SmartCast®

POSITION & SCAN GUIDE

(rev. 9/21)

Training videos can be viewed by visiting
www.nwpodiatric.com/smartcastnow

EST. NW 1964
PODIATRIC
LABORATORY

Position the patient

SmartCast® is designed for use with a podiatry chair featuring power lift, back and tilt functions. A podiatry chair is preferable because the knee is about 9 degrees flexed, making dorsiflexion of the foot to 90 degrees easier). SmartCast® can be used with a standard table or chair.

1. The patient should sit centered on the chair with both legs straight ahead and the kneecaps vertical.

2. **The patient shouldn't be leaning to one side or the other (i.e. equal weight on both hips) and shouldn't have a leg hanging off the side of the chair.**

3. Both feet should extend over the end of the chair approximately three inches.

4. The patient should be leaning on the back rest of the chair and should be relaxed.

    - *For shorter patients, it may be necessary to add additional back support to ensure they're sitting comfortably AND their feet extend over the end of the chair.*

    - *For inflexible or tall patients, consider adjusting the chair so the patient is lying flat.*

Set up the SmartCast Foot Positioning System®

1. Select a foot to scan first (either is okay).

2. On the SmartCast Foot Positioning System® (**FPS**), extend the Heel Tab horizontally and slide it until it's about two to three inches from the bottom.

3. Grasp the leg at the junction of the calf muscle and Achilles tendon, and lift the leg.

4. Slide the FPS underneath the patient's leg.

5. Lower the patient's leg onto the FPS. The forefoot should be loose and plantarflexed, passing through the vertical supports of the FPS.

    - *The FPS should remain relatively vertical (i.e. not leaning to the side). Depending on the firmness/softness of the podiatry chair and how close the FPS is to the edge of the chair, the FPS may have a tendency to tilt to one side or the other. If necessary, reposition the patient and FPS further away from the edge of the chair.*

6. Ensure the patient's Achilles tendon is resting securely on the Achilles Rest. If the patient's heel bone (calcaneus) or calf is resting on the Achilles Rest, adjust as necessary.

7. If needed, grasp the FPS and gently push it toward/pull it away from the patient to allow the patient's heel to lightly rest on the Heel Tab.

Position the foot

1. Grasp the outside (lateral side) of the foot, specifically the fifth metatarsal (met) head.

2. Lightly push the foot toward the patient (i.e. dorsiflex the foot).

3. Place the fifth metatarsal head on the Fifth Loading Tab to approximate locking the midtarsal joint.

    - *The Fifth Loading Tab should be horizontally oriented and shouldn't be above or below the fifth metatarsal head.*

