



# Observation Skill Development

## Sit to Stand

### Instructions

View the video **Sit to Stand: Observation of Normal Movement**. Try the movement yourself several times and observe the movement in several classmates. Note your observations below - remember to think kinematics of movement with attention to specific degrees of motion, and the typical muscle activity you would expect to see.

View the video **Early Gait Training: Difficulties with Sit to Stand and Stand to Sit**. Take note of his kinematics during the sit to stand transition. Compare this to the typical individual. You will need to start and stop the video several times in order to complete the chart in sufficient detail.

### Watch

Watch the following videos:

- **Sit to Stand: Observation of Normal Movement**
- **Early Gait Training: Difficulties with Sit to Stand and Stand to Sit**

# Observation Skill Development: Sit to Stand

## 1. Observation of typical sit to stand in the video: Sit to Stand: Observation of Normal Movement

<b>Alignment Symmetry Muscle recruitment</b>	<b>Prepares to stand</b> <i>Mostly isometric muscle activity to hold position</i>	<b>Leans upper body forward</b>	<b>Lifts buttocks</b>	<b>Assumes upright posture</b>
Ankle/foot	<i>Feet should be slightly posterior to knees, activation of tib anterior Foot flat and not inverted or exerted</i>	<i>Activation of tib anterior to promote dorsiflexion to ~10 degrees Feet should be neutral inversion/exersion</i>	<i>Activation of tib ant to promote ankle df Co-activation of soleus to prevent excess ankle df Ankles should be at ~20 degrees of dorsiflexion Feet should be flat, no inversion or eversion</i>	<i>Tibia begins to move backward relative to foot Ankle moves into relative plantarflexion and stops at 0 degrees of dorsiflexion Tib anterior and gastroc/soleus co-contrast to prevent excessive plantarflexion while allowing dorsiflexion Foot should be flat on ground</i>
Knee	<i>Knees should be flexed to at least 90 degrees</i>	<i>Momentum at trunk is counteracted by stabilization of knee extensors to prevent excess knee flexion</i>	<i>Active knee extension to prevent excessive knee flexion, quadriceps at maximal contraction here</i>	<i>Knees continue to move into extension using quadriceps but with less force than previous stage</i>
Hip	<i>Hips should be level with no obliquity, pelvis should not be rotated to either side, begins in neutral to slight anterior pelvic tilt</i>	<i>Pelvis should move into anterior pelvic tilt to initiate forward lean, pelvis remains level with no rotation, hips flex ~ 90-100 degrees</i>	<i>Hips continue to flex to approximately 125 degrees in most individuals- this is highly dependent on chair height. Back extensors and hip extensors need to fire to prevent trunk from falling forward.</i>	<i>Hips gradually assume more extended position via contraction of glut maximus Pelvis moves into more neutral position, pelvis should remain level and not rotated</i>
Trunk	<i>Looking for trunk to be in midline, no lateral side bending or rotation</i>	<i>Trunk momentum is used to initiate stand, must counterbalance forward flexion with back extensor muscle activity to prevent rounding of back</i>	<i>Trunk momentum needs to be controlled as hips maximally flex to prevent falling into gravity</i>	<i>Trunk extensors work with hip extensors to assume upright position with trunk in midline, arms should not need to be used for stability</i>

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Head/neck	<i>Head should be in neutral extension and flexion, midline position with no rotation or side bending</i>	<i>Neck may flex to assist with momentum</i>	<i>Neck extensors activate to prevent excessive neck flexion and keep eyes horizontal during movement</i>	<i>Head and neck should gradually move into neutral position with alignment over shoulder</i>
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# Observation Skill Development: Sit to Stand

