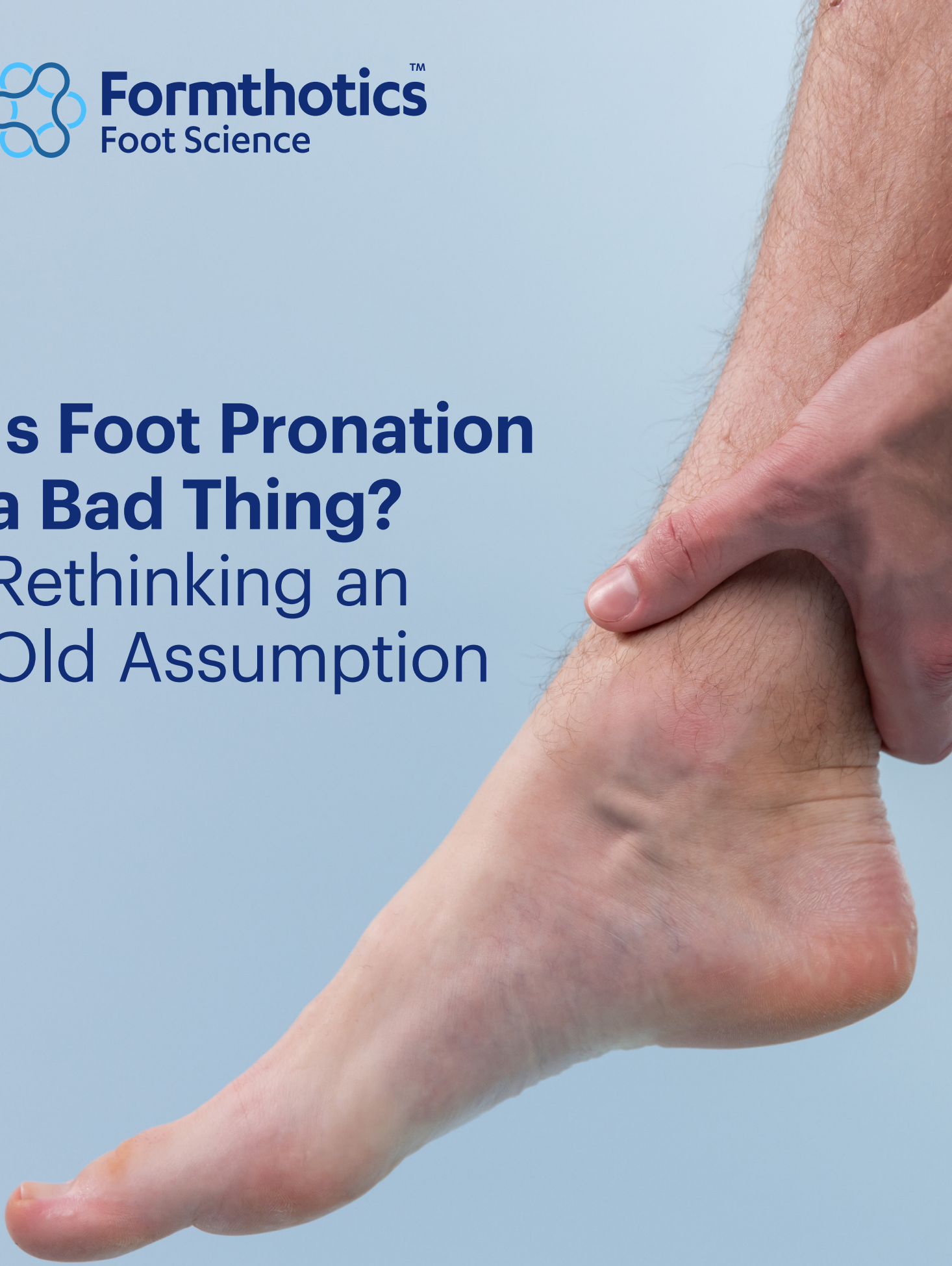
Formthotics™
Foot Science

Is Foot Pronation a Bad Thing?
Rethinking an Old Assumption



“Pronation is not a dirty word.”

