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FUNCTIONAL ASSESSMENT OF THE ELDERLY

FIRST EC2U SUMMER SCHOOL

SMART AGEING AND HEALTHY LIFE

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Elderly assessment

- The geriatric assessment is a multidimensional, multidisciplinary assessment designed to evaluate an older person's functional ability, physical health, cognition and mental health.

- The geriatric assessment differs from a standard medical evaluation by including nonmedical domains; by emphasizing functional capacity and quality of life and often, by incorporating a multidisciplinary team.

The need of evaluation

- The assessment of activities of daily living, functional and social status evaluation may have important clinical implications and should generate alerts to health care providers and social workers in order to provide better care to the geriatric population.

- Studies have shown that use of formalized comprehensive geriatric assessments can result in improved survival, reduced hospital and nursing home stays, decreased medical costs, and improved functional status.

What can we evaluate?

- Posture
- Mobility
- Balance
- Gait
- Daily activities
- Cognition
- Pain level (Visual Analogue Scale)

Changes in health that occur with age

The body generally undergoes organic changes, which do not occur at the same rate.

In some people the aging will be expressed by a premature degradation of the cardiovascular system, in others by a premature cerebral aging or by the functional decline of other organs.

Biological changes in elderly

Bone tissue

Muscular tissue

Circulatory system

Respiratory system

Digestive system

Nervous system

Immune system

Changes in health that occur with age

- MOBILITY:

The ability of older persons to perform ADLs depends on their capacity to maneuver safely and effectively. Early detection of impairments in function can identify those persons with reduced mobility, deconditioning, and risks for injury

BALANCE:

Aging is associated with declining balance.

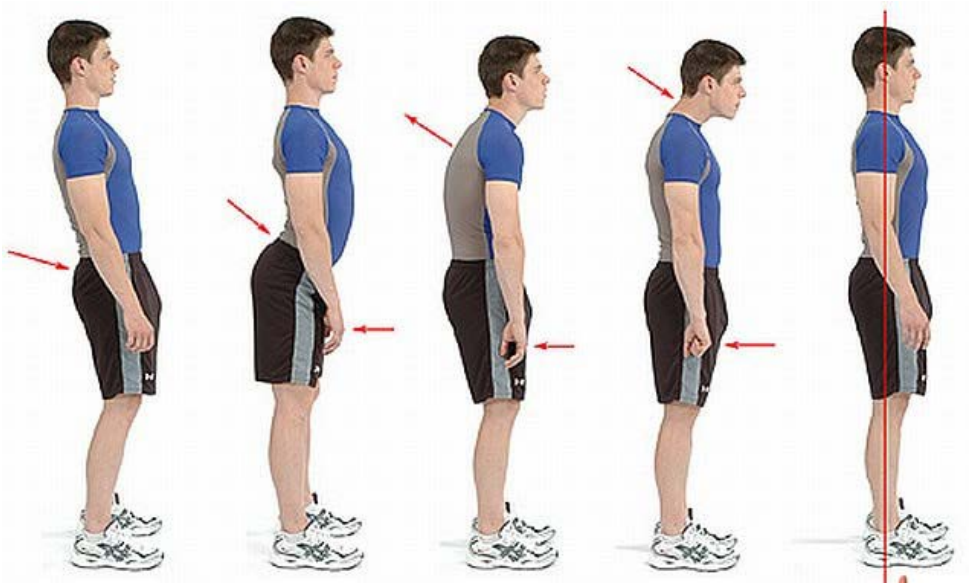
Many sensory systems contribute to balance, such as foot/ankle sensory input, visual input, and vestibular input

Many of these systems decline with age.

POSTURE:

The most common deficiencies in the elderly are located in the spine.

Bone changes and weakness of the back muscles can increase them.



Identification of risk factors for these geriatric syndromes may promote restoration of compensatory ability and prevent the onset of functional dependence.

Attention paid to these functional goals may improve a patient's quality of life and can assist in directing the management of elederly needs.

POSTURAL ASSESSMENT

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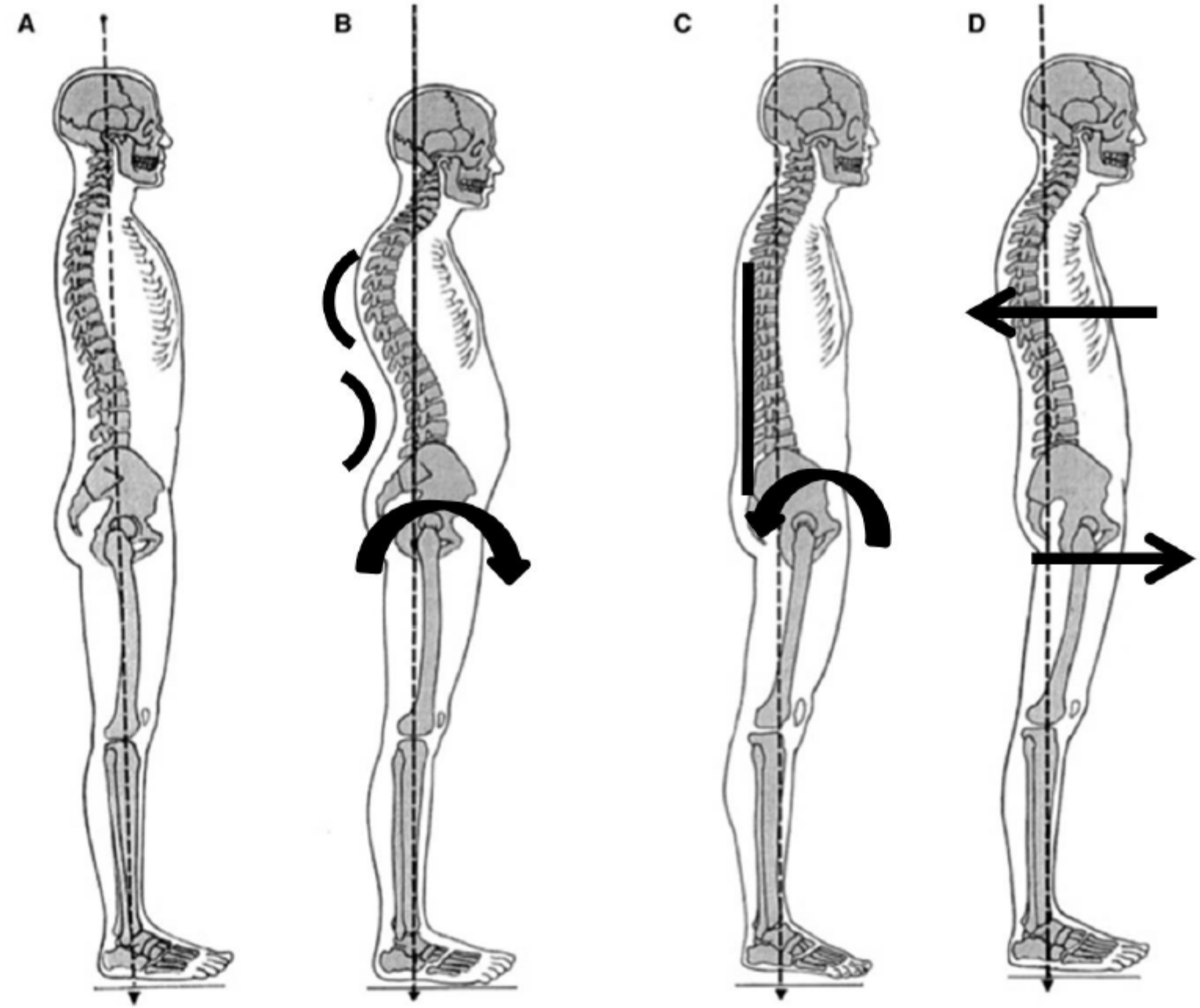
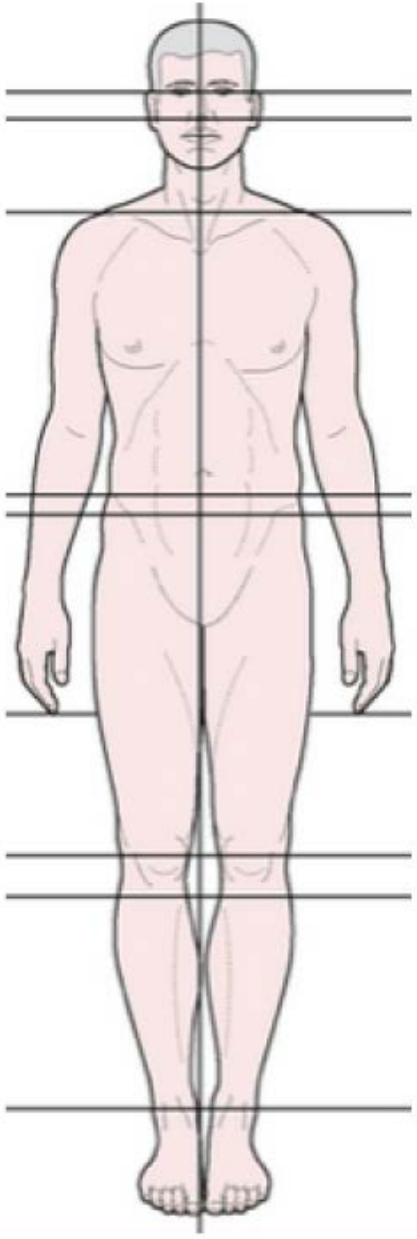


