

Executive Function and Postural Balance Tests

Date:

Participant Id:

1. Personal Information

- a. Age:
- b. Educational Level:

2. Trail Making Test part B

The Trail Making Test part B includes circles that contain numbers (1 to 13) and letters (A to L). The task consists of connecting the circles with lines drawn in an ascending pattern and alternating between numbers and letters (e.g., 1 – A – 2 – B – 3 – C).

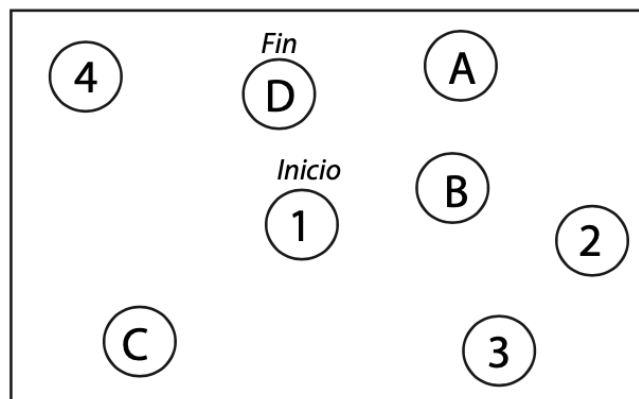
The participant should be instructed to connect the circles quickly without taking the pencil off the paper. If the participant makes a mistake, he/she is allowed to correct it. This will cause the participant to take more time in executing the test.

Step 1: Give the participant a copy of the test and a pencil.

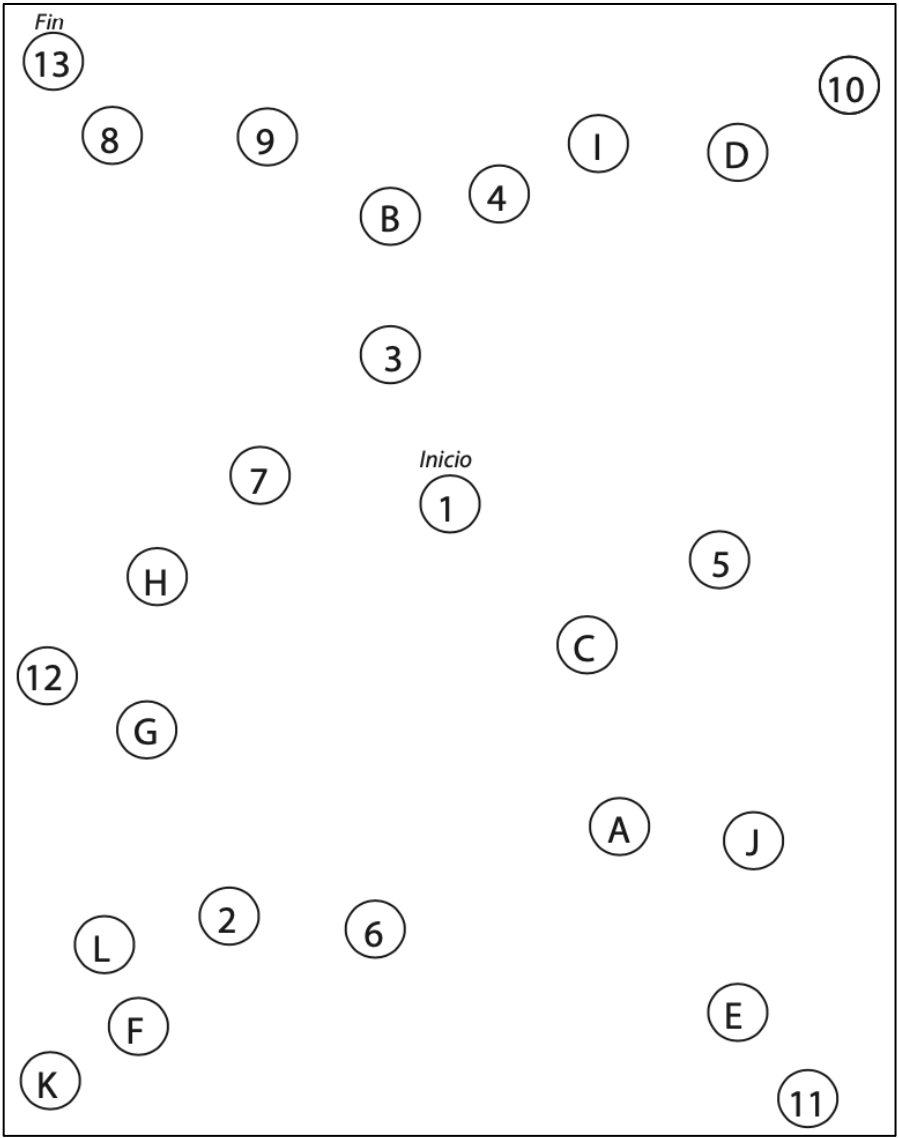
Step 2: Demonstrate the test using the example.