Dr. John Weed

Introduction

Dr John Weed – a renowned podiatric clinician and educator – knew that pronation was often misunderstood. Yet over the years, it’s become one of the most routinely “treated” foot motions in clinical and commercial settings. Orthoses, motion-control shoes, and bracing are widely prescribed with the goal of reducing or eliminating pronation.

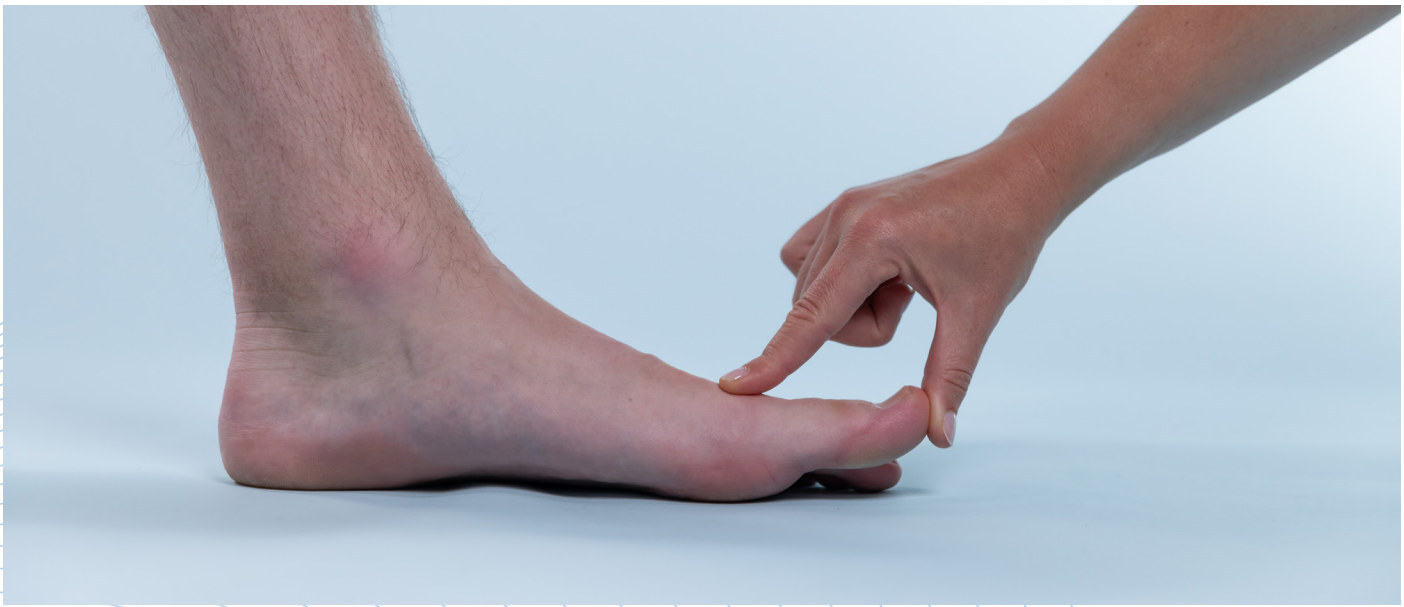
But is pronation really pathological? And if not always, when is it appropriate to intervene?