Ideal alignment. Kyphotic-lordotic posture Flat-back posture Sway-back posture.

Anterior View



Alignment Relative to Plumb Line

Lower Extremity

- Feet evenly spaced from plumb line
- Tibial crests: Slight external rotation
- Knees: Evenly spaced from plumb line
- Patella: facing anteriorly
- Consistent angulation from joint to joint
- The lateral malleoli, fibular head, and iliac crest should be bilaterally equal

Torso

- Umbilicus: Plumb line bisects
- Sternum: Plumb line bisects
- Jugular notch: Plumb line bisects

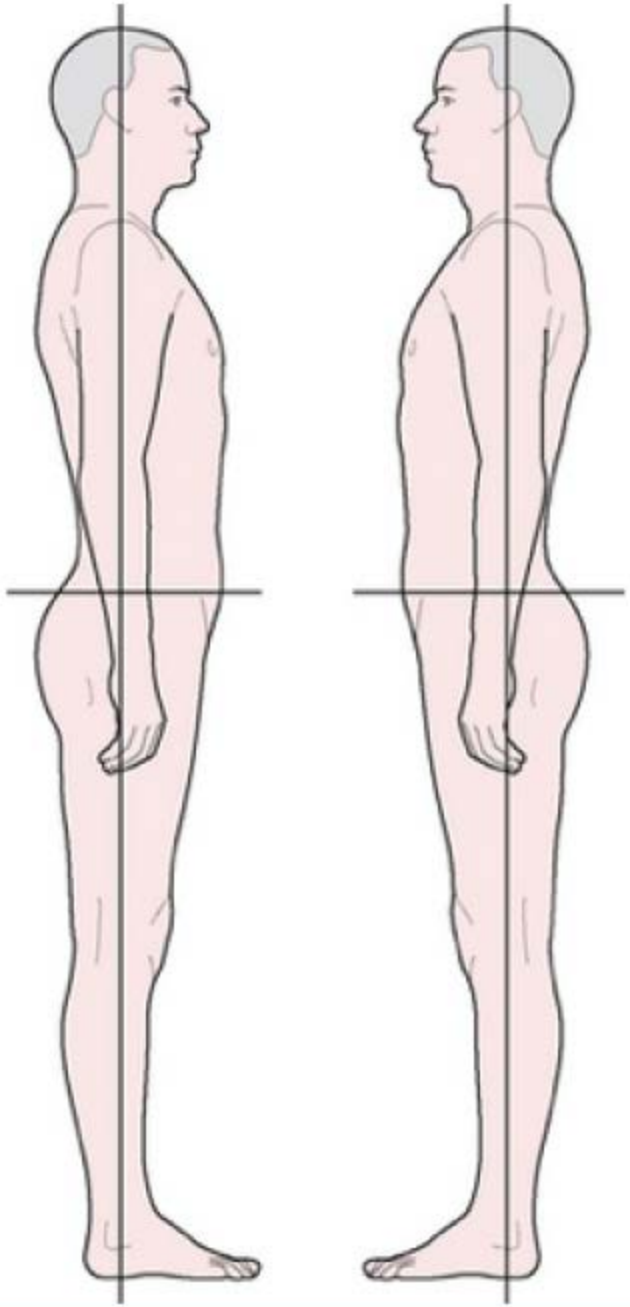
Shoulder

- Acromion process: Evenly spaced from plumb line
- Shoulder heights equal
- Deltoid, anterior chest musculature bilaterally symmetrical and defined

Head and Neck

- Head is bisected by plumb line
- Nasal bridge: Plumb line bisects
- Frontal bone: Plumb line bisects

Lateral View



Alignment Relative to Plumb Line

Lower Extremity

- Lateral malleolus: Slightly posterior
- The tibia should be parallel to the plumb line and the foot should be at a 90° angle to the tibia
- Greater trochanter: Plumb line bisects

Torso

- Mid thoracic region: Plumb line bisects

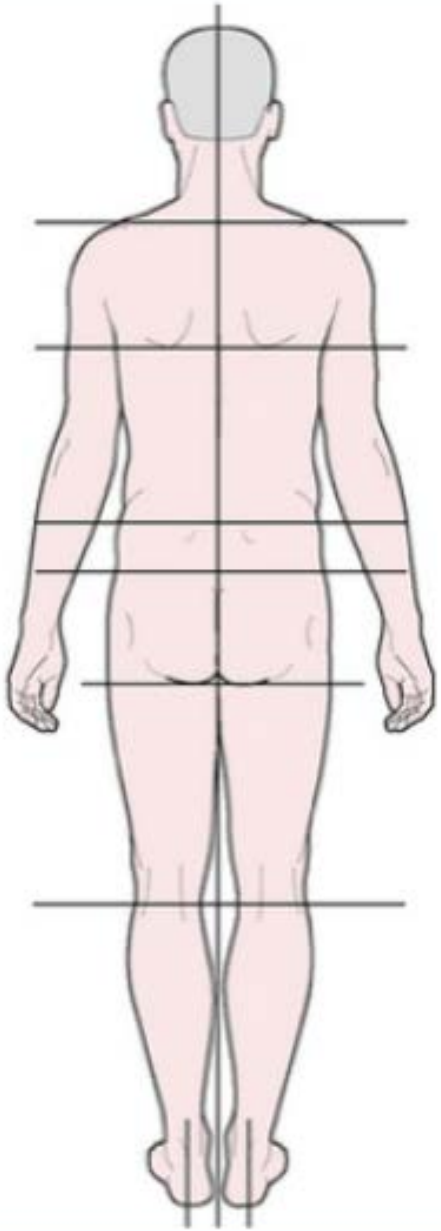
Shoulder

- Acromion process: Plumb line bisects

Head and Neck

- Cervical bodies: Plumb line bisects
- Auditory meatus: Plumb line bisects

Posterior View



Alignment Relative to Plumb Line

Lower Extremity

- Feet evenly spaced from plumb line
- Feet: Parallel
- Knees: Evenly spaced from plumb line
- Consistent angulation from joint to joint

