A test leader gives the acoustic start signal. Another test leader stands at the height of the finish line and stops the time of the test person from the start signal to crossing the finish line with the upper body to an accuracy of 0.1 seconds. It is also possible to measure with light barriers, which are placed at the start and finish line. The test person should sprint at least to the height of the finish line and only then reduce speed. If the run-out distance is too short, a soft floor mat can be set up to secure the end of the run. The test persons have two valid attempts each.

3. Test materials

Space requirement: a sports hall (handball field) or a 20 m track with 5 m run-out zone
Time and person requirements: 2-3 Test leader can test 10 subjects within 10 minutes
Equipment and material: Light barriers or stopwatch, adhesive tape, 4 hutches (2 each for the start and finish line), soft floor mat

4. Test setup

The test is ideally performed on a handball court. In small halls, the station can also be set up across the diagonal hall area. A 20 m distance is measured and the start and finish line is marked with 4 cones. For better visualization, the start line can be taped again. In the finish area, enough space should be left for the run-out zone and the run-out should be secured with a soft floor mat if

necessary. Approximately 2 m after the finish line, a marker is placed up to which the test person should sprint without braking in order to avoid a premature loss of speed.

In the case of a measurement with light barriers, the light barriers in the start and finish zones should be set up about 2 m apart. The start line must be set up sufficiently far away from the first light barrier (approx. 50 cm) so that it is not triggered by mistake.

When measuring with a stopwatch, the timekeeper must be at the height of the finish line.

5. Measurement recording

A test leader stops and records the time required by the test person for the 20m sprint. He is at the height of the finish line if he is measuring with a hand-held stopwatch. Otherwise he notes the time measured by the light barrier system. The time is measured in seconds, with an accuracy of 0.01 seconds.

Standard values
Numerous studies are available with information on mean values and standard deviations (cf. in summary Beck & Bös, 1995, p. 174 ff).
Current norm values for children and adolescents from 6 to 18 are published in the DMT Manual (Bös et al., 2009).

6. Test instruction

In this task, you have to run a distance of 20 m in the shortest possible time. You stand at the starting line and wait for my start signal ("On your marks! - Ready! - Go!"). At "Go!" I clap my hands above my head. When you hear the signal, you run as fast as you can. It is important that you run without slowing down until you reach the mark (2 m) behind the finish line and only then start slowing down. you have 2 attempts.

Optional if there is not much space: "After the marker, you slow down and run against the soft floor mat so that you are safely intercepted."

Command/ Start signal	**Simultaneous arm movement**	**Action of the test person**
„On your marks!“	The test leader extends the arms horizontally beside the body with the palms facing upward.	Assume the upright start position behind the start line.
„Ready!“	The test leader brings the arms half together on the way over the head.	Assume the upright start position behind the start line.
"Go!" (clapping of hands)	The hands are clapped together vigorously above the head with the arms extended so that both the test subject and the timekeeper can hear the signal.	Explosive sequence.

7. Special notes

The test task is performed with sports shoes.

Place an additional marker behind the finish line up to which the test person is to run at full speed so that he does not slow down beforehand.

There is a conversion factor for comparing the measured values between the measurement with light barrier and stopwatch.

Sources of error

Test person starts running before the start signal or triggers the light barrier too early.

Test person does not run at full speed to the finish line and slows down the run beforehand.

20m Dash (lightbarrier) (20m (lb))

1. Test objective

To determine the speed of action.

2. Description of the task

In the 20m sprint, the test subjects must cover a distance of 20m in the shortest possible time. At the beginning of the test task, the test subject stands upright and in a walking position behind the starting line. A test leader gives the acoustic start signal. The time is measured by light barriers placed at the start and finish line. The test person should sprint at least to the height of the finish line and only then reduce speed. If the run-out distance is too short, a soft floor mat can be placed to secure the end of the run. The test persons have two valid attempts each.