## 2. Observation of sit to stand in the video: Early Gait Training: Difficulties with Sit to Stand and Stand to Sit

<b>Alignment Symmetry Muscle recruitment</b>	<b>Prepares to stand</b> (freeze frame at 00:09)	<b>Leans upper body forward</b> (freeze frame at 00:12)	<b>Lifts buttocks</b> (freeze frame at 00:13)	<b>Assumes upright posture</b> (freeze frame at 00:16)
Ankle/foot	<i>L foot too far forward, in plantarflexion</i>	<i>No forward tibial translation Ankle lacks dorsiflexion</i>	<i>Foot is flat but ankle lacks dorsiflexion</i>	<i>Difficult to see in video but appears flat and at neutral dorsiflexion</i>
Knee	<i>L knee not flexed enough to promote quad activation</i>	<i>Inadequate L knee flexion,</i>	<i>Moving into L knee extension too early, decreased L knee active extension</i>	<i>Decreased knee control-required blocking from therapist, slight knee flexion, decreased L knee active extension</i>
Hip	<i>Posterior pelvic tilt, L hip slightly externally rotated, hips also too far back in the chair for effective movement transition</i>	<i>L hip flexes but not enough, still in posterior pelvic tilt, early hip rise due to pulling on bar</i>	<i>Neutral pelvic tilt, L hip appears more externally rotated and hip is abducted, decreased active L hip and knee extension</i>	<i>Slight hip flexion on L, increased L hip external rotation, decreased L hip control</i>
Trunk	<i>Appears to be in midline, rounded shoulders, decreased trunk muscle recruitment</i>	<i>Rounded shoulders, begins to lean to R and rotates to R, loses midline</i>	<i>L trunk is elongated and rotated to R, spine is straight and not falling into gravity, does not need support from therapist</i>	<i>Difficult to tell from side view but able to hold shoulders and head without assist, close to midline</i>
Head/neck	<i>Forward head but midline position is good, overuse of short neck extensors</i>	<i>Forward head but good midline position and good control of head and neck</i>	<i>Forward head and rotated and laterally flexed to R side</i>	<i>Overuses neck extension when asked to stand up tall but strength appears good</i>
Left Upper Extremity	<i>Unsupported at middle of body</i>	<i>Hanging unsupported and pulling upper body into rotation to R</i>	<i>Hanging unsupported and pulling upper body into rotation to R</i>	<i>Downward pulling on shoulder, poor muscle activation, at risk for shoulder subluxation</i>

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3. What are your observations on patient/therapist relationship/therapeutic alliance?  
*Comment on verbal cues, body language, and confirmation of patient understanding of the task.*

*Does not confirm that patient truly understands the task.  
Verbal cues are confusing and not specific enough- allow increased time for processing.  
Body language is rushed- does not get close enough to patient at times. When therapist steps in with corrections therapist is defensive, does not ask clarifying questions and seems to want to get it over with as soon as possible.  
Therapist could have checked in with the patient- ask how he felt the sit to stand went to facilitate self-reflection. Also, could have made the activity more salient and rewarding.  
Overall the therapist does not promote independence- she steps in too quickly to move the patient rather than asking him to do it himself- which he does several times during the video.*

4. What could the therapist have done differently to promote better alignment and symmetry before the patient moved from sit to stand?

*The patient needs to scoot forward in his chair- this is a great opportunity for functional strengthening!  
Give the patient time to 'fix' his feet, position both feet slightly behind knees to improve force production.  
Provide tactile input to left leg-verbally cue the patient that you want him to use both legs.  
Promote midline posture and symmetry of the trunk prior to standing will allow muscles to be recruited in a more appropriate way.  
Cue the patient to assume an anterior pelvic tilt- allow him time to do it and if he is not able to, then provide facilitation to assist.*

5. What could the therapist have done to promote muscle activation during the sit to stand transition?  
*Comment on verbal, tactile or other strategies to promote motor learning and recovery of function.*

*Cue or assist patient to stay in midline during the transition.  
Provide approximation to the left knee in a downward direction to promote weight bearing on left.  
Tap quadriceps muscle to increase sensory and cognitive awareness of using the left side.  
Allow the patient to forward weight shift and promote forward tibial translation over foot.  
As he rises, maintain symmetry and midline with cues or manual facilitation.  
Manual cues to contract the gluteal muscles appears to be necessary for this patient at this time.  
Overall, there were many opportunities for functional strengthening which were lost during the treatment- primarily due to use of the gait belt as a lifting device which the patient doesn't appear to need.  
Another key element to consider during sit to stand is the height of the seating surface- this becomes critical when considering treatment.*

6. What challenges exist when guarding a patient who is moving from sit to stand? Do you think the therapist over-guarded this patient? What is the impact of allowing the patient to pull themselves up on the parallel bar?

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*Safety is always paramount but over-guarding and overhelping the patient as this therapist does can negatively impact recovery by discouraging problem solving so crucial to motor learning. Functional strengthening is key to the motor recovery for patients with neurological injury. Pulling up on the // bar encourages a weight shift away from the weak side which promotes disuse. Pulling up on the // bar is not the motor activity needed to successfully use an assistive device in the future.*

7. Comment on the use of a gait belt for patients with neurologic impairments. From a brief review of the literature, are gait belts proven to prevent falls? Are there draw backs to the use of gait belts?