Torso

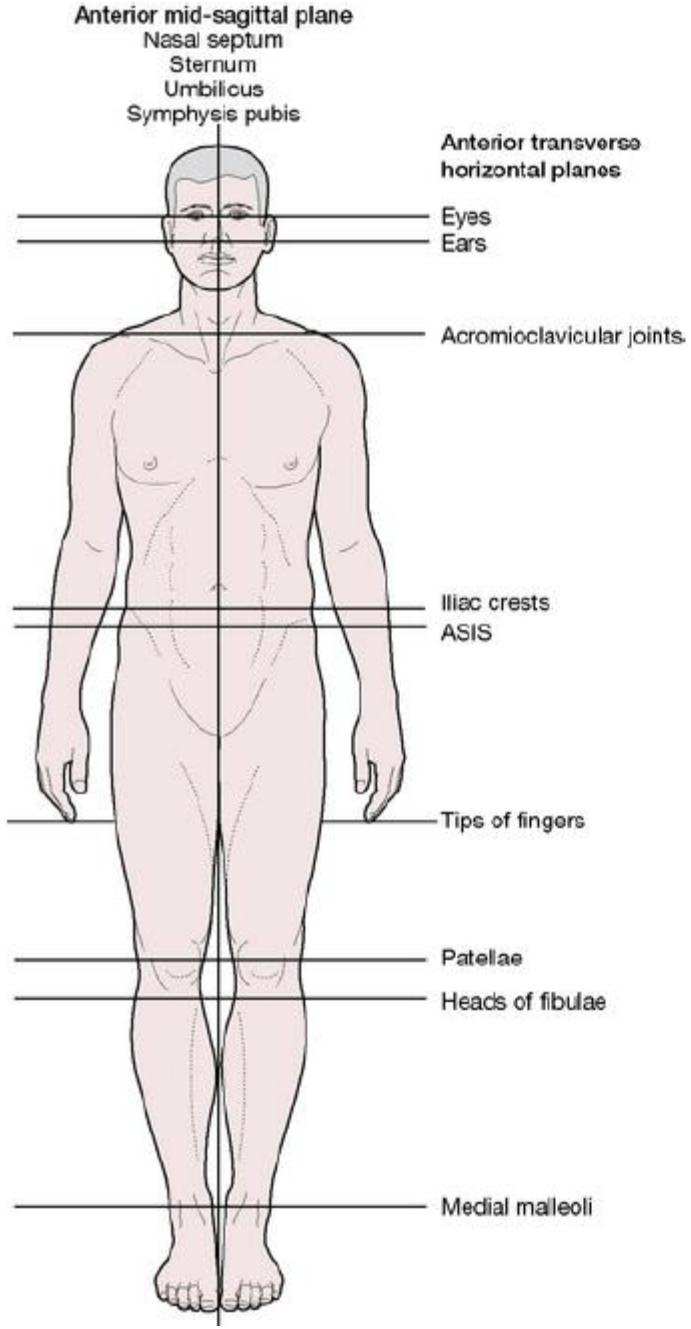
- Median sacral crest: Plumb line bisects
- Spinous processes: Plumb line bisects
- Paraspinals bilaterally symmetrical

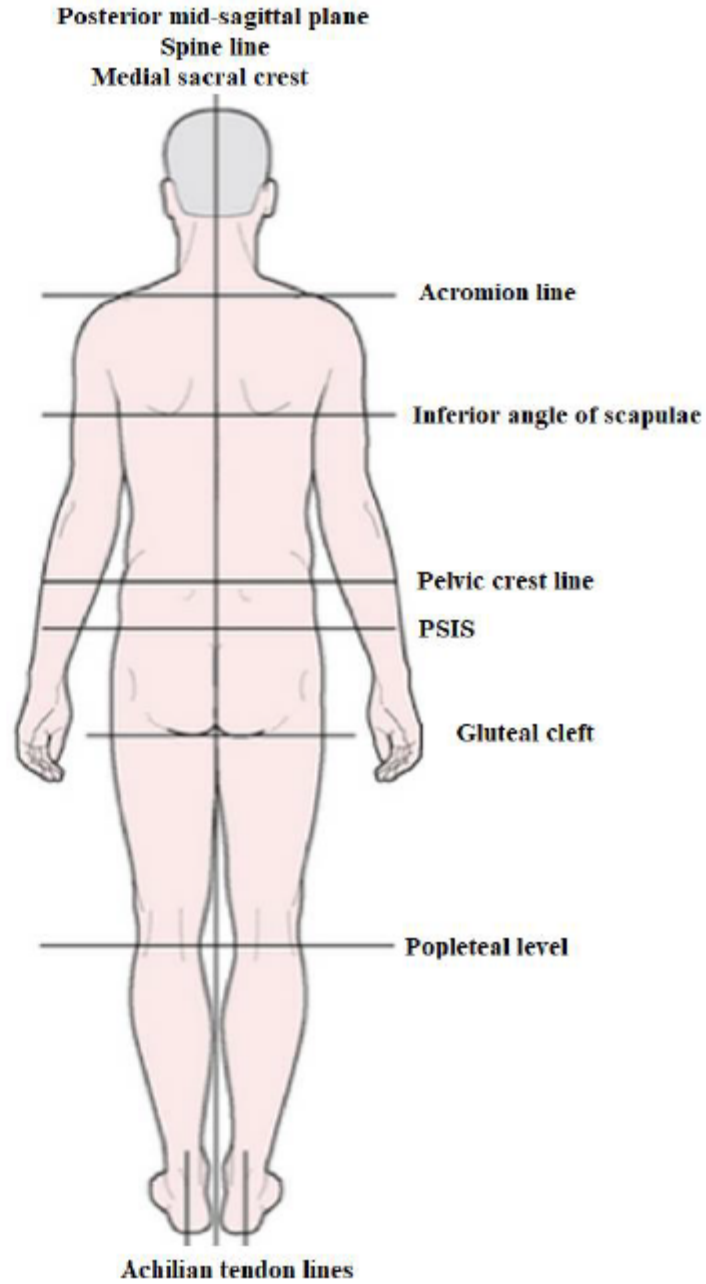
Shoulder

- Scapular borders: Evenly spaced from plumb line
- Acromion processes: Evenly spaced from plumb line
- Deltoid, posterior muscular bilaterally symmetrical
- Shoulder heights equal

Head and Neck

- Cervical spinous processes: Plumb line bisects
- Occipital protuberance: Plumb line bisects


Anterior mid-sagittal plane
Nasal septum
Sternum
Umbilicus
Symphysis pubis
Anterior transverse horizontal planes
Eyes
Ears
Acromioclavicular joints
Iliac crests
ASIS
Tips of fingers
Patellae
Heads of fibulae
Medial malleoli


Posterior mid-sagittal plane
Spine line
Medial sacral crest
Acromion line
Inferior angle of scapulae
Pelvic crest line
PSIS
Gluteal cleft
Popleteal level
Achilian tendon lines

