

# Foot orthoses

Iqra Nadeem

- Appliances.... Apply forces to the foot
- May be An insert..... placed in the shoe
- An internal modification....affixed inside the shoe
- External modification..... attached to sole or heel of the shoe

- Enhance function by relieving pain
- Mechanism:-
- Transferring weightbearing stresses to pressure-tolerant sites,
- Protecting painful areas from contact with the shoe,
- Correcting alignment
- Accommodating a fixed deformity



# Internal modifications

- Closer the modification to the foot.....more effective it is
- Widely used
- Insert permits the pt..... Transfer orthosis from shoe to shoe.
- Terminates just behind the metatarsal heads; may slip forward , particularly if shoe has relatively high heel.
- Some inserts... extend the full length of the sole, preventing slippage but occupying often limited space

- **Internal modifications** are fixed to the shoe's interior, guaranteeing the desired placement but limiting the patient to the single pair of modified shoes.
- Reduce shoe volume.... So must be judged
- Materials
- Soft material....viscoelastic plastics
- Semirigid or rigid plastics, rubber, or metal often with a resilient overlay.

- **Heel-spur insert orthosis**, for example, may be made of viscoelastic plastic or rubber.
- Orthosis slopes anteriorly and a concave relief..... Reduce pressure on the tender area.
- **Longitudinal arch supports**... intended to prevent depression of the subtalar joint and flattening of the arch (pes planus)
- Orthosis may include a wedge to alter foot alignment.
- Rubber scaphoid pad apex lies between talus and navicular tuberosity.

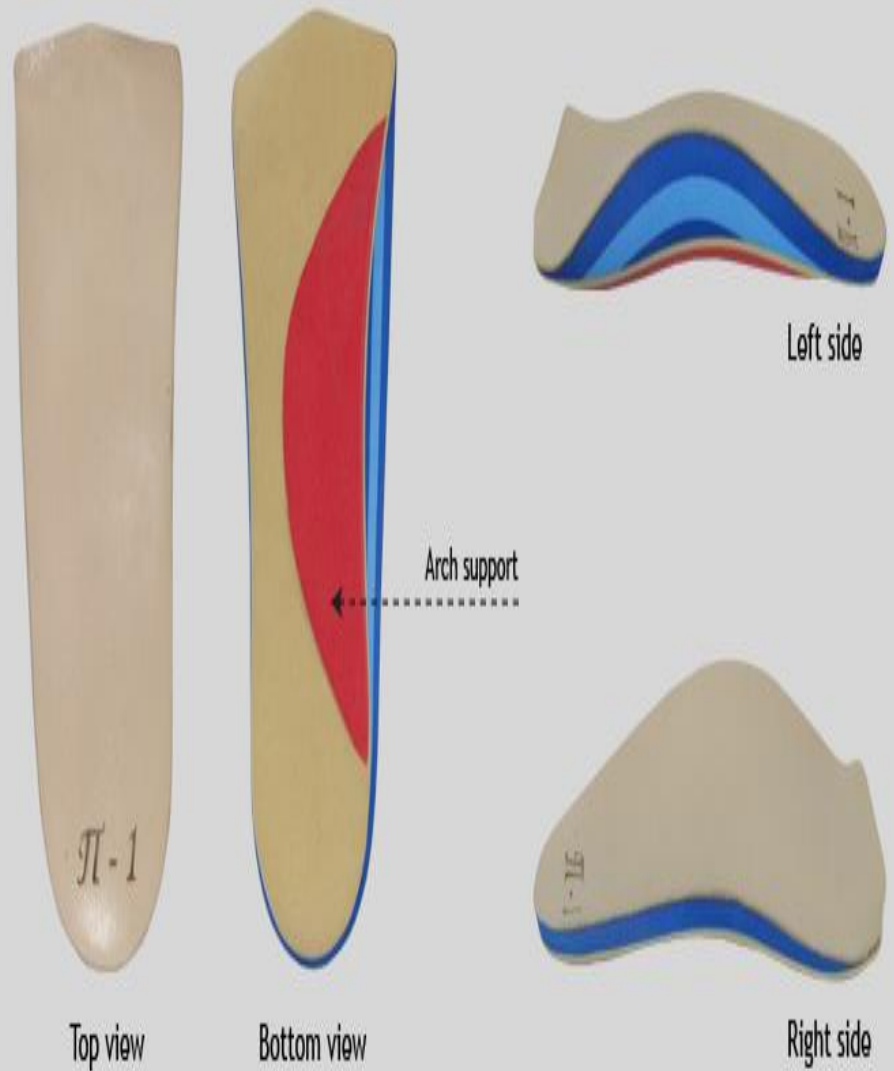
# Heel-spur insert orthosis





- **Flexible flat foot**:- realigned by a semirigid plastic *UNIVERSITY of California Biomechanics Laboratory (UCBL) inserts*.
- It covers heel and midfoot
- Investigations suggest For alters onset of errector spinae and gluteus medius activity so reduces patellofemoral pain
- While others show little or no effect.