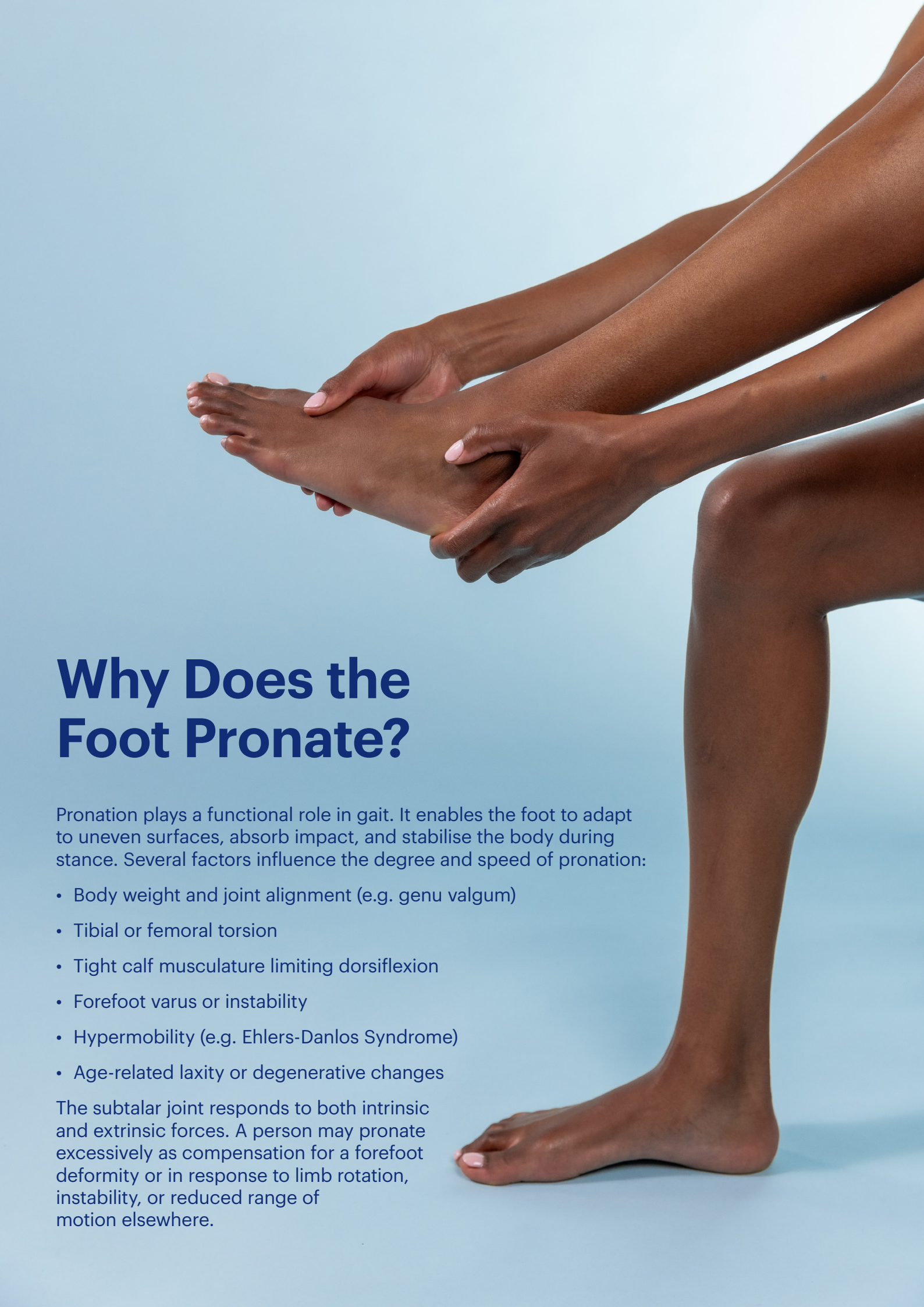
What Is Pronation?

Pronation is the motion created as the talus rotates medially and downward over the calcaneus, causing the heel to roll inward (eversion) and the medial arch to drop. This is visible as a flattened arch and valgus heel – the classic signs of “overpronation”.

This motion occurs primarily at the subtalar joint and is a natural part of walking and running. Most individuals strike the ground in slight supination, then pronate as the foot contacts the ground fully – helping the body absorb shock and adapt to terrain.

Without pronation, the limb would receive excessive impact. In fact, high-arched feet that do not pronate well are more commonly associated with overuse injuries.





Why Does the Foot Pronate?