MOBILITY ASSESSMENT

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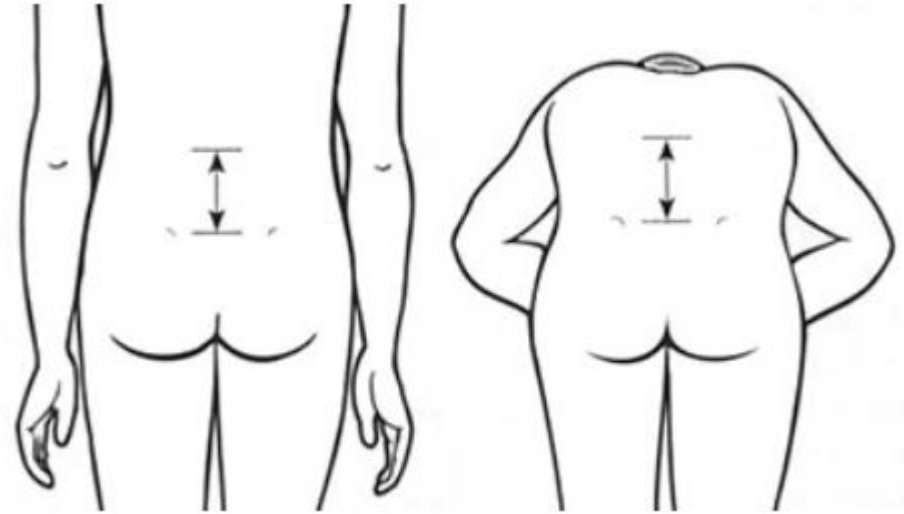
Schober Test

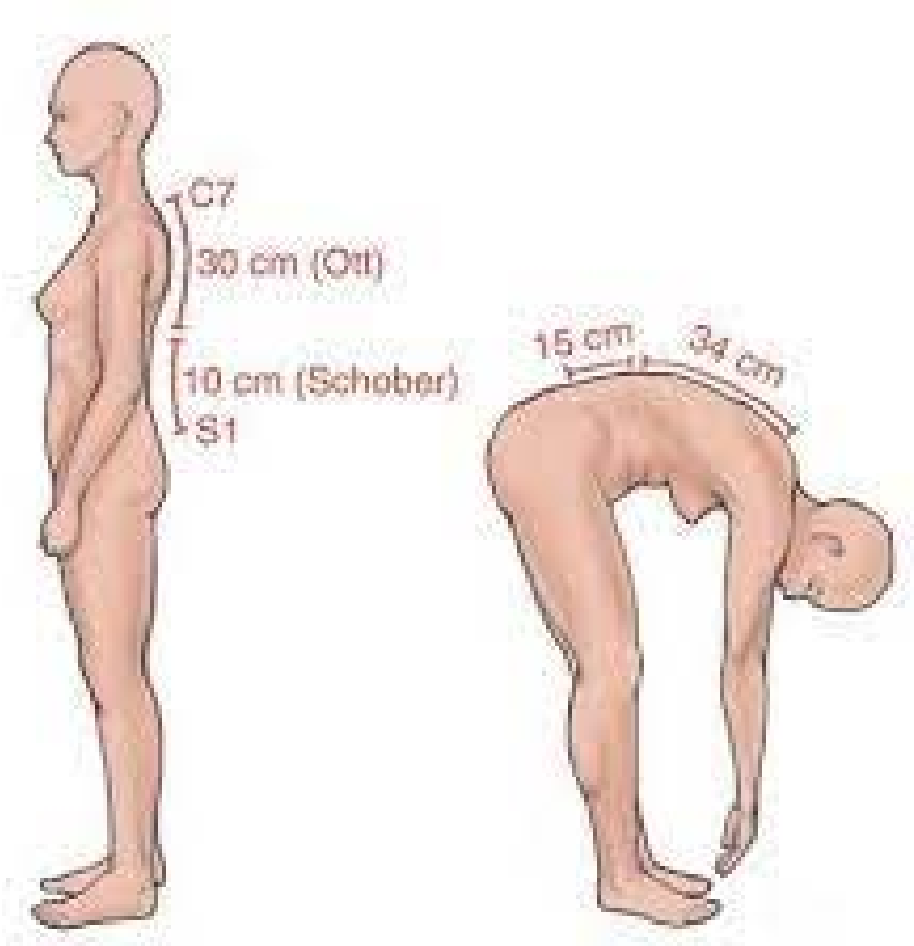
Schober's test is classically used to determine if there is a decrease in lumbar spine range of motion (flexion).



Technique

- Patient is standing, examiner marks the L5 spinous process by drawing a horizontal line across the patients back.
- A second line is marked 10 cm above the first line.
- Patient is then instructed to flex forward as if attempting to touch his/her toes, examiner remeasures distance between two lines with patient fully flexed.
- The difference between the measurements in erect and flexion positions indicates the outcome of the lumbar flexion

FINGER TIPS TO FLOOR TEST



BALANCE ASSESSMENT

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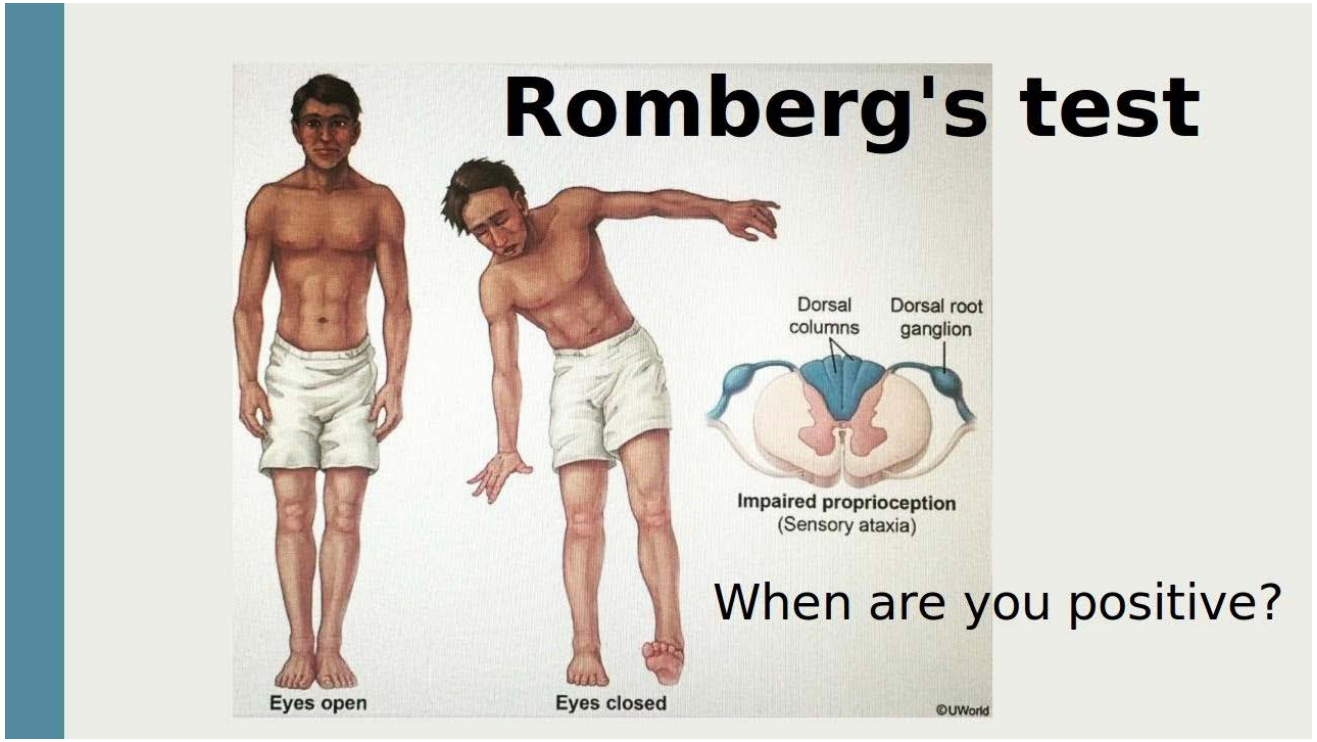
Romberg Test

The Romberg test is used for the clinical assessment of patients with disequilibrium or ataxia from sensory and motor disorders.



