

Combining Orthotic Modifications

Cumulative Mechanical Effects, Common Combinations & Conflict Principles

Orthotic modifications are rarely prescribed in isolation. The cumulative mechanical effect of a combination is not simply the sum of its parts — modifications interact, and some combinations amplify, neutralise, or conflict with each other. This reference covers the principles of combining modifications, common effective combinations, and combinations that require caution.

1 Principles of Combination Prescribing

Aspect	Detail
Additive effects	Modifications targeting the same joint/direction add their effects. A medial heel skive + medial rearfoot post both create supinatory STJ moments — combined, they produce significantly more rearfoot control than either alone. Use deliberately when high control is needed; with caution in moderate presentations.
Opposing effects	Some combinations partially cancel each other. A forefoot valgus post (lateral forefoot elevation) combined with a forefoot varus post (medial forefoot elevation) achieves a flat forefoot — sometimes intentional for accommodation, but often a prescribing error.
Proximal-to-distal sequencing	Rearfoot modifications influence forefoot mechanics and vice versa. Correcting rearfoot pronation may alter forefoot loading patterns — always re-assess the forefoot relationship after determining rearfoot prescription.
Total correction concept	The combined posting angle across rearfoot and forefoot should rarely exceed the measured deformity. If RCSP shows 4° eversion and you prescribe 4° rearfoot post + 4° forefoot varus post, the total may over-correct. Start at 50–75% of each component.
Mechanical conflict	Some modifications are biomechanically incompatible (see Section 3). Prescribing them together produces an unpredictable or harmful outcome — identify conflicts before finalising.

2 Common Effective Combinations

Combination	Pathologies	Cumulative Effect	Notes/Cautions
Medial heel skive + Medial rearfoot post	PTTD, severe flat foot	Maximum STJ supinatory moment; high rearfoot control; greater than either alone	Only for high-resistance presentations; monitor for lateral column loading
Medial rearfoot post + Forefoot varus post	Flexible flat foot, FHL, MTSS	Combined rearfoot and forefoot pronation control; addresses both rearfoot eversion and late-stance forefoot compensation	Assess total correction — do not over-post; re-evaluate FPI at review
Reverse Morton's + Medial rearfoot post	Functional hallux limitus with pronation	Facilitates windlass AND controls rearfoot pronation driving FHL; addresses both the structural and compensatory component	Ensure rearfoot driver confirmed — if no pronation, reverse Morton's alone may suffice
Heel raise + Deep heel cup	Insertional Achilles tendinopathy	Reduces Achilles tensile load AND provides heel containment/cushioning; synergistic	Avoid deep heel cup if Haglund's deformity present — may compress insertion
Heel raise + Met dome	Equinus with metatarsalgia	Raises heel to reduce equinus-driven forefoot loading AND offloads met heads; addresses cause and symptom	Ensure met dome is proximal to heads; forefoot loading may shift further if heel raise is too high
Lateral heel skive + Lateral forefoot wedge + Lateral flange	Pes cavus with lateral instability	Comprehensive lateral accommodation and stability; reduces supination moments, encourages eversion, supports lateral column	Most appropriate for rigid cavus with chronic ankle instability; may need bespoke fabrication
Deep heel cup + Plantar fascial groove + Medial arch fill	Plantar fasciitis	Heel containment + fascial pressure relief + arch support; comprehensive plantar fascial offloading	Avoid medial heel skive in same prescription if calcaneal tubercle pain is dominant — use rearfoot post instead
Morton's extension + Stiff shell	Hallux rigidus	Blocks 1st MTPJ dorsiflexion mechanically; combined with shell stiffness provides maximal rigidus management	Carbon fibre shell provides superior stiffness; rocker-bottom footwear is a complementary adjunct

Combination	Pathologies	Cumulative Effect	Notes/Cautions
Medial flange + Medial rearfoot post + Deep heel cup	PTTD Stage I-II	Comprehensive medial rearfoot control — flange blocks talar adduction, post controls calcaneal eversion, heel cup contains fat pad	Standard combination for early PTTD; if insufficient, progress to rigid shell + medial heel skive

3 Conflicting Combinations (Avoid)

Warning — Conflicting Combinations

The following combinations produce conflicting or harmful mechanical effects and should generally be avoided unless there is a specific clinical rationale.

Conflicting Combination	Why It Conflicts	What to Do Instead
Medial heel skive + Lateral rearfoot post	Directly opposing STJ moments cancel each other; net effect is unpredictable and wastes prescription components	Choose direction based on rearfoot assessment — one or the other, not both
Morton's extension + Reverse Morton's	Morton's blocks hallux dorsiflexion; Reverse Morton's facilitates it — directly opposing effects at the 1st MTPJ	Assess whether hallux rigidus or functional hallux limitus — prescribe accordingly
Forefoot varus post + Forefoot valgus post (full)	If applied equally, creates a flat forefoot — may neutralise each other; if asymmetric, produces unpredictable loading	Only combine intentionally for full forefoot accommodation; more commonly a prescribing error
Medial heel skive + Heel cushioning aperture at medial calcaneal tubercle	Skive increases compressive load at medial calcaneal tubercle; aperture tries to offload it — conflicting	If calcaneal tubercle pain is present, use medial rearfoot post (not skive) + heel aperture or horseshoe pad
High heel raise (>12mm) + Forefoot met dome	Very high heel raise shifts weight anteriorly onto forefoot; met dome raises under shafts — combined can cause excessive pressure at the met shaft/head junction	Keep heel raise conservative (≤ 10 mm); if large ADF restriction, address with physiotherapy; consider rocker footwear instead
Full-length top cover + Toe deformities (hammer/claw)	Full-length cover over rigid toe deformities increases dorsal toe pressure in footwear	Use sulcus-length cover; address toe deformities with appropriate toe orthoses separately

4 Cumulative Posting Guide

Aspect	Detail
Starting principle	Begin with the rearfoot prescription only. Assess at 4–6 weeks. Add forefoot component only if rearfoot correction alone is insufficient or if forefoot deformity is the primary driver.
Maximum rearfoot posting	Typically 4–6° for most presentations. >6° in rigid polypropylene requires strong clinical justification; rarely exceeds 8°.
Maximum forefoot posting	Typically 2–4°. Rarely exceeds 6°; high forefoot posts affect footwear fit and propulsive mechanics.
Combined rearfoot + forefoot	Total combined correction should not exceed the measured deformity. If RCSP = 4° and forefoot varus = 3°, total posting should be ≤7° combined, typically prescribed at 50–75% of each.
Skive vs post	Medial heel skive is more aggressive than an equivalent-angle rearfoot post — a 4mm skive produces a greater supinatory moment than a 4° post for most foot types. Do not combine a full-angle post with a full skive unless maximum control is clearly indicated.
Review and titration	All posting combinations should be reviewed at 6–8 weeks. Reduce if over-corrected (new lateral symptoms, patient reports "tipping" sensation). Increase if insufficient control.

Every modification combination changes the mechanical environment in ways that are difficult to predict precisely. The safest approach is to prescribe conservatively, review systematically, and modify iteratively — rather than attempting to correct everything in the first prescription.