

Modified Romberg Balance

The Modified Romberg Balance is modified version of the original test developed in the 19th Century. The test requires the subject to stand with the feet together and the head tilted back slightly and with the eyes closed. The test also requires that the subject attempt to estimate 30 seconds; the subject must be instructed to open the eyes and tilt the head forward and say “stop” when they think thirty seconds has elapsed. You must not instruct the subject as to how they are to estimate the passage of 30 seconds.

Some drugs tend to “speed up” the subject’s time estimation, so that the subject may open the eyes after only 10 or 15 seconds have gone by. Other drugs may “slow down” the time estimation, so that the subject keeps the eyes closed for 60 or more seconds. And, sometimes the drugs confuse the subject to the point where they won’t remember to open the eyes until instructed.

Drug impairment can affect both divided attention and the subject’s internal timing estimation mechanism and can vary among people. The use of the Modified Romberg Balance Test time estimation to predict or relate to certain drug categories is not supported by research at this time. Performance outside the range of plus or minus 5 seconds must be used cautiously and considered with the totality of the decision process.

The original Romberg Balance Test is a divided attention test, as well as a possible measurement of the person’s internal timing estimates. You must look at a timing device as soon as the subject starts the test and must record the actual amount of time that elapses until the subject opens his or her eyes. You must not close your eyes while demonstrating this test for safety reasons. You must record how much time actually elapsed from the start of the test until the subject opened their eyes and said “stop”. If the subject continues to keep their eyes closed for 90 seconds, you should stop the test and record the fact that it was terminated at 90 seconds.

Administrative Procedures and Instructions

- Tell the subject to stand straight with their feet together and their arms down at their sides.
- Tell the subject to maintain that position while you give the instructions. Emphasize that he or she must not start the test until told to start.
- Ask the subject if he or she understands so far.
- Make sure to obtain a verbal response from the subject.
- Tell the subject when you instruct them to begin the test, they must tilt their head back slightly and close their eyes.

DEMONSTRATE how the head should be tilted, but DO NOT CLOSE YOUR EYES while demonstrating.

- Tell the subject that when you say "Start", they must keep their head tilted back with their eyes closed until they think that 30 seconds have gone by. DO NOT tell the subject to "count to thirty seconds" or to use any other specific procedure to keep track of time. But on the other hand, DO NOT tell the subject that they are not allowed to count to thirty seconds. SIMPLY SAY, "keep your head tilted back with your eyes closed until you think that thirty seconds have gone by".
- Tell the subject that, when they think the 30 seconds have gone by, they must bring their head forward, open their eyes, and say "Stop".
- Ask the subject if he or she understands.

Balancing Stage

- Look at your timing device and pick a convenient time to start the test.
- Tell the subject to tilt their head back and close their eyes.
- Tell the subject to begin or start the test.
- Keep track of time while the subject performs the test.
- Check subject for presence of tremors (eyelid and/or body) and sway.
- When the subject opens their eyes, ask them "how much time was that?"
- Make sure to document their "exact" verbal response.
- Record how much time actually elapsed from the start of the test until the subject opened their eyes.
- If the subject continues to keep their eyes closed for 90 seconds, stop the test and record the fact that it was terminated at 90 seconds.

Recording Results of the Modified Romberg Balance Test

The major items that need to be recorded for the Modified Romberg Balance test are:

- The amount that the subject sways.
- The actual amount of time that the subject keeps the eyes closed.
- To record swaying, you must estimate how many inches the subject sways, either front-to-back, left-to-right, or circular.

Lack of Convergence

The test for Lack of Convergence (LOC) determines whether the subject is able to cross his or her eyes. The check for Lack of Convergence (LOC) can provide another clue as to the possible presence of depressants, inhalants, or dissociative anesthetics. Lack of Convergence is also an indicator of the possible presence of Cannabis.

Procedures

- Position the stimulus approximately 12 to 15 inches in front of the subject's nose in the same position we use for the HGN test.
- Inform the subject that you are going to move the stimulus around in a circle in front of his or her face and to follow the stimulus with his or her eyes only. (The stimulus can be moved either clockwise or counterclockwise.)
- Inform the subject that you will move the tip of the stimulus in toward the bridge of his or her nose. (It is important that the subject be aware of what will happen so that he or she will not flinch or become frightened when you move the stimulus toward his or her face.)
- Inform the subject that he or she will have to keep their head steady and try to cross the eyes in order to keep their eyes focused on the stimulus as it moves in toward the nose.
- Inform the subject that you will not actually touch the their nose.
- Start to move the object slowly in a circle. (The circular motion helps to verify that the subject has focused on the stimulus and is able to track it.)
- Verify the subject is tracking the stimulus.
- Stop moving in a circular manner with the stimulus above eye level.
- Slowly move the stimulus down to within approximately two inches of the bridge of the nose.
- Carefully observe the subject's eyes to determine whether both eyes converge on the stimulus.

It is recommended that you repeat the check for LOC, conducting the check at least two times. Do not actually touch the nose and not to go any closer than approximately two inches from the bridge of the nose. If the subject wears glasses during reading and for near visual tasks, and they are readily available, ensure that the eye glasses are worn for the check for Lack of Convergence.