*First of all, the gait belt is positioned far too high on the patient's trunk- it should be at his umbilicus to be closer to his center of gravity- this will help prevent loss of balance and would allow the therapist to control him with less strain on her shoulder. In some small-scale studies gait belts have been shown to decrease the risk of falls during assisted activities and decrease severity of injury during assisted falls.<sup>1</sup> Certainly, family members and nursing assistants feel more comfortable moving a man of this size using a gait belt and anecdotally many family members prefer to use a gait belt as opposed to providing manual facilitation to their loved ones. Pulling on a gait belt as the therapist in this video does decreases the ability of the therapist to facilitate muscle activity, and the therapist is actually in a worse position to block the weak left leg in the event of buckling. The opportunity for functional strengthening is lost. Lastly, skilled physical and occupational therapy should be promoting independence, not promoting reliance on an external device. Best practice is to have the gait belt on the patient at all times as a mechanism to keep the patient from falling when they have lost their balance but to promote muscle activity through facilitation.*

1. Venema DM, Skinner AM, Nailon R, Conley D, High R, Jones KJ. Patient and system factors associated with unassisted and injurious falls in hospitals: an observational study. *BMC Geriatr.* 2019;19(1):348. Published 2019 Dec 11. doi:10.1186/s12877-019-1368-8

8. Comment on any safety concerns you see in the video. As the therapist, what could you do differently?

*Safety is compromised as evidenced by the chair not staying in position with sit to stand and stand to sit. Its unclear if the brakes are not locked or if they are broken- which we all know happens. The therapist could have had another person hold the chair steady for transitions. The therapist could have held the chair in place somewhat more safely using their foot. Ultimately it is the responsibility of the therapist to notify someone responsible or to learn how to fix the brakes in their facility. Its unacceptable- a student who did this on a practical exam would be failed.*

9. What is the level of assist for the sit to stand transition? How are you determining this?

*Different programs may use different scales to determine level of assist (for example the FIM language or CARE terminology). Students should have a visual example of the rating scales available as they develop the skill to determine level of assist. In general it is best to frame level of assist from the standpoint of how much effort the PATIENT is exerting. This helps control for variability in the strength of individual therapists.*



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*From this video, it appears the patient is exerting at least 50% of the effort needed for sit to stand. Moderate assist on the FIM scale is defined as that patient exerting between 50-74% of the effort for the task therefore he appears to be moderate assist. Other students may have different answers to this question- this would be most important to determine as a group for goal writing.*

10. What participation activities incorporate sit to stand as a major component?

*Sit to stand is important in many participation activities including leisure activities such as playing games, engaging in work or school related activities unique to the individual, and childcare activities which includes the added level of complexity of going from sit to stand while holding a child. Sit to stand is a functional activity itself, but it needs to be generalized to many participation activities in many different settings depending on seating surface, surface height, and other aspects of the task that vary depending on the activity being performed.*

11. Where on the mobility>stability>controlled (dynamic) stability>skill continuum does sit to stand fall? How does that influence your critical thinking regarding treatment planning?

*Sit to stand is a skill. It is a motor behavior with a distinct goal. Because sit to stand is a skill, it inherently involves all of the previous stages of motor control. The patient must have the ability to assume the positions (mobility) from a range of motion standpoint. They must have the ability to hold the starting position in sitting (stability) in order to perform well. They must be able to superimpose movement on a stable base of support (controlled/dynamic stability). When considering treatment planning, its important to remember that skill level tasks are the most difficult and require the most of the patient in terms of motor control. If a patient is struggling with a skill activity, the therapist must consider if whole task training is safe and effective or if the task needs to be broken down into smaller parts. Providing more support and assistance will also be needed for most patients.*

12. List all possible impairments that you think may be contributing to the functional limitation of decreased ability to move from supine to sit. Use professional terms and be specific.

*It would be helpful to list specific impairments so students can eventually formulate a well-conceived goal and treatment plan.*

*L ankle df PROM 0-5 degrees  
L hip extension PROM 0 degrees  
Decreased midline posture of trunk  
Core/trunk weakness  
LUE absent motor control/strength  
LUE flaccid muscle tone  
LLE noted extensor synergy starting but flaccid muscle tone  
Decreased strength/motor control L hip extensors/abd/add  
Decreased strength/motor control L knee extensors/flexors  
Decreased strength/motor control L ankle ms*

*Positive factors- it is always important to consider the patient's strengths in order to capitalize on them*

*Able to follow multistep commands  
No apparent visual or body neglect*

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*Strength in RUE and RLE appear normal or at least functional*  
*Patient does not appear fearful and complies with all therapy*  
*Patient has good family support*