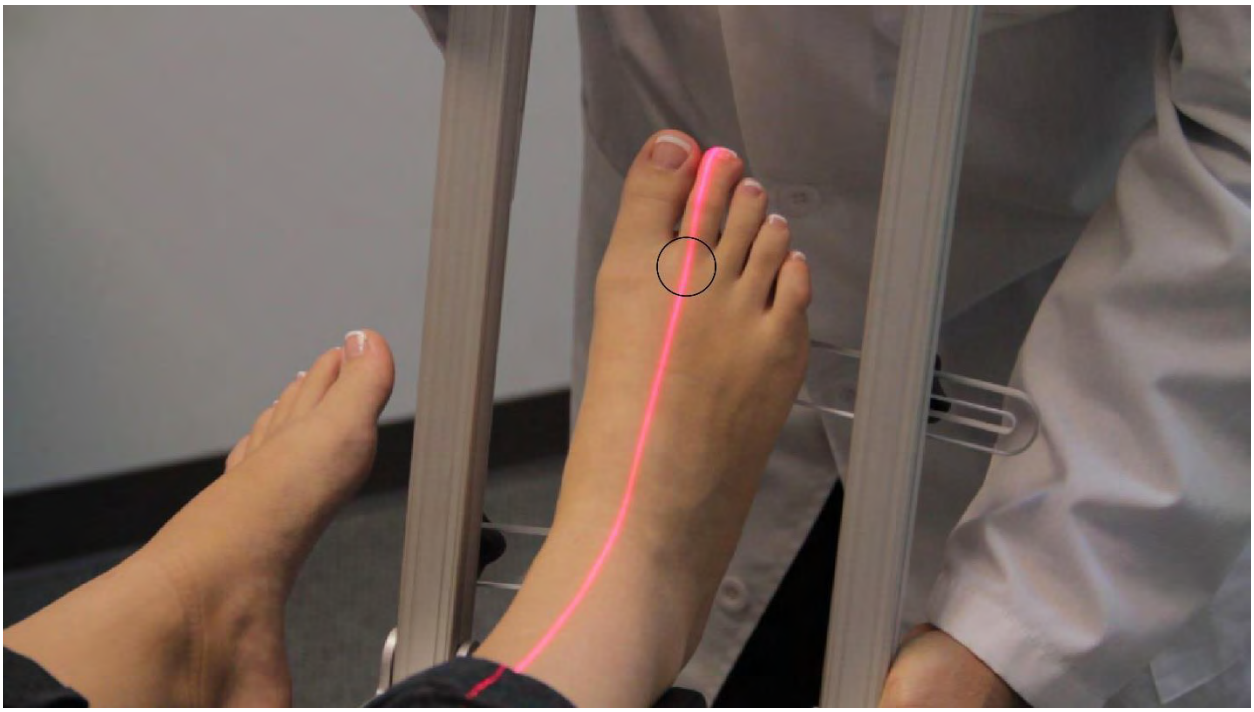
    - *The Fifth Loading Tab shouldn't extend too far toward the middle of the foot or too close to the edge of the foot. The fifth met head should rest comfortably on the Fifth Loading Tab.*

Fine tune positioning

1. Turn on the Alignment Laser by pressing the red button on the top of the black laser housing.

2. Bisect the second metatarsal head with the laser line by slightly loosening the black knob on the Fifth Loading Tab and adjusting the position of the foot and Tab accordingly. Tighten the black knob when the laser is centered on the second metatarsal head.

    - *Some patients' toes may block the laser line from clearly showing on the second metatarsal head. Gently move the toes until the laser line is visible and align the laser on the second metatarsal head. Release the toes.*



3. Bisect the lower (distal) 1/3 of the leg with the laser line.

    - *Adjust the alignment of the laser line on the leg by using two hands to grasp the FPS's vertical supports to pivot the frame as needed.*

4. Ensure the patient's legs are straight ahead and their knees remain vertical (i.e. their legs aren't internally or externally rotated).

You've now confirmed that your patient's subtalar joint is in neutral position.

5. Ensure patient's anterior tibial tendon is relaxed.

    - If it is tight, ask the patient to relax their tendon and/or manually plantarflex and dorsiflex the big toe (hallux) to loosen the tendon.

You've now confirmed that your patient's midtarsal joint is locked.

6. Turn off the Alignment Laser.

Prepare to scan

1. Loosen the black knob on the Heel Tab and move the Tab so it's hanging vertically and not obstructing the view of the foot.

2. Raise and tilt the podiatry chair.

3. Depending on the practitioner scanning the foot, it may be desirable to sit in a rolling chair or stool.

4. Within the SmartCast® app, navigate to the Patients screen. Tap "New Patient" and enter all necessary patient information. Tap "Save Information" once complete.

5. If the patient is already created, select the patient on the Patient List.

Scan the foot

1. While on patient order screen, select the foot you want to scan first. Tap the "Plantar Surface" option. Then Tap "Start".
   *Other scanning options consist of AFO's (Richie Brace) and scanning foam boxes.

1. Hold the iPad in horizontal/landscape orientation with the screen visible and the camera/Structure Sensor pointed toward the patient's foot. The Structure Sensor should be on the top of the iPad. Hold the iPad in a way that prevents fingers from accidentally obstructing the camera.

2. Beginning close to the foot, slowly move away until the foot is framed in a white cube and the plantar surface is fully highlighted in red. Tap the green "Start" button on the right-hand side of the screen.

    - *The SmartCast® app will only collect 3D data for objects contained within the cube.*
    - *The scanning process should take about 20 seconds.*
    - *During the entire recording process, the iPad must be pointed at the foot while staying the same distance away as when you started.*

3. "Scoop" to capture the back of the heel.