Pronation plays a functional role in gait. It enables the foot to adapt to uneven surfaces, absorb impact, and stabilise the body during stance. Several factors influence the degree and speed of pronation:

- Body weight and joint alignment (e.g. genu valgum)
- Tibial or femoral torsion
- Tight calf musculature limiting dorsiflexion
- Forefoot varus or instability
- Hypermobility (e.g. Ehlers-Danlos Syndrome)
- Age-related laxity or degenerative changes

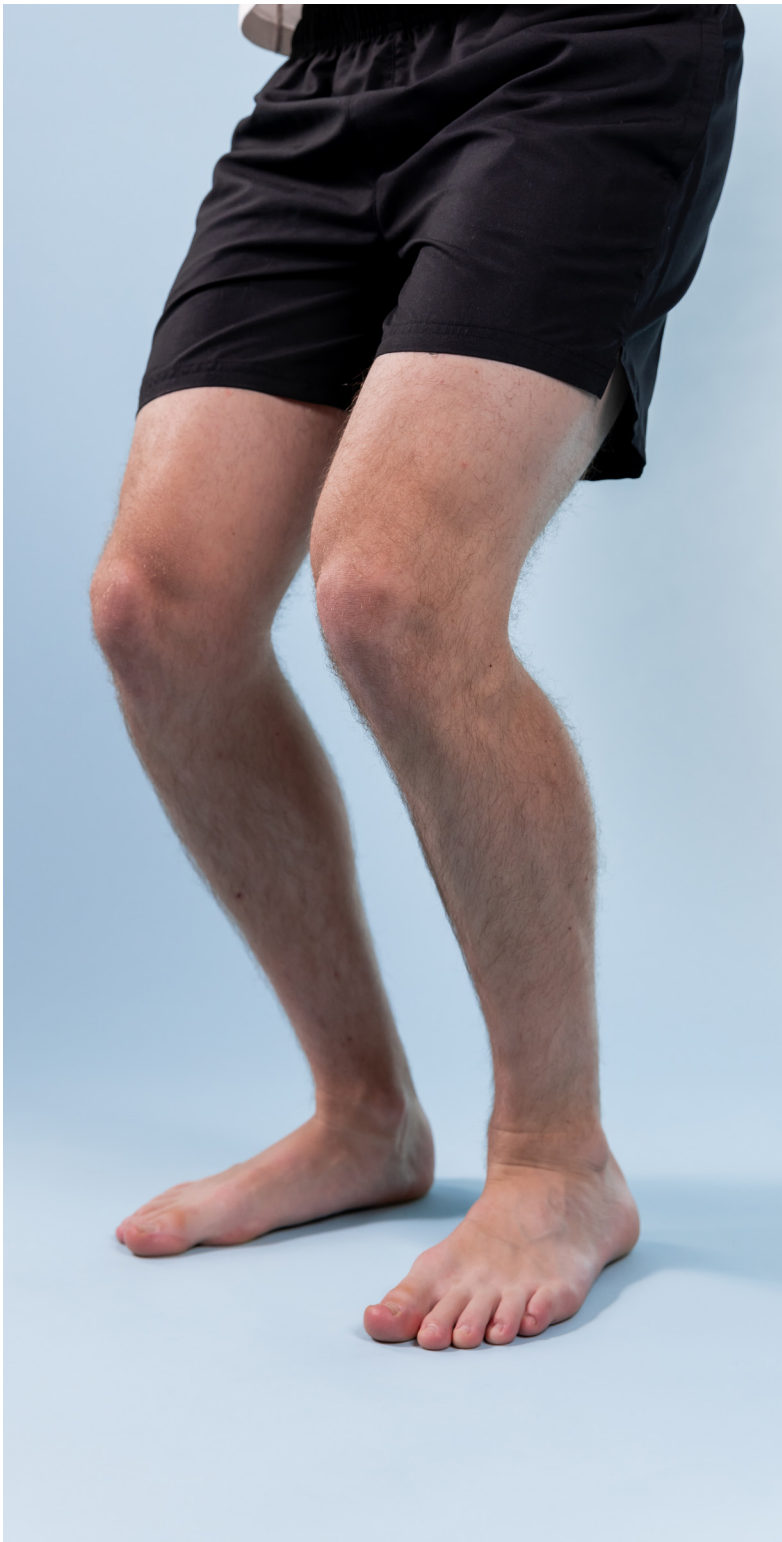
The subtalar joint responds to both intrinsic and extrinsic forces. A person may pronate excessively as compensation for a forefoot deformity or in response to limb rotation, instability, or reduced range of motion elsewhere.

