

# POSTette: Vital Signs: Therapy Considerations

Vital signs are defined as the “objective measurement of temperature, pulse, respirations, and blood pressure as a means of assessing general health and cardiorespiratory function. Additionally, we need to measure Pain (5th Vital Sign) and Gait Speed (6th Vital Sign). **Vital signs are critical indicators of patient status both at rest and during exercise.**

**Body Temperature:** One of the vital signs that tell us the amount of heat in the body. Temperature is measured using thermometer.

- Oral temperature: The average range of oral temperature is 97.6 to 99.6 degrees Fahrenheit.
- Axillary temperature: The normal range for an axillary temperature is 96.6 to 98.6 Fahrenheit.
- Normal Temperature for Elderly: 97.8 to 99 degrees Fahrenheit

**Pulse:** The pulse tells us how fast the heart is beating. Common sites for taking pulse are the radial artery, located on the thumb side of the wrist and the carotid artery, located on either side of the neck.

- Never use your thumb to take a pulse. Your thumb has a pulse of its own making it difficult to get an accurate reading.
- Normal Heart Rate for Elderly: 60 to 100 beats per minute
- Two important qualities of pulse: The force and rhythm.
  - Force – Can be absent pulse, thready, weak, normal, bounding.
  - Rhythm – Normal, Irregular
- Apical pulse – The apical pulse measures the actual beating of the heart.

**Respiration:** The act of breathing. Measuring respiration is one way how the respiratory system is working.

- Breathing in and out: Counts as one respiration.
- Normal Respiration: Normal respiration has a regular pattern. The breath is even, quiet and effortless.
- Normal Respiratory Rate for Elderly: 12 to 18 breaths per minute
- BORG Dyspnea Scale can also be used to determine perceived shortness of breath.

Use this scale to rate the difficulty of your breathing.

It starts at number 0 where your breathing is causing you no difficulty at all and progresses through to number 10 where your breathing difficulty is maximal.

How much difficulty is your breathing causing you right now?

0	Nothing at all
0.5	Very, very slight (just noticeable)
1	Very slight
2	Slight
3	Moderate
4	Somewhat severe
5	Severe
6	
7	Very severe
8	
9	Very, very severe (almost maximal)
10	Maximal

**Blood Pressure:** Blood pressure is the force that blood exerts against the walls of the blood vessels. The heart pumping blood into the arteries causes this force.

- **Systolic:** When the heart contracts, the resulting pressure against the arteries is called the systolic pressure. It is the higher number in a blood pressure reading (140/80).
- **Diastolic:** When the heart is resting and filling with blood, there is less pressure against the arteries. This pressure is known as diastolic pressure and is a lower number of a blood pressure reading (140/80).
- Normal blood pressure readings:
  - Systolic: 100 – 140 mmHg
  - Diastolic: 70 – 90 mmHg
- Normal Blood Pressure for Elderly: 120/80 mmHg or below (Pre-hypertension: 121 to 139 mmHg)

## EFFECTS OF MEDICINES ON VITAL SIGNS

- Medicines that are used to treat health problems in older people can affect the vital signs. For example, the medicine digoxin used for heart failure and blood pressure medicines called beta-blockers may cause the pulse to slow.
- Diuretics (water pills) can cause low blood pressure, most often when changing body position too quickly.

**Pain: “5<sup>th</sup>”vital sign:** Pain assessment using a numeric rating scale from 0–10 has gained popularity as an important screening tool in a variety of healthcare settings, and has been widely referred to as the “fifth vital sign”.

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- Between 25–50% of community-dwelling seniors and 45–80% of long-term care residents report that they commonly experience significant, undertreated, and often disabling daily pain. (Mobily PR, Herr KA, Clark K, Wallace RB. An epidemiologic analysis of pain in the elderly. J Aging Health. 1994; 6:139–55.)
- Assess for pain during evaluation and intervention (if pain indicated be prepared to address it in the POC and treatment).
- Identify medical diagnoses related to the pain: underlying diagnoses causing pain (for example; osteoarthritis, cellulitis, diabetic peripheral neuropathy, etc.)
- Rate pain using various scales including non-verbal and cognitively impaired patients. (Use the same scale when comparing data throughout treatment.)
  - The Numeric Rating Scale (NRS) is a tool to rate the intensity of pain on a scale from 0-10. The Verbal Numeric Rating Scale may have a limited role for communication or cognitively impaired patients. NRS can be more effective when combined with repeated assessments to determine the efficacy of pain interventions.

### 0-10 Numeric Pain Intensity Scale\*



- Faces Pain Scale - Many geriatric patients who are cognitively impaired can't understand or relate to the popular zero-to-10 numerical pain rating scale. The Faces Pain Scale usually has six faces ranging in expression from smiling to crying, and they carry numbers from 0 to 5 which would be assigned to a pain level (Kim, Buschmann, 2006).