    - *Maintaining a consistent distance between the foot and iPad, move the iPad straight down and then curve under the foot – a gentle scooping motion.*

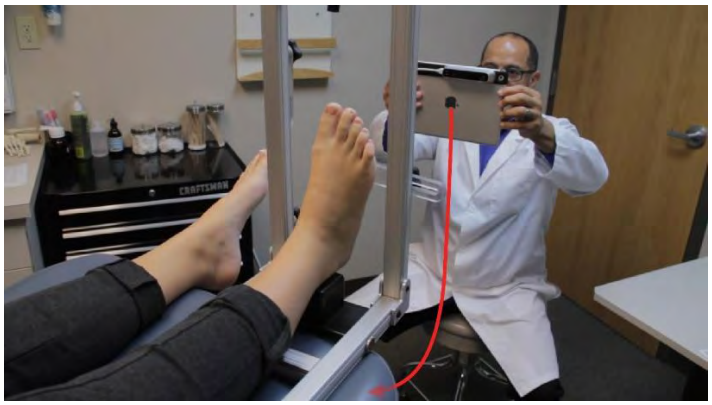
        - *Viewed from the side, this motion should look like a "J".*

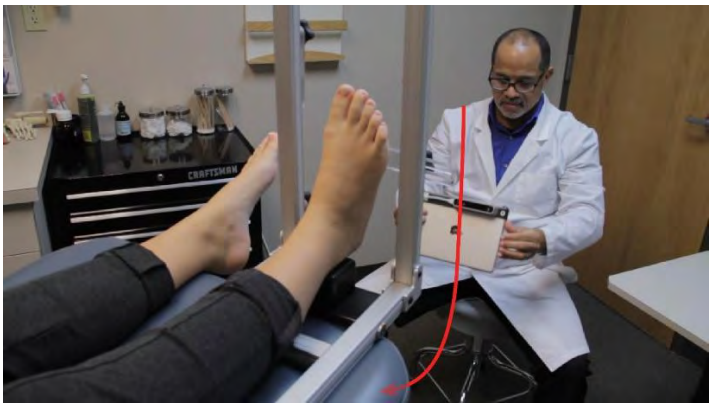
            - *At the top of the J, the iPad is level with the met head.*
            - *At the bottom of the J, the iPad is capturing the back (posterior aspect) of the heel.*

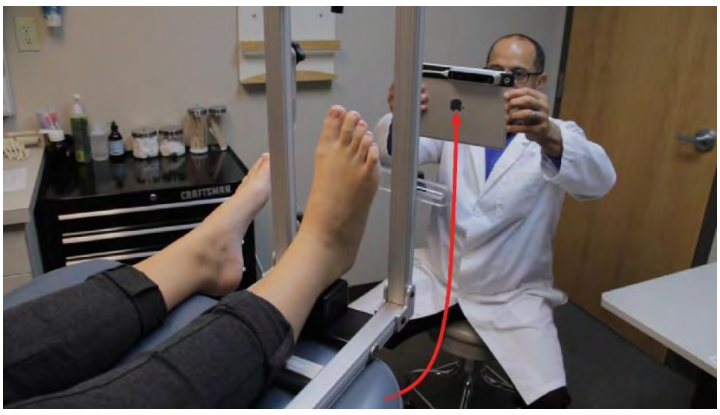
        - *Be sure to tilt the iPad during the "scoop" so that the front of the sensor (the black portion) is continually pointed at the foot.*

        - ***It is not necessary to see the iPad screen during the scanning process.***

    - *Bring the iPad back to its original position.*



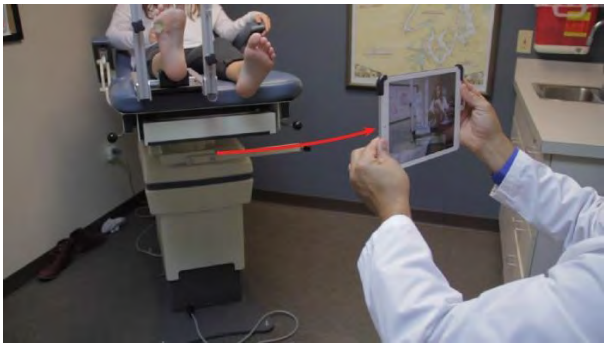




4. "Swoop" to capture the medial and lateral sides of the foot.