When Is Pronation a Problem?

While pronation is a natural motion, excessive or uncontrolled pronation can contribute to tissue stress and overuse injury – particularly when it exceeds the tissue's capacity to adapt. Conditions frequently associated with abnormal pronation include:

- Plantar fasciitis
- Medial tibial stress syndrome (MTSS)
- Achilles tendinopathy (less direct association)
- Tibial and navicular stress fractures
- Patellofemoral pain
- Iliotibial band syndrome (ITBS)
- Hallux limitus, bunions, metatarsalgia

The challenge is determining when pronation is contributing to symptoms. This depends on joint structure, gait mechanics, activity level, and individual tissue resilience.



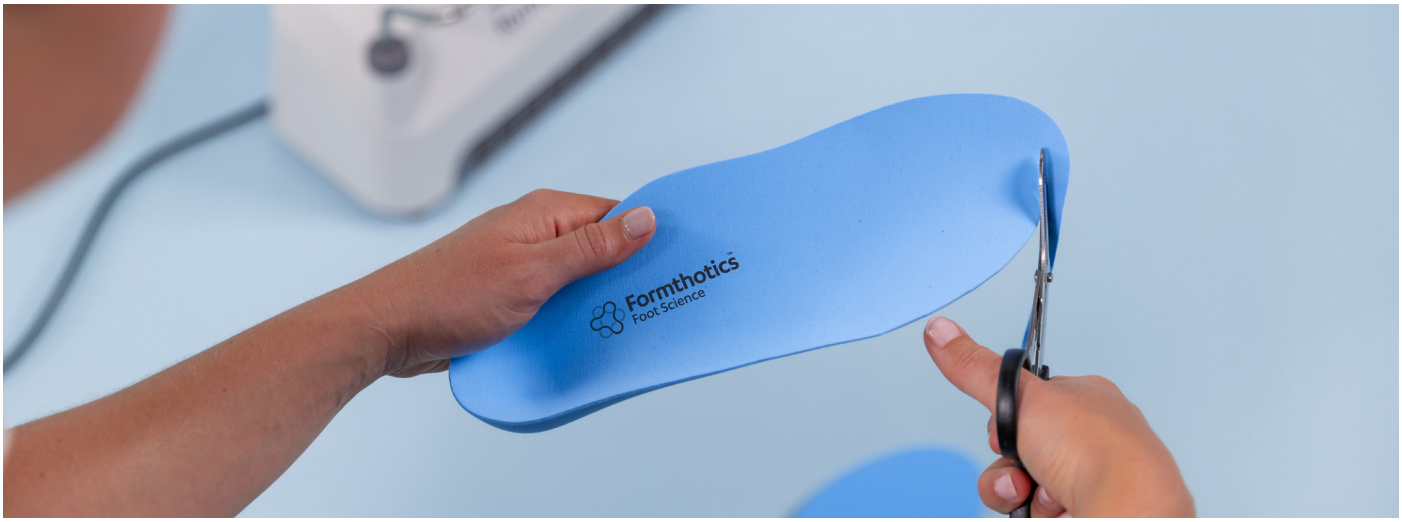
How Orthoses Help

Foot orthoses are designed not to eliminate pronation, but to manage its degree, velocity, and impact on other joints.

They work by:

- Redistributing plantar load
- Reducing excessive midfoot collapse
- Stabilising the subtalar joint and medial arch
- Controlling tibial rotation that affects the knee

Formthotics offer customisable support that can be adjusted based on forefoot structure, arch compliance, calf length, and footwear profile – allowing clinicians to target interventions more effectively.



Children and Flat Feet

Flat feet in young children are often benign. In infancy and early childhood, a thick plantar fat pad and ligamentous laxity make the arch appear absent. Most children develop a visible arch by age 10 without intervention.

Still, orthoses may be appropriate when:

- The child is symptomatic (e.g., pain, fatigue)
- There is developmental delay or hypotonia
- Structural hypermobility impairs gait

In these cases, orthoses may help improve comfort, stability, and participation in physical activity.