- If the eyes converge (cross) when the stimulus is approximately two inches from the bridge of the nose, the Lack of Convergence is "not present".
- Lack of Convergence is present if the subject's eyes do not come together and cross as they track and stay aligned on the stimulus.
- In a non-impaired subject, the eyes should come together (converge) and remain converged for one second.

Convergence response in most people is a distance of approximately two inches from the bridge of the nose.

- If the eyes do not converge or remain converged on the stimulus for one second, then Lack of Convergence is present.

Some normal non-impaired people may not be able to converge to the bridge of the nose. Moving the stimulus within two inches of the nose provides a better indicator of Lack of Convergence attributed to drug impairment. Remember to keep the stimulus high enough so that eye movement can be observed.

Drug categories which usually cause lack of convergence include:

- CNS Depressants
- Inhalants
- Dissociative Anesthetics
- Cannabis

Finger-to-Nose

The Finger to Nose is a divided attention test that differs from the other three tests. During this test the examiner must continue to give instructions to the subject throughout the test.

Administrative Procedures for Finger to Nose

- The subject must be told that he/she will be given a series of commands, i.e., “left, right, etc.” to indicate which fingertip is to be brought to the tip of the nose.
- The subject must be told to stand with feet together, arms down at the sides, facing the examiner.
- You should demonstrate the stance.
- The subject must be told to close his/her hands, rotate the palms forward and then to extend the index fingers from the closed hands.

Demonstrate the proper extension of the index fingers.

- You must tell subject that they will be asked to touch the tip of the index finger to the tip of the nose.
- You must demonstrate to the subject how they are expected to touch the fingertip to the nose. (Without actually touching your nose.)
- Demonstrate: “When I say ‘left,’ touch the tip of your left index finger to the tip of your nose.

You must tell the subject that they are expected to return the arm to the side immediately after touching the fingertip to the nose.

- Demonstrate the movement of the fingertip to the nose by standing at an angle to the “subject” so that he/she can see the proper method for touching the nose.
- The subject must be told to tilt the head back slightly and to close the eyes, and keep them closed until the examiner says to open them.
- The subject’s head should be tilted back in the same fashion as in the Modified Romberg Balance test.
- The examiner should demonstrate the stance with head tilted back, arms at the sides with index fingers extended. Remind the participants that they should not close their eyes during the instructions for safety reasons.

The test is always given in the following sequence of commands: Left, Right, Left, Right, Right, Left

Recording Results of the Finger to Nose Test

- The results of Finger to Nose test are recorded by drawing a “map” showing where the fingertips landed on each attempt.
- A line should be drawn to the appropriate circle or triangle to indicate where the subject touched their nose.
- Suggestion: If the DRE draws the line from the place where the subject touches to the appropriate circle or triangle, it enables them to draw a straighter line.

A “P” is an indicator that the subject touched with the pad of his/her finger instead of the fingertip.

	CNS Depressants	CNS Stimulants	Hallucinogens	Dissociative Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN	Present	None	None	Present	None	Present	None
VGN	Present*	None	None	Present	None	Present*	None
LOC	Present	None	None	Present	None	Present	Present
Pupil Size	Normal (1)	Dilated	Dilated	Normal	Constricted	Normal (2)	Normal (3)
General Indicators	Disoriented Droopy eyelids Drunk-like behavior Flaccid muscle tone Gait ataxia Slow, sluggish reactions Thick, slurred speech Uncoordinated	Anxiety Body tremors Dry mouth Euphoria Exaggerated reflexes Excited Eyelid tremors Grinding teeth (Bruxism) Increased alertness Insomnia Irritability Redness to nasal area Restlessness Rigid muscle tone Runny nose Talkative	Body tremors Dazed appearance Difficulty with speech Disoriented Flashbacks Hallucinations Memory loss Nausea Paranoia Perspiring Poor perception of time and distance Rigid muscle tone Synesthesia Uncoordinated	Blank stare Confused Chemical odor (PCP) Cyclic behavior (PCP) Difficulty with speech Disoriented Early HGN onset Hallucinations Incomplete verbal responses Increased pain threshold "Moon walking" (PCP) Perspiring Possibly violent (PCP) Ridged muscle tone Sensory distortions Slow, slurred speech	Constricted pupils Depressed reflexes Drowsiness Droopy eyelids (Ptosis) Dry mouth Euphoria Facial itching Flaccid muscle tone Nausea Fresh puncture marks "On the Nod" Puncture marks Slow, low, raspy speech Slowed breathing	Bloodshot watery eyes Confusion Disorientated Flushed face Intense headache Lack of muscle control Non- communicativ e Normal or flaccid muscle tone Odor of substance Possible nausea Residue of substance Slow, thick, slurred speech	Body tremors Disoriented Eyelid tremors Impaired perception of time and distance Increased appetite Marijuana debris in mouth Marked reddening of conjunctiva Normal muscle tone Odor of marijuana Possible paranoia Relaxed inhibitions
Overdose Signs	Cold, clammy skin Pupils dilated Rapid, weak pulse Coma Shallow breathing	Agitation Increased body temperature Hallucination s Convulsions	Long, intense "trip"	Long, intense "trip"	Slow, shallow breathing Clammy skin Coma Convulsions	Coma	Fatigue Paranoia

* High dose for that individual

(1) Soma, Quaaludes and some anti-depressants usually dilate pupils

(2) Normal, but may be dilated

(3) Pupil size possibly normal