Technique

- The patient is asked to remove his shoes and stand with his two feet together. The arms are held next to the body or crossed in front of the body.
- The clinician asks the patient to first stand quietly with eyes open, and subsequently with eyes closed. The patient tries to maintain his balance. For safety, it is essential that the observer stand close to the patient to prevent potential injury if the patient were to fall. When the patients closes his eyes, he should not orient himself by light, sense or sound, as this could influence the test result and cause a false positive outcome.
- The Romberg test is scored by counting the seconds the patient is able to stand with eyes closed.

To make the Romberg test more difficult, the clinician can attempt to disturb the patient's balance with a perturbation. It is important that the clinician does not exaggerate the perturbation.

The Romberg test is positive when the patient is unable to maintain balance with their eyes closed. Losing balance can be defined as increased body sway, placing one foot in the direction of the fall, or even falling.

The Sharpened or Tandem Romberg test

The Sharpened or Tandem Romberg test is a variation of the original test.

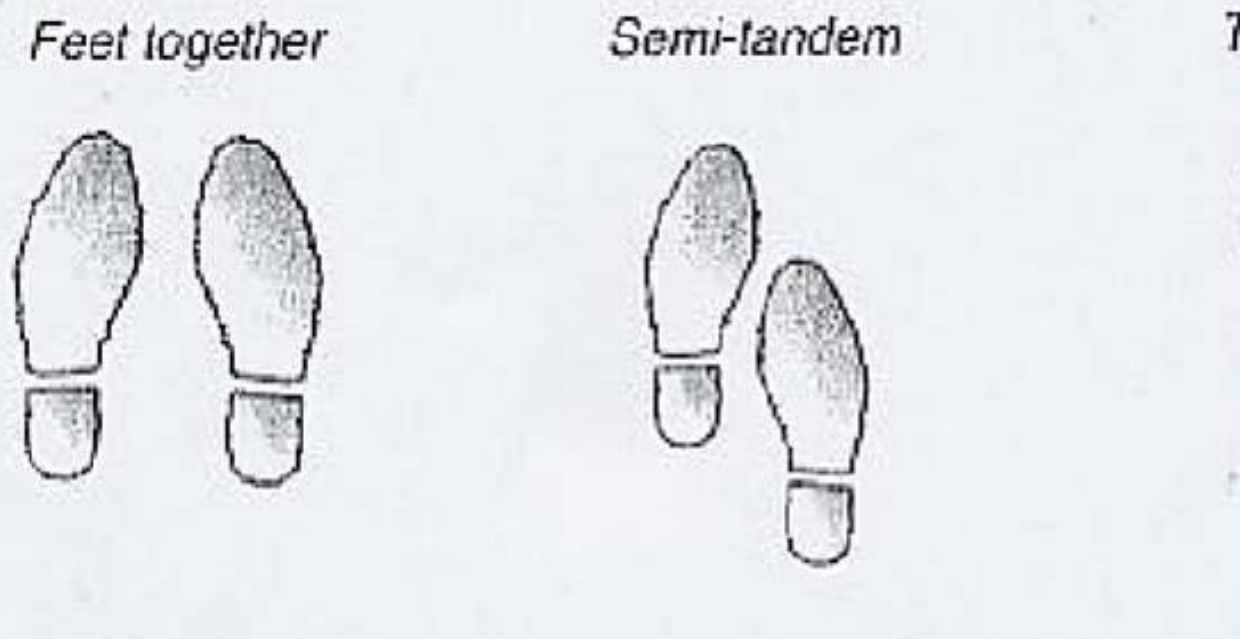
The implementation is mostly the same.

For this second test, the patient has to place his feet in heel-to-toe position, with one foot directly in front of the other.

As with the original Romberg test, the assessment is performed first with eyes open and then with eyes closed.

The patient crosses his arms over his chest, and the open palm of the hand lies on the opposite shoulder.

The patient also distributes his weight over both his feet and holds his chin parallel with the floor



. Balance (Sharpened Romberg test). Patient stands with feet together, semi-tandem, and tandem, with eyes open for 10 seconds then closed for 10 seconds in each position.

GAIT ASSESSMENT

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Timed “Up and Go”

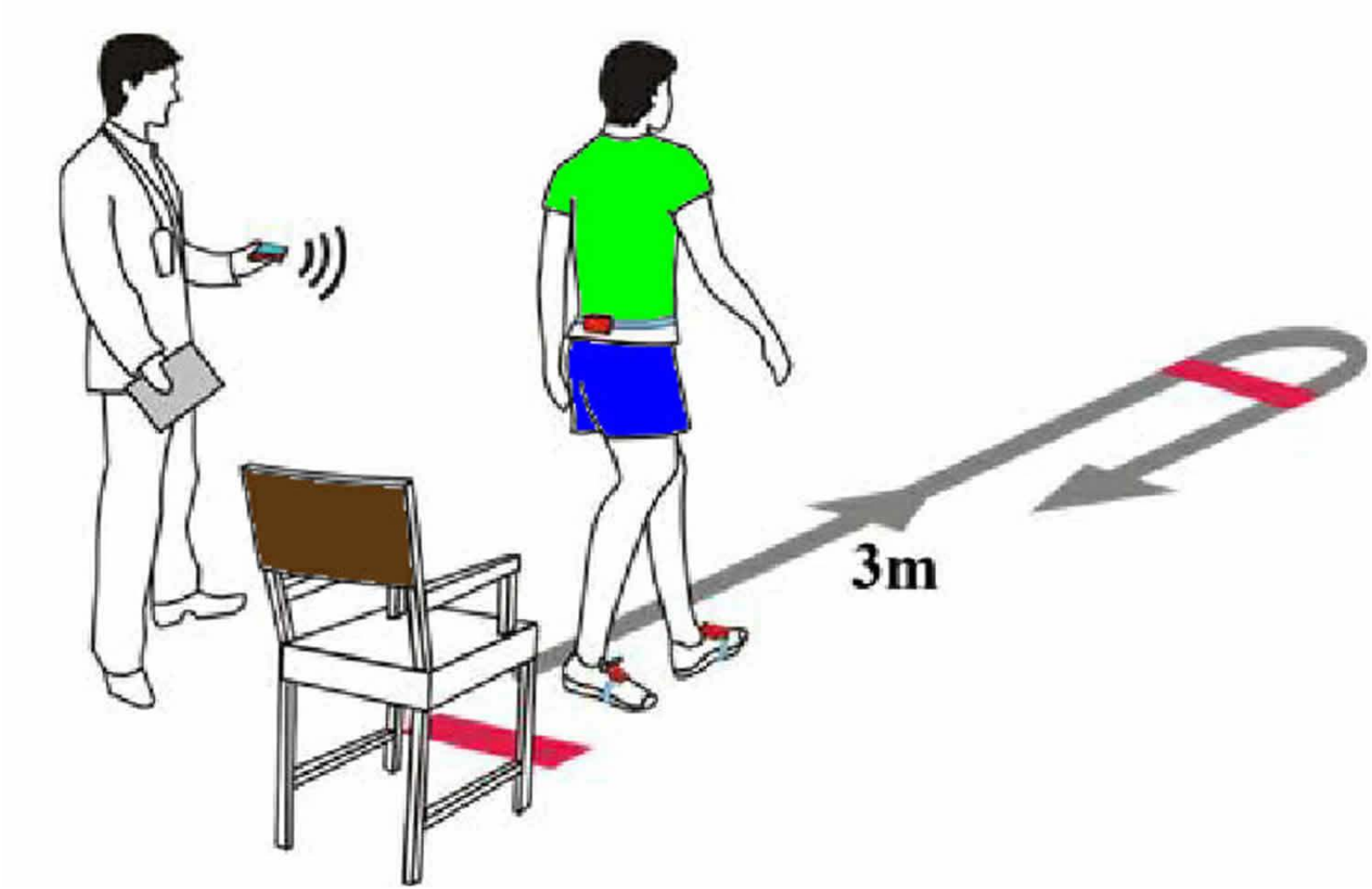
- The timed “Up and Go” test measures, in seconds, the time taken by an individual to stand up from a standard arm chair (approximate seat height of 46 cm, arm height 65 cm), walk a distance of 3 meters, turn, walk back to the chair, and sit down.