Muscle Strength and Orthotic Use

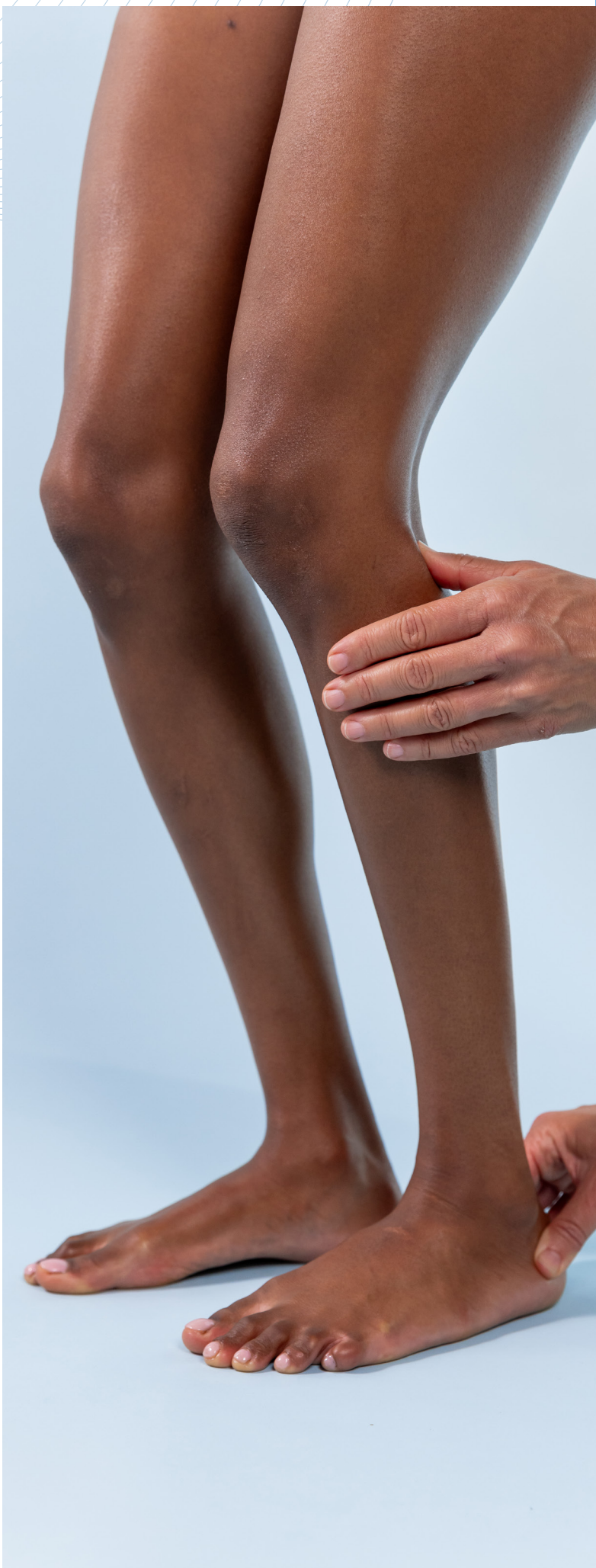
A common concern is that orthoses might weaken the feet. However, EMG studies show that intrinsic and extrinsic foot muscles remain active – and may even become more efficient – with orthotic use.

Much like glasses don't weaken your eyes, orthoses don't inherently weaken your feet. Instead, they provide external support to modulate mechanical stress while allowing for ongoing functional activity.

Foot Pronation and the Knee

Because the talus transmits movement directly to the tibia, excessive pronation introduces internal tibial rotation. This movement, when paired with a knee joint designed primarily for flexion and extension, can create rotational stress
– especially on the patellofemoral joint.

Foot orthoses have been shown to reduce tibial rotation and are effective in managing peri-patellar symptoms and medial knee arthritis in certain populations.