    - *Keep the iPad level with the forefoot and slowly swing it to the medial side of the foot so the Structure Sensor begins to capture the medial arch of the foot.*
    - *Maintaining a consistent distance between the foot and iPad, move the iPad in a gentle, U-shaped arc that ends in the same position you started in, but capturing the lateral side of the foot. The bottom of the arc should be directly underneath the foot, with the 3D sensor capturing the back of the heel.*

        - *Be sure to tilt the iPad during the "swoop" so that the front of the sensor (the black portion) is continually pointed at the foot.*




5. Tap the red square button to stop recording.
    - ***DON'T hit the physical Home button (the round button with the square icon) on the iPad. This will cause the 3D scan to be lost.***

Key points for successful scanning:

- Move the iPad/Structure Sensor somewhat slowly – it should take approximately 20 seconds to fully capture all aspects of the foot.

- The most difficult part of the foot to capture is the heel. Raising and tilting the podiatry chair back makes this much easier.

- **Keep the iPad a consistent distance from the foot. It's easy to drift closer to the foot as the scanning process progresses.**

- When scanning, ensure the Structure Sensor is aimed at the foot at all times. There is no need to watch the screen while scanning the back of the heel.

- The entire scanning process must happen in one motion (i.e. the iPad can't be set down momentarily or pointed away from the foot).

Review the scan

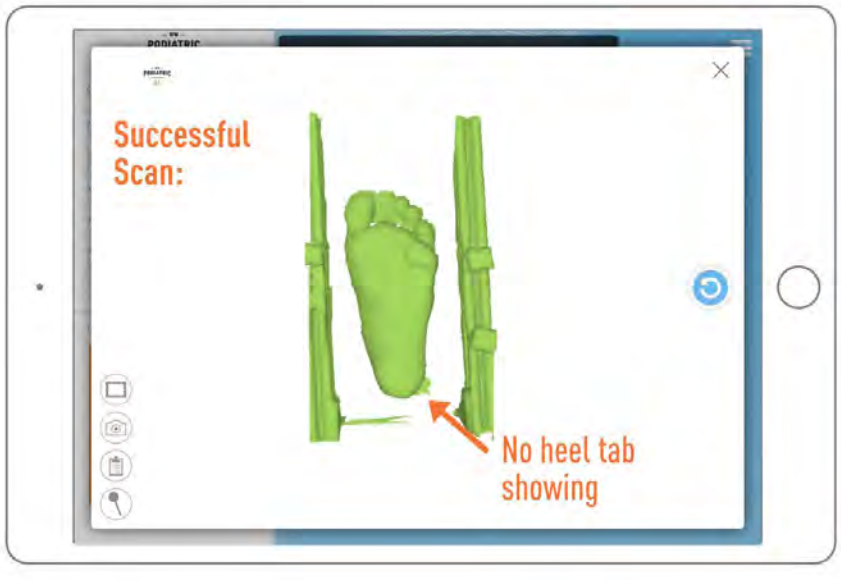
When scanning is complete and the red stop button is tapped, the app will enter Model Preview mode. Use your fingers to rotate the scan.

What to look for:

- Proper foot positioning
    i. Fifth met head is properly placed on the tab.

    ii. The relationship between the foot and leg close to a 90 degree angle (i.e. not plantarflexed).

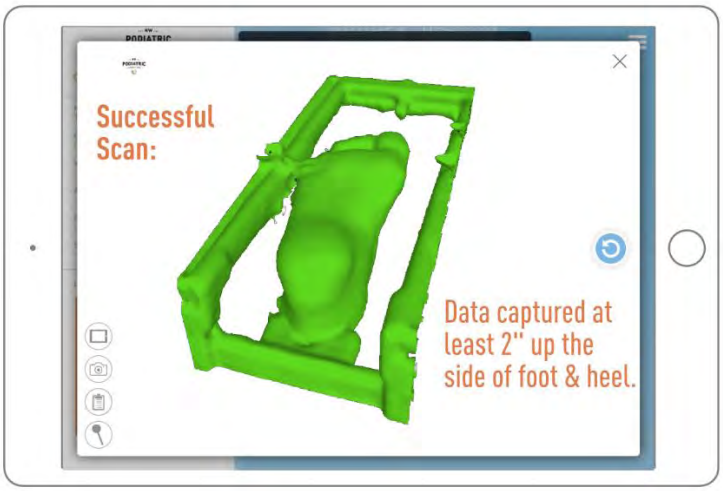
    iii. Heel Tab is rotated away from the foot.