- No physical assistance is given

- They are instructed that, on the word “go” they are to get up and walk at a comfortable and safe pace to a line on the floor 3 meters away, turn, return to the chair and sit down again. The subject walks through the test once before being timed in order to become familiar with the test.

Instructions to the patient:

"When I say 'go' I want you to stand up and walk to the line, turn and then walk back to the chair and sit down again. Walk at your normal pace."



Berg Balance Scale

Description:
14-item scale designed to measure balance of the older adult in a clinical setting.

Completion:
Time: 15-20 minutes

Scoring: A five-point ordinal scale, ranging from 0-4. “0” indicates the lowest level of function and “4” the highest level of function.

Interpretation: 41-56 = low fall risk
21-40 = medium fall risk
0 –20 = high fall risk
< 36 fall risk close to 100%

Berg Balance Scale

Name: _____ Date: _____

Location: _____ Rater: _____

ITEM DESCRIPTION SCORE (0-4)

1. Sitting to standing _____
2. Standing unsupported _____
3. Sitting unsupported _____
4. Standing to sitting _____
5. Transfers _____
6. Standing with eyes closed _____
7. Standing with feet together _____
8. Reaching forward with outstretched arm _____
9. Retrieving object from floor _____
10. Turning to look behind _____
11. Turning 360 degrees _____
12. Placing alternate foot on stool _____
13. Standing with one foot in front _____
14. Standing on one foot _____

Total _____

Berg Balance Scale

1. SITTING TO STANDING

INSTRUCTIONS: Please stand up. Try not to use your hand for support.

( ) 4 able to stand without using hands and stabilize independently

( ) 3 able to stand independently using hands

( ) 2 able to stand using hands after several tries

( ) 1 needs minimal aid to stand or stabilize

( ) 0 needs moderate or maximal assist to stand

2. STANDING UNSUPPORTED

INSTRUCTIONS: Please stand for two minutes without holding on.

( ) 4 able to stand safely for 2 minutes

( ) 3 able to stand 2 minutes with supervision

( ) 2 able to stand 30 seconds unsupported

( ) 1 needs several tries to stand 30 seconds unsupported

( ) 0 unable to stand 30 seconds unsupported

If a subject is able to stand 2 minutes unsupported, score full points for sitting unsupported. Proceed to item #4.

3.SITTING WITH BACK UNSUPPORTED BUT FEET SUPPORTED ON FLOOR OR ON A STOOL

INSTRUCTIONS: Please sit with arms folded for 2 minutes.

( ) 4 able to sit safely and securely for 2 minutes

( ) 3 able to sit 2 minutes under supervision

( ) 2 able to able to sit 30 seconds

( ) 1 able to sit 10 seconds

( ) 0 unable to sit without support 10 seconds

4. STANDING TO SITTING

INSTRUCTIONS: Please sit down.

( ) 4 sits safely with minimal use of hands

( ) 3 controls descent by using hands

( ) 2 uses back of legs against chair to control descent

( ) 1 sits independently but has uncontrolled descent

( ) 0 needs assist to sit

5. TRANSFERS

INSTRUCTIONS: Arrange chair(s) for pivot transfer. Ask subject to transfer one way toward a seat with armrests and one way toward a seat without armrests. You may use two chairs (one with and one without armrests) or a bed and a chair.

( ) 4 able to transfer safely with minor use of hands
( ) 3 able to transfer safely definite need of hands
( ) 2 able to transfer with verbal cuing and/or supervision
( ) 1 needs one person to assist
( ) 0 needs two people to assist or supervise to be safe

6. STANDING UNSUPPORTED WITH EYES CLOSED

INSTRUCTIONS: Please close your eyes and stand still for 10 seconds.

( ) 4 able to stand 10 seconds safely
( ) 3 able to stand 10 seconds with supervision
( ) 2 able to stand 3 seconds
( ) 1 unable to keep eyes closed 3 seconds but stays safely
( ) 0 needs help to keep from falling

7.STANDING UNSUPPORTED WITH FEET TOGETHER

INSTRUCTIONS: Place your feet together and stand without holding on.

( ) 4 able to place feet together independently and stand 1 minute safely

( ) 3 able to place feet together independently and stand 1 minute with supervision

( ) 2 able to place feet together independently but unable to hold for 30 seconds

( ) 1 needs help to attain position but able to stand 15 seconds feet together

( ) 0 needs help to attain position and unable to hold for 15 seconds

8. REACHING FORWARD WITH OUTSTRETCHED ARM WHILE STANDING

INSTRUCTIONS: Lift arm to 90 degrees. Stretch out your fingers and reach forward as far as you can. (Examiner
places a ruler at the end of fingertips when arm is at 90 degrees. Fingers should not touch the ruler while reaching
forward. The recorded measure is the distance forward that the fingers reach while the subject is in the most forward
lean position. When possible, ask subject to use both arms when reaching to avoid rotation of the trunk.)

( ) 4 can reach forward confidently 25 cm (10 inches)

( ) 3 can reach forward 12 cm (5 inches)

( ) 2 can reach forward 5 cm (2 inches)

( ) 1 reaches forward but needs supervision

( ) 0 loses balance while trying/requires external suppor

9.PICK UP OBJECT FROM THE FLOOR FROM A STANDING POSITION

INSTRUCTIONS: Pick up the shoe/slipper, which is place in front of your feet.

( ) 4 able to pick up slipper safely and easily

( ) 3 able to pick up slipper but needs supervision

( ) 2 unable to pick up but reaches 2-5 cm(1-2 inches) from slipper and keeps balance independently

( ) 1 unable to pick up and needs supervision while trying

( ) 0 unable to try/needs assist to keep from losing balance or falling

10. TURNING TO LOOK BEHIND OVER LEFT AND RIGHT SHOULDERS WHILE STANDING

INSTRUCTIONS: Turn to look directly behind you over toward the left shoulder. Repeat to the right. Examiner may pick an object to look at directly behind the subject to encourage a better twist turn.

( ) 4 looks behind from both sides and weight shifts well

( ) 3 looks behind one side only other side shows less weight shift

( ) 2 turns sideways only but maintains balance

( ) 1 needs supervision when turning

( ) 0 needs assist to keep from losing balance or falling

11.TURN 360 DEGREES

INSTRUCTIONS: Turn completely around in a full circle. Pause. Then turn a full circle in the other direction.

( ) 4 able to turn 360 degrees safely in 4 seconds or less

( ) 3 able to turn 360 degrees safely one side only 4 seconds or less

( ) 2 able to turn 360 degrees safely but slowly

( ) 1 needs close supervision or verbal cuing

( ) 0 needs assistance while turning

12. PLACE ALTERNATE FOOT ON STEP OR STOOL WHILE STANDING UNSUPPORTED

INSTRUCTIONS: Place each foot alternately on the step/stool. Continue until each foot has touch the step/stool four

times.