**Gait Speed: “6<sup>th</sup>” vital sign:** Gait speed assesses an individual's functional mobility. Gait speed is used as a predictor of decline in functional mobility.

- 10 meter walk test  
<https://geriatrictoolkit.missouri.edu/gaitspeed/10mWalkTest.pdf>

### Take Vitals During Therapy Sessions:

- Take vitals before the activity/exercise (to establish a baseline),
- 6 to 8 minutes into the activity/ exercise and,
- 5 minutes after the activity/exercise (recovery).

### **Medical Condition Changes detected by Vital Signs:**

**Sepsis Early Warning Signs:** Report any of these findings to the nurse and DOR immediately:

- Temperature higher than 100.4° F or lower than 96.8° F
- Heart rate greater than 90 beats per minute
- Respirations greater than 20 breaths per minute

### Using Vital Signs to determine Exercise Termination

- Significant blood pressure changes
  - BP>200/110
  - Lightheadedness; BP drops >20 mmHg
  - No more than an increase of 20mm Hg with activity.
- Oxygen Saturation <90%
- Severe Shortness of breath
- Noticeable change in heart rhythm

### Respiratory Rehab Considerations

- A resting HR > 100 bpm is a relative indicator of patient instability.
- If lower than 90%, there is an inadequate oxygen supply, and less than 70% is life threatening.
- Normal resting respiratory rate is 12-20 breaths per minute. “Normal” respiratory rate for an individual with pulmonary disease may fall outside these parameters. It is important to establish what is “normal” for each patient. Respiratory rate needs to be monitored before, during, and after exercise.

### **Helpful Sources for Measuring Vital Signs**

- **Training video on Blood pressure**  
<https://www.youtube.com/watch?v=UGOoegSoWS>
- **Training video on all vital signs:**  
<https://www.youtube.com/watch?v=JpGuSxDQ8jS>
- **LMS Video available on Vital Signs:** How to Measure Vital Signs REL-PAC-0-HMVS 1 hour

### **Additional Resources:**

- **Pain POSTette**
- **Clinical Complex POSTette**
- **Sepsis POSTette**

*POSTettes: PT, OT, SLP Therapy Educational Tips, Tricks and Examples Summarized  
 Please always refer to company policies and procedures as source documents*

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## Physiologic Response to Exercise

Parameter	Normal Resting Value (Adult)	Expected Response With Exercise	Abnormal Response With Exercise	*Stopping Point (Safety)
Heart Rate	60 - 100	Gradual Increase commensurate with workload	<ul style="list-style-type: none"> <li>Increases too rapidly for workload</li> <li>Increases too high (may be dysrhythmia)</li> <li>Fails to rise with increase in workload</li> <li>Drops with consistent workload</li> </ul>	No specific number, may wish to calculate patient's estimated max HR and stop at pre-determined point. Percent of max HR varies for individual's conditions and fitness level. May be best to use RPE scale in those with autonomic pathologies or beta blockers
BP - Systolic	90 - 120	Gradual increase commensurate with workload (Guideline +20 mm for mild exercise; +40 to 50 mm for intensive exer.)	<ul style="list-style-type: none"> <li>Increases too rapidly for workload</li> <li>Increases too high</li> <li>Drops or fails to increase with increase in workload</li> </ul>	>200 mmhg (or set higher with physician input or your comfort level)
BP - Diastolic	70 – 90 mmhg	Increase or decrease 10 mmhg from resting level	<ul style="list-style-type: none"> <li>Increases &gt;10mmhg from resting level</li> <li>Decreases &gt;10mmhg in non-athlete (highly trained may drop 15mmhg)</li> </ul>	>100 mmhg (Or, higher based on your comfort level; <b>absolutely not greater than 115</b> ) – refer to MD  Stop if pulse pressure narrows to less than 20mm (SBP – DBP)
Respiratory Rate	12 – 20	Increases with mild to moderate intensity aerobic exercise, then plateaus as exercise intensity continues to increase	If monitoring SaO <sub>2</sub> , not <95% OR not <88% in those with COPD	Respiratory Distress. Abnormally high response may indicate coronary artery disease <ul style="list-style-type: none"> <li>Declines indicate heart failure, lung disease 86 – 89%: consider adding supplemental O<sub>2</sub> and may be an indication to stop exercise (consult nurse/DOR/MD)</li> <li>SPO<sub>2</sub> <b>less than or equal to 85%:</b> Add or increase supplemental O<sub>2</sub>; <b>contraindication for continuing exercise/activity;</b> refer to MD if remains &lt;90%</li> </ul>
O <sub>2</sub> Saturation	More than or equal to 90%	More than or equal to 90%		

\*Stopping points are general; may be modified by therapist or in discussion with physician/nurse in specific patients.

**Source:**

- Avers, D. (2016). Aerobic exercise for older adults. Annual Review of Gerontology & Geriatrics, 36(1), 123-154.
- ACSM guidelines for exercise testing and prescription (9<sup>th</sup> ed).