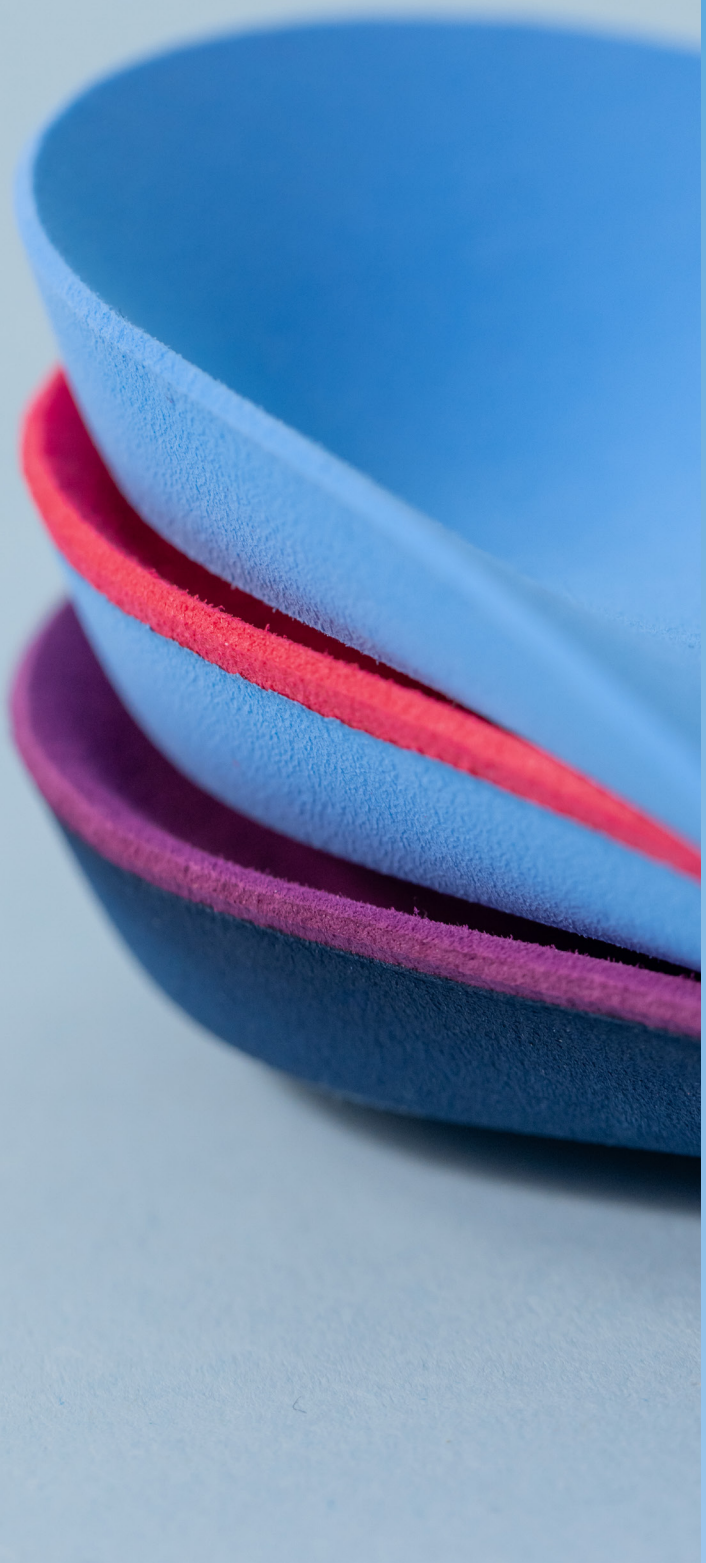


Conclusion

Pronation is not inherently problematic. It's a vital, shock-absorbing component of human locomotion. However, when excessive or poorly controlled, it may lead to overload injuries in the foot, leg, and knee.

The clinical question is not whether pronation is "bad," but whether its presentation in a given patient is contributing to symptoms – and whether targeted orthotic intervention can help.

In that respect, orthoses – particularly adaptable options like Formthotics – remain a valuable, evidence-informed tool in the conservative management of pronation-related issues. As clinicians, we can honour Dr. John Weed's legacy by not pathologising pronation, but instead understanding when and how to support it.



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