3. Test materials

Space requirement: a sports hall (handball field) or a 20 m track with a 5 m run-out zone.
Time and person requirements: 2-3 test leaders can test 10 test persons within 10 minutes.
Equipment and material: light barriers, adhesive tape, 4 little hats (2 each for the start and finish line), soft floor mat

4. Test setup

The test is ideally performed on a handball court. In small halls, the station can also be set up across the diagonal hall area. A 20 m distance is measured and the start and finish line is marked with 4 cones. For better visualization, the start line can be taped again. In the finish area, enough space should be left for the run-out zone and the run-out should be secured with a soft floor mat if necessary. Approximately 2 m after the finish line, a marker is placed up to which the test person should sprint through without braking in order to avoid a premature loss of speed.

In the case of a measurement with light barriers, the light barriers in the start and finish zones should be placed about 2 m apart. The start line must be set up sufficiently far away from the first light barrier (approx. 50 cm) so that it is not triggered by mistake.

5. Measurement recording

A test leader notes down the time measured by the light barrier system. The time is measured in seconds, with an accuracy of 0.01 seconds.

Standard values
Numerous studies are available with information on mean values and standard deviations (cf. in summary Beck & Bös, 1995, p. 174 ff).
Current norm values for children and adolescents from 6 to 18 are published in the DMT Manual (Bös et al., 2009).

6. Test instruction

Bei dieser Aufgabe sollst du eine Strecke von 20 m in möglichst kurzer Zeit durchlaufen. Du stellst dich an die Startlinie und wartest auf mein Startsignal („Auf die Plätze! – Fertig! – Los!“). Bei „Los!“ klatsche ich über dem Kopf in die Hände. Wenn du das Signal hörst, rennst du so schnell du kannst los. Wichtig ist, dass du ohne abzubremsen bis zu der Markierung (2 m) hinter der Ziellinie läufst und erst dann anfängst abzubremsen. du hast 2 Versuche.

Optional bei wenig Platz: „Nach der Markierung bremst du ab und läufst gegen die Weichbodenmatte, damit du sicher abgefangen wirst."

Command/ Start signal	**Simultaneous arm movement**	**Action of the test person**
„On your marks!“	The test leader extends the arms horizontally beside the body with the palms facing upward.	Assume the upright start position behind the start line.
„Ready!“	The test leader brings the arms half together on the way over the head.	Assume the upright start position behind the start line.
"Go!" (clapping of hands)	The hands are clapped together vigorously above the head with the arms extended so that both the test subject and the timekeeper can hear the signal.	Explosive sequence.

7. Special notes

The test task is performed with sports shoes.
Place an additional marker behind the finish line, up to which the test person should run at full speed, so that he does not slow down beforehand.
A conversion factor exists for the comparison of the measured values between the measurement with light barrier and stopwatch.

Sources of error
- Test person starts running before the start signal or triggers the light barrier too early.

- Test person does not run at full speed to the finish line and slows down the run beforehand.

Handgrip (Hgrip)

1. Test objective

To determine the maximum strength of the hands.

2. Description of the task

The hand dynamometer is pressed as hard as possible with one hand at a time. The dynamometer measures the maximum force exerted by the hand.

3. Test materials

Hand dynamometer

4. Measurement recording

The values displayed on the hand dynamometer are noted down for the right and left hand respectively.

5. Test instruction

The hand dynamometer should be squeezed as tightly as possible with one hand.

Flexibility

Sit & Reach (Si&R)

1. Test objective

The goal is to determine the stretching ability of the posterior back and leg muscles to quantify overall trunk flexibility.

2. Description of the task

In the Sit & Reach test, the test person sits in a long seat and tries to bend the upper body forward as far as possible with the knees fully extended. The test measures how far the subject's fingertips reach under the soles of his feet while sitting with his legs stretched out. The maximum end position must be held for at least 2 seconds.

3. Test materials

Space requirement: 2 m2
Time and person requirements: 1 test leader can test 1 test subject within 2 minutes
Equipment and material: A simplified implementation is possible with a horizontal, wall-mounted, meter measure. For a more precise measurement, special measuring devices are required.

4. Test setup

A board with a centimeter scale is attached to a specially made wooden box, which also displays values below and above the sole level. The zero point is directly at the edge of the box. Behind the edge of the box the scale is positive, in front of it it is negative.