Step 3: Record the time the subject takes to connect the circles by alternating numbers and letters.

- a. Example



b. Test



3. Digit Span Backward test.

Attempt 1

Say, "Now I will tell you some numbers. Listen carefully because I cannot repeat them. When I have finished saying them, I am going to ask you to repeat them back to me in reverse order. For example, what would you say to me if I told you 7 – 1?"

If the participant answers correctly [1 – 7], say, "That is correct" and proceed to attempt 2.

If the participant answers incorrectly, say, "That is not correct. I said 7 – 1, so in reverse order the correct answer was 1 – 7." Proceed to attempt 2.

Attempt 2

Say, "Let's try another one. Remember to say them in reverse order. 3 – 4".

If the participant answers correctly [4 – 3], say, "That's correct, let's do some more". Proceed to attempt 1 of item 1.

If the participant answers incorrectly, say, "That's not correct. I said 3 – 4, so in reverse order the correct answer was 4 – 3. Let's do some more. Proceed to attempt 1 of item 1.

Item	Digit Span	Correct Answer	Pass or Fail
1	3 – 1	1 – 3	
	2 – 4	4 – 2	
2	4 – 6	6 – 4	
	5 – 7	7 – 5	
3	6 – 2 – 9	9 – 2 – 6	
	4 – 7 – 5	5 – 7 – 4	
4	8 – 2 – 7 – 9	9 – 7 – 2 – 8	
	4 – 9 – 6 – 8	8 – 6 – 9 – 4	
5	6 – 5 – 8 – 4 – 3	3 – 4 – 8 – 5 – 6	
	1 – 5 – 4 – 8 – 6	6 – 8 – 4 – 5 – 1	
6	5 – 3 – 7 – 4 – 1 – 8	8 – 1 – 4 – 7 – 3 – 5	
	7 – 2 – 4 – 8 – 5 – 6	6 – 5 – 8 – 4 – 2 – 7	
7	8 – 1 – 4 – 9 – 3 – 6 – 2	2 – 6 – 3 – 9 – 4 – 1 – 8	
	4 – 7 – 3 – 9 – 6 – 2 – 8	8 – 2 – 6 – 9 – 3 – 7 – 4	
8	9 – 4 – 3 – 7 – 6 – 2 – 1 – 8	8 – 1 – 2 – 6 – 7 – 3 – 4 – 9	
	7 – 2 – 8 – 1 – 5 – 6 – 4 – 3	3 – 4 – 6 – 5 – 1 – 8 – 2 – 7	

4. Stroop Color-Word Interference test

Subtest I

Read the name of the colors as fast as possible from the first column down, then continue with the next column in the same way.

brown	green	yellow	red	blue	red	blue	brown	green	yellow
red	brown	yellow	green	blue	green	brown	red	blue	yellow
yellow	red	brown	green	blue	red	brown	green	yellow	blue
brown	red	blue	green	yellow	brown	blue	yellow	red	green
blue	yellow	red	green	brown	green	yellow	blue	brown	red
green	yellow	brown	red	blue	brown	green	red	blue	yellow
blue	red	yellow	brown	green	green	brown	blue	red	yellow
red	blue	yellow	brown	green	brown	blue	green	yellow	red
green	brown	yellow	blue	red	green	brown	yellow	red	blue
brown	red	green	blue	yellow	blue	red	green	brown	yellow

Subtest II

Read the name of the colors as fast as possible from the first column down, then continue with the next column in the same way.