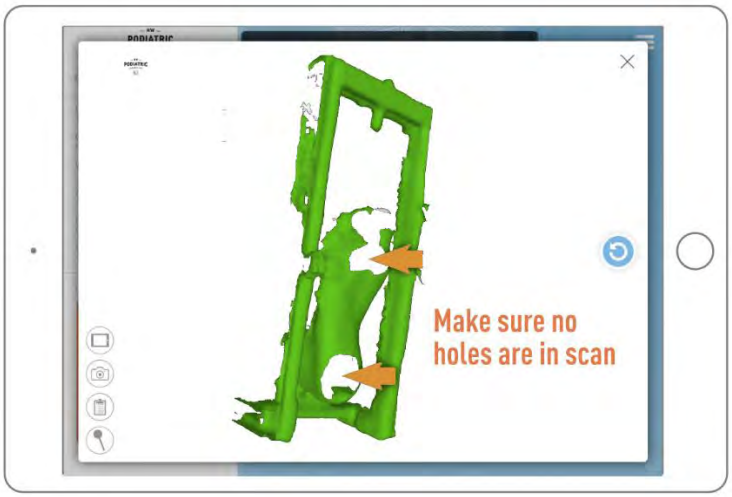
- Completeness of the scan

    i. **All sides of the heel (posterior, medial and lateral) are fully captured.**

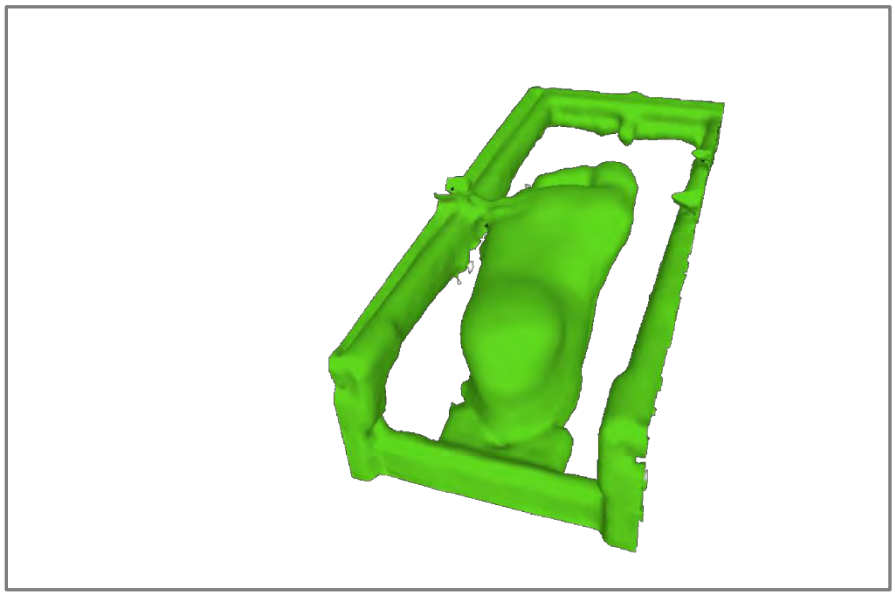
    ii. The medial and lateral sides of the midfoot and forefoot are adequately captured (two inches up both sides of the foot)



    iii. There is no missing data (holes or gaps) in the scan.



When the patient is properly positioned and the scanning procedure is done correctly, the completed scan looks like this:



If the scan is acceptable, tap the Save button.

If the scan is unacceptable, tap the Redo button and rescan the patient.

Repeat the positioning and scanning process for the second foot.