The test person sits on the floor without shoes with legs stretched forward and places the soles of the feet against the crate. If only a normal crate is available, it is placed directly against a wall to which the measurement scale is attached.

5. Measurement recording

For the quantitative measurement, the distance to the sole level is recorded. The scale value is read at the furthest point that the fingertips of both hands touch. The distance is measured to the nearest 0.1 cm. Note that the scale is positive behind the sole level and negative in front of it. Two passes are completed. The result is usually better on the second pass due to pre-stretching.

Standard values
Information on norms is provided by Morrow and colleagues (1995) and Bös and colleagues (2009), among others.

6. Test instruction

In this task we want to examine the flexibility of the hip joints. Sit down so that the soles of your feet touch the wall of the box with the whole foot. Now slowly bend forward and push both hands forward as far as you can. It is very important that you keep your knee joints extended.

7. Special notes

When comparing measured values, it must be taken into account whether the sole level is taken as the basis for the measurement (then there are positive and negative values) or whether other scales are used. Common are scales that start below the sole level and show only positive values (cf. Eurofit, 1993).
Slow, non-jerky exercise execution and do not take momentum.
The extension of the knees is tested tactilely by the experimenter guiding the knees of the test participant to the floor or pressing them down slightly.
A maximum position is only scored if it can be held for at least two seconds.
The exercise should be performed without shoes.

Sources of error
The test person goes forward with momentum and immediately leaves the maximum stretch position.

Stand and Reach (St&R)

1. Test objective

Determination of trunk flexibility and stretching ability of the back muscles, lower extremities and long back extensors. The trunk flexion ability is seen as a combination of the stretching ability of the ischiocrural musculature and the flexion mobility of the spine.

2. Description of the task

In this test, the test person stands on a specially made wooden box (alternatively: a small box or a long bench). The upper body is slowly bent forward and the hands are brought down as far as possible with outstretched fingers in parallel along a centimeter scale. The legs are stretched throughout (to check, the test leader holds the index and middle fingers under the knee on the subject's patella tendon). The maximum stretch position attainable is to be held for two seconds. The scale reading is taken at the lowest point the fingertips touch. The subject has two attempts. Between the first and second attempt, the subject is to stand up briefly.

3. Test materials

Space requirement: 2 m2
Time and person requirements: 1 test leader can test 1 test subject within 2 minutes
Equipment and material: 1 special wooden box or 1 long bench with a centimeter scale

4. Test setup

A centimeter scale is attached vertically to a prefabricated wooden box, which also displays values below the zero point. The zero point is the upper edge of the wooden box. Below the edge the scale is positive, above it it is negative. The test person stands without shoes on the wooden box with his toes on the edge.

5. Measurement recording

The test administrator reads off the value achieved using the numerical scale and notes down the respective scale value for both of the test person's trials. Measurements are taken in centimeters to the nearest 0.1 cm. It should be noted that the scale is positive below the brine level and negative above it. The better value from both tests is scored.

Standard values
Information on standards is given in Morrow and colleagues (1995) and Bös and colleagues (2009), among others.

6. Test instruction

This test is to check your trunk flexibility. Please stand on the box. The scale should be between your feet. The tips of your toes are on the edge of the box. Then bend forward and slowly slide your hands along the scale - as far down as possible. It is very important that you keep your legs straight and your hands parallel. When you reach the lowest point possible, say "Stop!" and stay in this position for 2 seconds.

7. Special notes

The exercise should be performed without sports shoes.
No trial tests, because of pre-stretching.
If the test is also performed with older children, e.g. in the age group of 11-14 years, it should be noted that the legs may be longer in relation to the trunk due to the 2nd shape change, and the test subject may therefore not reach the zero level, despite normal stretching ability and flexibility of the musculature.
(MoMo test manual)

Sources of error
The test person does not keep the legs extended. The test administrator detects bending at the knee joint by placing the index and middle fingers on the patella tendon.
The test person enters the final position with a jerky movement and leaves it immediately without remaining in the position for 2 seconds.
The test person only rounds the upper back and does not use the complete range of motion in the lower back, which significantly worsens the test result.