brown	green	yellow	red	blue	red	blue	brown	green	yellow
red	brown	yellow	green	blue	green	brown	red	blue	yellow
yellow	red	brown	green	blue	red	brown	green	yellow	blue
brown	red	blue	green	yellow	brown	blue	yellow	red	green
blue	yellow	red	green	brown	green	yellow	blue	brown	red
green	yellow	brown	red	blue	brown	green	red	blue	yellow
blue	red	yellow	brown	green	green	brown	blue	red	yellow
red	blue	yellow	brown	green	brown	blue	green	yellow	red
green	brown	yellow	blue	red	green	brown	yellow	red	blue
brown	red	green	blue	yellow	blue	red	green	brown	yellow

Subtest III

Name the color of each of the words starting from the first column down, then continue with the next column.

yellow	yellow	blue	brown	brown	green	blue	yellow	red	green
yellow	red	brown	brown	red	blue	green	blue	yellow	red
brown	blue	red	yellow	yellow	brown	red	blue	red	green
blue	green	brown	red	green	yellow	brown	blue	yellow	brown
brown	green	brown	brown	red	yellow	red	yellow	yellow	green
blue	blue	blue	blue	green	green	red	yellow	red	red
brown	blue	red	yellow	red	yellow	green	red	yellow	blue
brown	yellow	green	green	blue	blue	green	brown	brown	green
yellow	yellow	red	green	yellow	red	green	blue	blue	yellow
blue	brown	brown	red	Brown	brown	green	blue	red	green

5. MiniBESTest

ANTICIPATORY

SUB SCORE: /6

1. SIT TO STAND

Instruction: *"Cross your arms across your chest. Try not to use your hands unless you must. Do not let your legs lean against the back of the chair when you stand. Please stand up now."*

(2) Normal: Comes to stand without use of hands and stabilizes independently.

(1) Moderate: Comes to stand WITH use of hands on first attempt.

(0) Severe: Unable to stand up from chair without assistance, OR needs several attempts with use of hands.

2. RISE TO TOES

Instruction: *"Place your feet shoulder width apart. Place your hands on your hips. Try to rise as high as you can onto your toes. I will count out loud to 3 seconds. Try to hold this pose for at least 3 seconds. Look straight ahead. Rise now."*

(2) Normal: Stable for 3 s with maximum height.

(1) Moderate: Heels up, but not full range (smaller than when holding hands), OR noticeable instability for 3 s.

(0) Severe: ≤ 3 s.

3. STAND ON ONE LEG

Instruction: *"Look straight ahead. Keep your hands on your hips. Lift your leg off of the ground behind you without touching or resting your raised leg upon your other standing leg. Stay standing on one leg as long as you can. Look straight ahead. Lift now."*

Left: Time in Seconds. Trial 1: _____ Trial 2: _____

(2) Normal: 20 s.

(1) Moderate: < 20 s.

(0) Severe: Unable.

Right: Time in Seconds. Trial 1: _____ Trial 2: _____

(2) Normal: 20 s.

(1) Moderate: < 20 s.

(0) Severe: Unable.

To score each side separately use the trial with the longest time.

To calculate the sub-score and total score use the side [left or right] with the lowest numerical score [i.e. the worse side].

REACTIVE POSTURAL CONTROL

SUB SCORE: /6

4. COMPENSATORY STEPPING CORRECTION- FORWARD

Instruction: *"Stand with your feet shoulder width apart, arms at your sides. Lean forward against my hands beyond your forward limits. When I let go, do whatever is necessary, including taking a step, to avoid a fall."*

(2) Normal: Recovers independently with a single, large step (second realignment step is allowed).

(1) Moderate: More than one step used to recover equilibrium.

(0) Severe: No step, OR would fall if not caught, OR falls spontaneously.

5. COMPENSATORY STEPPING CORRECTION- BACKWARD

Instruction: *"Stand with your feet shoulder width apart, arms at your sides. Lean backward against my hands beyond your backward limits. When I let go, do whatever is necessary, including taking a step, to avoid a fall."*

- (2) Normal: Recovers independently with a single, large step.
- (1) Moderate: More than one step used to recover equilibrium.
- (0) Severe: No step, OR would fall if not caught, OR falls spontaneously.

6. COMPENSATORY STEPPING CORRECTION- LATERAL

Instruction: *"Stand with your feet together, arms down at your sides. Lean into my hand beyond your sideways limit. When I let go, do whatever is necessary, including taking a step, to avoid a fall."*

Left

- (2) Normal: Recovers independently with 1 step (crossover or lateral OK).
- (1) Moderate: Several steps to recover equilibrium.
- (0) Severe: Falls, or cannot step.