( ) 4 able to stand independently and safely and complete 8 steps in 20 seconds

( ) 3 able to stand independently and complete 8 steps in > 20 seconds

( ) 2 able to complete 4 steps without aid with supervision

( ) 1 able to complete > 2 steps needs minimal assist

( ) 0 needs assistance to keep from falling/unable to try

13. STANDING UNSUPPORTED ONE FOOT IN FRONT

INSTRUCTIONS: (DEMONSTRATE TO SUBJECT) Place one foot directly in front of the other. If you feel that you cannot place your foot directly in front, try to step far enough ahead that the heel of your forward foot is ahead of the toes of the other foot. (To score 3 points, the length of the step should exceed the length of the other foot and the width of the stance should approximate the subject's normal stride width.)

( ) 4 able to place foot tandem independently and hold 30 seconds
( ) 3 able to foot ahead independently and hold 30 seconds
( ) 2 able to take small step independently and hold 30 seconds
( ) 1 needs help to step but can hold 15 seconds
( ) 0 loses balance while stepping or standing

14. STANDING ON ONE LEG

INSTRUCTIONS: Stand on one leg as long as you can without holding on.

( ) 4 able to lift leg independently and hold > 10 seconds
( ) 3 able to lift leg independently and hold 5-10 seconds
( ) 2 able to lift leg independently and hold ≥ 3 seconds
( ) 1 tries to lift leg unable to hold 3 seconds but remains standing independently.
( ) 0 unable to try of needs assist to prevent fall

TOTAL SCORE (Maximum = 56)

Tinetti Performance Oriented Mobility Assessment
Balance Tests

Initial instructions:
Subject is seated in hard, armless chair. The following maneuvers are tested.

1.	**Sitting Balance**	Leans or slides in chair	=0	
		Steady, safe	=1	_____
2.	**Arises**	Unable without help	=0	
		Able, uses arms to help	=1	
		Able without using arms	=2	_____
3.	**Attempts to Arise**	Unable without help	=0	
		Able, requires > 1 attempt	=1	
		Able to rise, 1 attempt	=2	_____
4.	**Immediate Standing Balance** (first 5 seconds)			
		Unsteady (swaggers, moves feet, trunk sway)	=0	
		Steady but uses walker or other support	=1	
		Steady without walker or other support	=2	_____
5.	**Standing Balance**			
		Unsteady	=0	
		Steady but wide stance(medial heals > 4 inches apart) and uses cane or other support	=1	
		Narrow stance without support	=2	_____

6. **Nudged** (subject at maximum position with feet as close together as possible, examiner pushes lightly on subject's sternum with palm of hand 3 times)

Begins to fall	=0	
Staggers, grabs, catches self	=1	
Steady	=2	_____

7. **Eyes Closed** (at maximum position of item 6)

Unsteady	=0	
Steady	=1	_____

8. **Turing 360 Degrees**

Discontinuous steps	=0	
Continuous steps	=1	_____
Unsteady (grabs, staggers)	=0	
Steady	=1	_____

9. **Sitting Down**

Unsafe (misjudged distance, falls into chair)	=0	
Uses arms or not a smooth motion	=1	
Safe, smooth motion	=2	_____

BALANCE SCORE: _____/16

6-Minute Walk Test

Description: The 6-Minute Walk test is a measure of endurance.

Instructions: Monitor vital signs before and after each test if indicated. Assure patient safety throughout the test. Give the same verbal instructions each time. "When I say 'go', I want you to walk around this [track]. Keep walking until I say 'stop' or until you are too tired to go any further. If you need to rest, you can stop until you feel ready to go again. I am interested in measuring how far you can walk. You can begin when I say 'go'." Time the subject for 6 minutes, then say 'stop'. Measure the distance walked.

6-Minute Walk Test Distances: Means and Standard Deviations by Age and Gender (Meters)

Age	Gender (N)	Mean	SD	Normal Range (2SD)
60-69	Male (15)	572	92	388-756
	Female (22)	538	92	354-722
70-79	Male (14)	527	85	357-697
	Female (22)	471	75	321-621
80-89	Male (8)	417	73	271-563
	Female (15)	392	85	222-562

Steffen, T.M. (2000) Functional assessment: A literature review of four tools. Focus: Geriatric Physical Therapy: An Independent Home Study Course for Individual Continuing Education.

GAIT SPEED (cadence)

Very slow – 24m/min

Slow – 30m/min

Moderate – 60m/min

Rapid – 114m/min

PAIN ASSESSMENT

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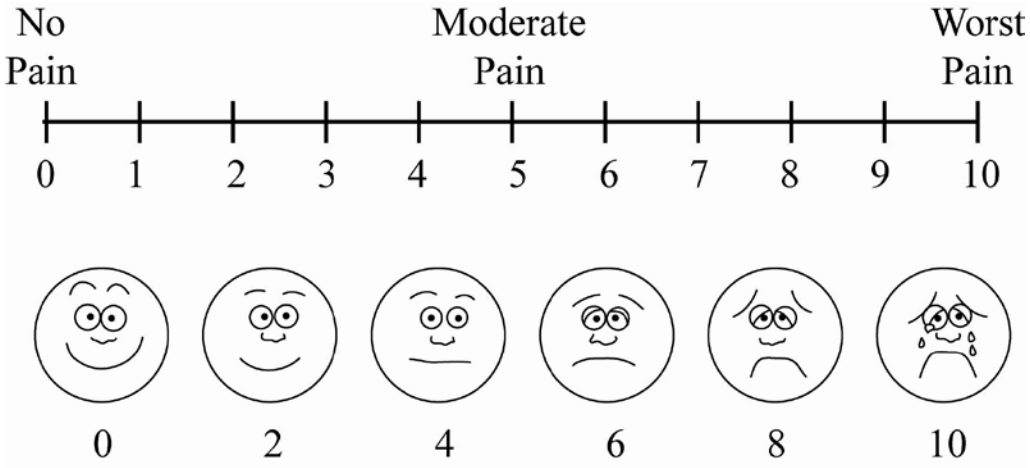
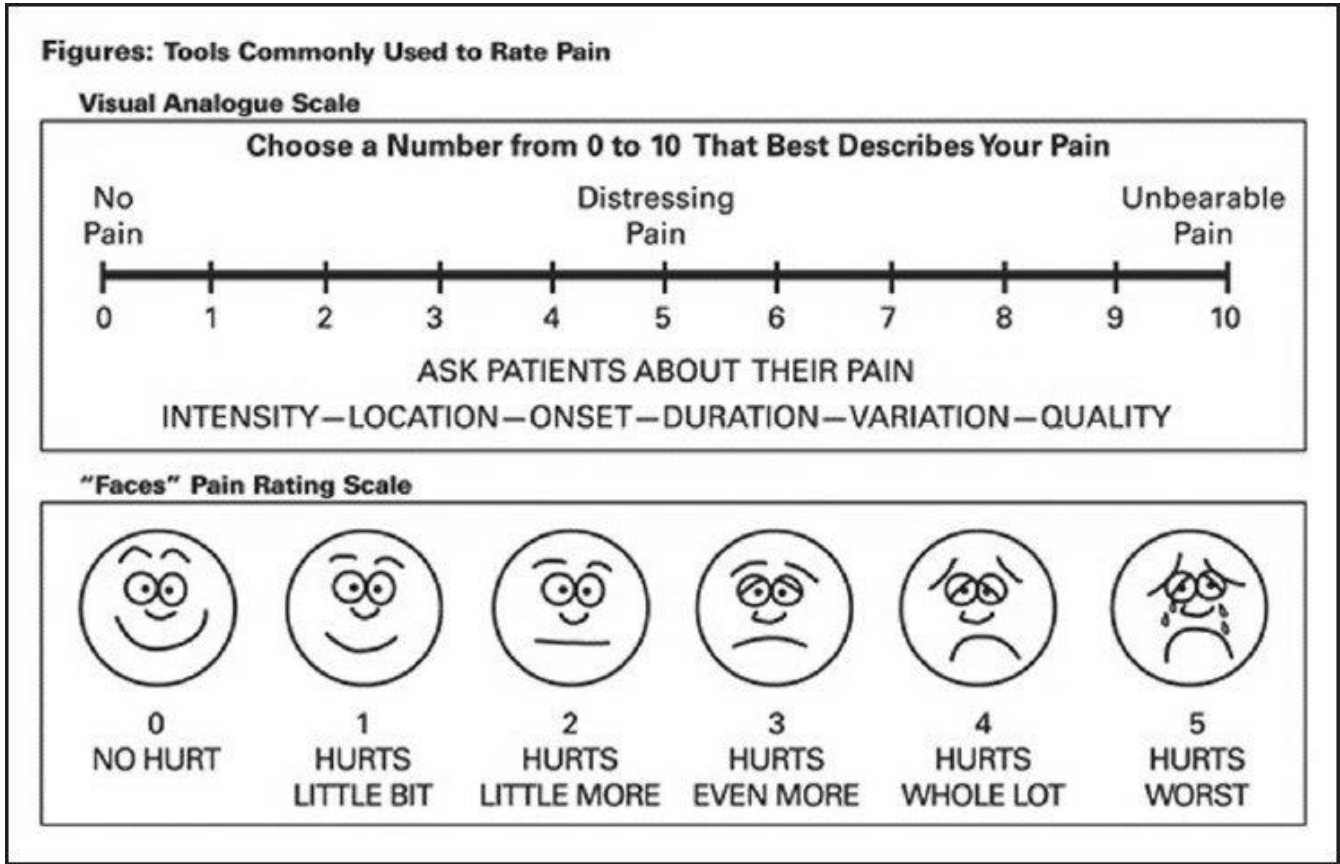
PAIN Evaluation





