

Casting Position Reference

STJ Neutral, RCSP, Non-Weightbearing, Semi-Weightbearing and Weightbearing Methods

The casting or scanning position used to capture foot geometry fundamentally determines the shape of the orthotic shell and the degree of correction built into the device. Different positions capture different foot postures — and prescribing the correct position for the clinical presentation is as important as the modifications applied to the finished device.

1 Key Positions Defined

Position	Definition	Foot Captured In	Common Method
Subtalar Joint Neutral (STJN) Non-Weightbearing	STJ positioned in neutral (1:2 ratio of medial:lateral talar head palpation); foot non-weightbearing; forefoot-to-rearfoot relationship measured in true neutral	True neutral STJ position — deformities captured as they exist without compensation	Plaster of Paris (POP) slipper cast; foam box NWB; 3D scan with clinician holding neutral
Relaxed Calcaneal Stance Position (RCSP) Weightbearing	Foot captured in its natural weightbearing position — calcaneus in its habitual resting eversion angle	Compensated position — captures the foot as it functions under load	Foam box WB (foam impression); 3D scan WB; plaster slab WB
Semi-Weightbearing (SWB)	Patient seated with foot on ground but partial load only; ~50% body weight through foot	Partially compensated — intermediate between NWB neutral and full WB	Foam box SWB; 3D scan SWB; clinician-loaded NWB cast
Subtalar Joint Neutral Semi-Weightbearing	STJ held in neutral with partial weight through foot — combines neutral STJ with physiological loading	Neutral STJ under partial load — closer to functional position than pure NWB	Clinician-held STJ neutral with patient partially weightbearing; 3D scan with neutral loading

2 Comparison: NWB vs SWB vs WB

Feature	NWB (STJ Neutral)	Semi-Weightbearing	Full Weightbearing (RCSP)
Foot position captured	True STJ neutral — deformities uncompensated	Partial compensation	Fully compensated habitual position
Arch height	Higher — true arch without load deformation	Intermediate	Lowest — full arch collapse visible
Forefoot relationship	Accurate measurement of true forefoot-to-rearfoot deformity	Moderate accuracy	May underestimate true deformity
Correction built into device	Highest — device corrects toward neutral	Moderate	Minimal — device accommodates habitual position
Patient tolerance	May feel overcorrecting if significant compensation present	Generally well tolerated	Most comfortable — closely matches habitual position
Best for	High-control prescriptions; PTTD; significant deformity; when true neutral correction is desired	General MSK; moderate presentations; balance of control and comfort	Accommodative orthotics; elderly; neuropathy; advanced OA; comfort priority; less correction needed
Common errors	Over-controlling compensated foot types; patient intolerance	Inconsistent loading between practitioners	Under-correcting when control is clinically required

3 Casting Methods: Comparison

Method	Position Possible	Accuracy	Pros	Cons
Plaster of Paris (POP) slipper cast	NWB STJ neutral	High	Gold standard; captures true neutral; widely validated	Messy; time-consuming; requires lab processing; patient must return for device
Foam box (impression box)	NWB or WB	Moderate	Quick; no lab processing required; low cost	Operator-dependent; foam compression variable; less accurate for significant deformity
3D scanning (optical /photogrammetry)	NWB, SWB, WB	High	Fast; clean; digital workflow; no physical cast needed; easily stored/repeated	Equipment cost; accuracy dependent on scan quality and patient movement; software variability
Plaster slab / gravity cast	WB or SWB	Moderate	Captures weightbearing arch; useful for accommodative prescriptions	Less precise for NWB neutral; variable technique

4 Clinical Decision: Which Position to Use

Casting Position Decision Guide

Flexible flat foot, significant pronation, PTTD → NWB STJ neutral: maximum correction required.

General MSK (plantar fasciitis, MTSS, PFPS, mild-moderate pronation) → SWB STJ neutral or foam box NWB: good balance of control and tolerance.

Rigid/cavoid foot, accommodative prescription, elderly, neuropathy → WB RCSP: accommodates habitual position; avoids overcorrection.

Paediatric (moderate-severe flat foot) → NWB STJ neutral: correction required while growth allows adaptation.

Paediatric (mild/flexible, observation phase) → SWB or WB: less correction; monitor.

5 Common Casting Errors

Error	Clinical Consequence	How to Avoid
STJ not truly in neutral during NWB cast	Shell built in incorrect position — may over- or under-correct	Confirm 1:2 medial:lateral talar head palpation; reassess frequently during cast application
Forefoot allowed to invert/evert during POP cast	Forefoot-to-rearfoot relationship inaccurate — incorrect post angle built in	Maintain forefoot perpendicular to rearfoot bisection throughout; take measurement before casting
Foam box impression too deep (over-penetration)	False arch reduction — orthotic will be flatter than intended	Load gently — approximately body weight divided by 2 per foot; assess impression depth
Patient moving during 3D scan	Scan artefact; inaccurate geometry	Use stable seated or standing position; repeat scan if movement detected
Casting in plantar-flexed ankle position	Heel-to-forefoot relationship altered; heel cup depth affected	Ensure ankle at 90° or as close as tolerable during NWB casting

THE POSITION DETERMINES THE PRESCRIPTION

The casting position is not a neutral step — it is a clinical decision that determines the corrective geometry of the entire device. A foam box in RCSP and a POP cast in STJ neutral will produce fundamentally different orthotics from the same prescription form.

MATCH POSITION TO PATHOLOGY

High-control indications (PTTD, severe flat foot) demand NWB STJ neutral. Accommodative indications (neuropathy, elderly, OA) demand WB. Using the wrong position risks patient intolerance or inadequate control — both are avoidable prescribing errors.

DOCUMENT YOUR POSITION

Always record the casting position used. At follow-up — or when re-casting — this information is essential for interpreting patient feedback and making appropriate adjustments.