Right

- (2) Normal: Recovers independently with 1 step (crossover or lateral OK).
- (1) Moderate: Several steps to recover equilibrium.
- (0) Severe: Falls, or cannot step.

Use the side with the lowest score to calculate sub-score and total score.

SENSORY ORIENTATION

SUB SCORE: /6

7. STANCE (FEET TOGETHER); EYES OPEN, FIRM SURFACE

Instruction: *"Place your hands on your hips. Place your feet together until almost touching. Look straight ahead. Be as stable and still as possible, until I say stop."*

Time in Seconds: _____

- (2) Normal: 30 s.
- (1) Moderate: < 30 s.
- (0) Severe: Unable.

8. POSTURA (PIES JUNTOS); OJOS CERRADOS, SUPERFICIE ESPONJOSA

Instruction: *"Step onto the foam. Place your hands on your hips. Place your feet together until almost touching. Be as stable and still as possible, until I say stop. I will start timing when you close your eyes."*

Time in Seconds: _____

- (2) Normal: 30 s.
- (1) Moderate: < 30 s.
- (0) Severe: Unable.

9. INCLINE- EYES CLOSED

Instruction: "Step onto the incline ramp. Please stand on the incline ramp with your toes toward the top. Place your feet shoulder width apart and have your arms down at your sides. I will start timing when you close your eyes."

Time in Seconds: _____

- (2) Normal: Stands independently 30 s and aligns with gravity.
- (1) Moderate: Stands independently <30 s OR aligns with surface.
- (0) Severe: Unable.

DYNAMIC GAIT

SUB SCORE: /10

10. CHANGE IN GAIT SPEED

Instruction: "Begin walking at your normal speed, when I tell you 'fast', walk as fast as you can. When I say 'slow', walk very slowly."

- (2) Normal: Significantly changes walking speed without imbalance.
- (1) Moderate: Unable to change walking speed or signs of imbalance.
- (0) Severe: Unable to achieve significant change in walking speed AND signs of imbalance.

11. WALK WITH HEAD TURNS – HORIZONTAL

Instruction: "Begin walking at your normal speed, when I say "right", turn your head and look to the right. When I say "left" turn your head and look to the left. Try to keep yourself walking in a straight line."

- (2) Normal: performs head turns with no change in gait speed and good balance.
- (1) Moderate: performs head turns with reduction in gait speed.
- (0) Severe: performs head turns with imbalance.

12. WALK WITH PIVOT TURNS

Instruction: "Begin walking at your normal speed. When I tell you to 'turn and stop', turn as quickly as you can, face the opposite direction, and stop. After the turn, your feet should be close together."

- (2) Normal: Turns with feet close FAST (≤ 3 steps) with good balance.
- (1) Moderate: Turns with feet close SLOW (≥ 4 steps) with good balance.
- (0) Severe: Cannot turn with feet close at any speed without imbalance.

13. STEP OVER OBSTACLES

Instruction: "Begin walking at your normal speed. When you get to the box, step over it, not around it and keep walking."

- (2) Normal: Able to step over box with minimal change of gait speed and with good balance.
- (1) Moderate: Steps over box but touches box OR displays cautious behavior by slowing gait.
- (0) Severe: Unable to step over box OR steps around box.

TIMED UP & GO WITH DUAL TASK [3 METER WALK]

Instruction TUG: *"When I say 'Go', stand up from chair, walk at your normal speed across the tape on the floor, turn around, and come back to sit in the chair."*

Instruction TUG with Dual Task: *"Count backwards by threes starting at _____. When I say 'Go', stand up from chair, walk at your normal speed across the tape on the floor, turn around, and come back to sit in the chair. Continue counting backwards the entire time."*

TUG: _____ seconds; Dual Task TUG: _____ seconds

(2) Normal: No noticeable change in sitting, standing or walking while backward counting when compared to TUG without Dual Task.

(1) Moderate: Dual Task affects either counting OR walking (>10%) when compared to the TUG without Dual Task.

(0) Severe: Stops counting while walking OR stops walking while counting.

When scoring item 14, if subject's gait speed slows more than 10% between the TUG without and with a Dual Task the score should be decreased by a point.

Total Score: _____/28