NEUROLOGICAL AND CARDIOLOGICAL WARNING SIGNS

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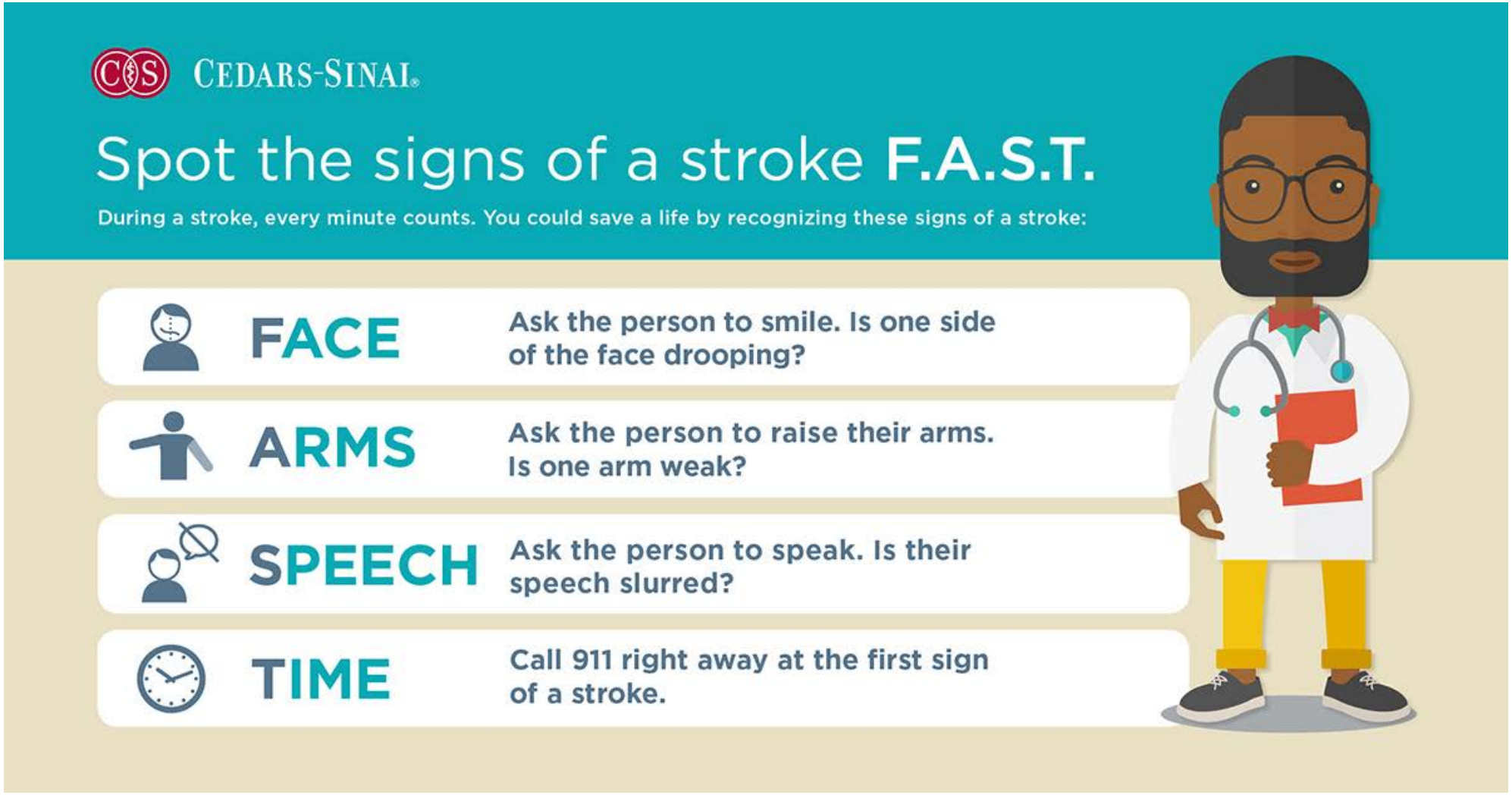
STROKE SIGNS



B E F A S T

Balance

Does the person have a sudden loss of balance?

Eyes

Has the person lost vision in one or both eyes?

Face

Does the person's face look uneven?

Arms

Is one arm weak or numb?

Speech

Is the person's speech slurred? Does the person have trouble speaking or seem confused?

Time

Call 9-1-1 now!

Other Stroke Symptoms

Watch for Sudden:

NUMBNESS or weakness of face, arm, or leg, especially on one side of the body

CONFUSION, trouble speaking or understanding speech

TROUBLE SEEING in one or both eyes

TROUBLE WALKING, dizziness, loss of balance or coordination

SEVERE HEADACHE with no known cause

HYPERTENSION SIGNS

If your blood pressure is extremely high, there may be certain symptoms to look out for, including:

Severe headaches.

Nosebleed.

Fatigue or confusion.

Vision problems.

Chest pain.

Difficulty breathing.

Irregular heartbeat.

Blood in the urine.

SYMPTOMS OF LOW BLOOD PRESSURE

lightheadedness or dizziness.

feeling sick.

blurred vision.

generally feeling weak.

confusion.

fainting.

SYMPTOMS OF A LOW BLOOD SUGAR LEVEL

sweating.

feeling tired.

dizziness.

feeling hungry.

tingling lips.

feeling shaky or trembling.

a fast or pounding heartbeat (palpitations)

becoming easily irritated, tearful, anxious or moody.

tremble

Thank you !

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