- **The metatarsal pad:-**
- Convexity may be incorporated in an insert or may be resilient domed component glued to the inner sole.... Apex is under the metatarsal shafts.
- Transfers stress from the metatarsal heads to the metatarsal shafts.
- Occasionally modifications are sandwiched between inner and outer soles, for example pt with marked arthritic changes
- Long steel springs.....eliminate motion at the painful jt
- Same effects with rigid insert



# External modifications

- Ensures that the patient wears the appropriate shoes and does not reduce shoe volume
- Erode as the pt walks
- Client limited to wearing the modified shoe, rather than being able to choose from a wide selection of shoes

# Heel wedge

- Frequently prescribed external modification..... alters alignment of calcaneus
- **A medial heel wedge**: aid in realigning flexible pes valgus, can accommodate rigid pes varus.
- Cushion heel..... Resilient material...absorb shock
- Indicated.... Pt wears an orthosis with a rigid ankle.



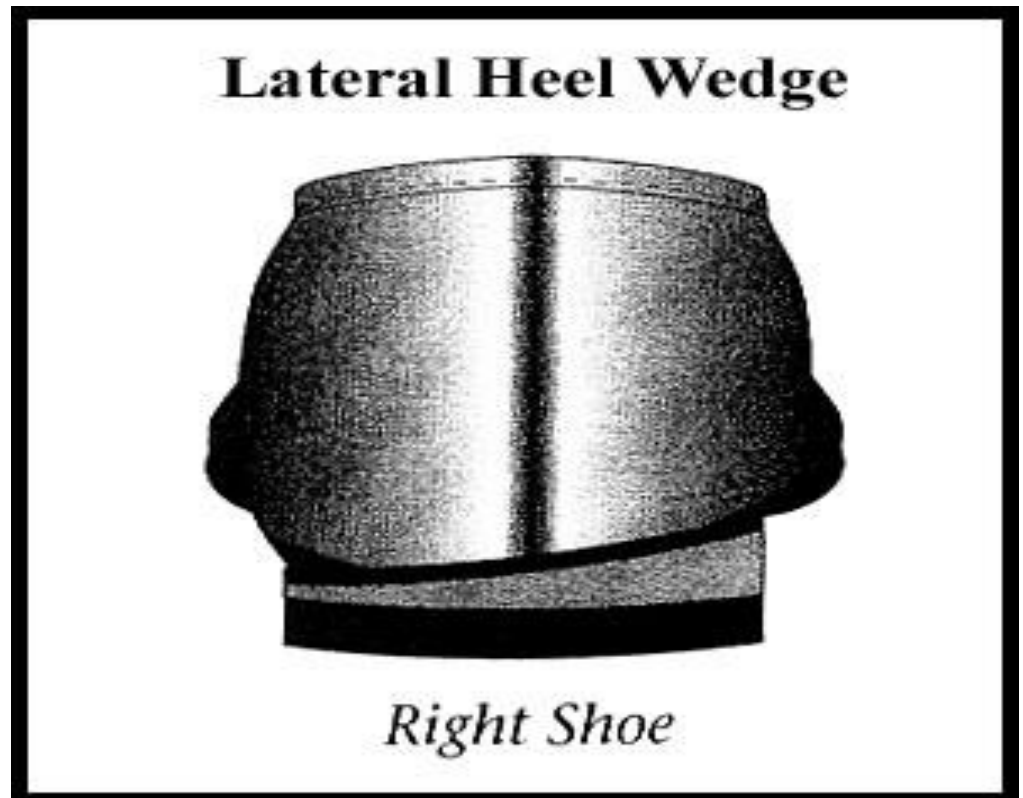
Before



After



# Lateral heel wedge





# Lateral heel wedge

- Shifts weight bearing to the medial side of the front of the foot
- Indication:-
  - fixed forefoot valgus

## Sole wedge

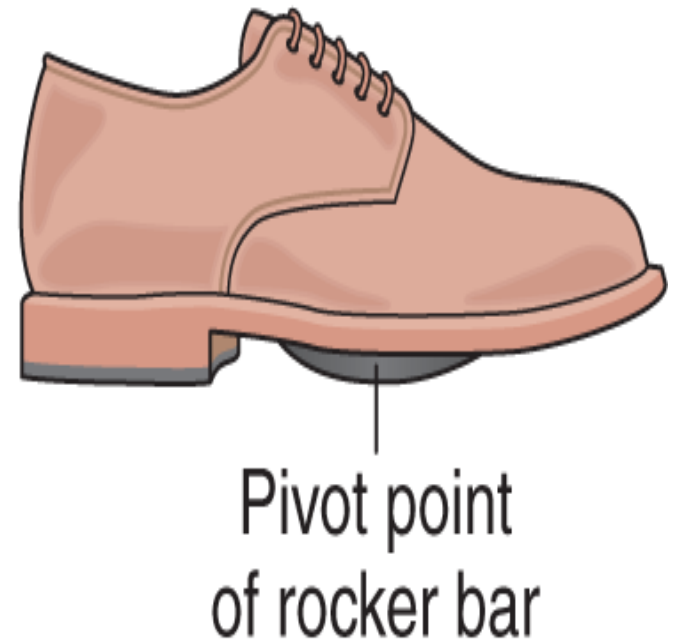
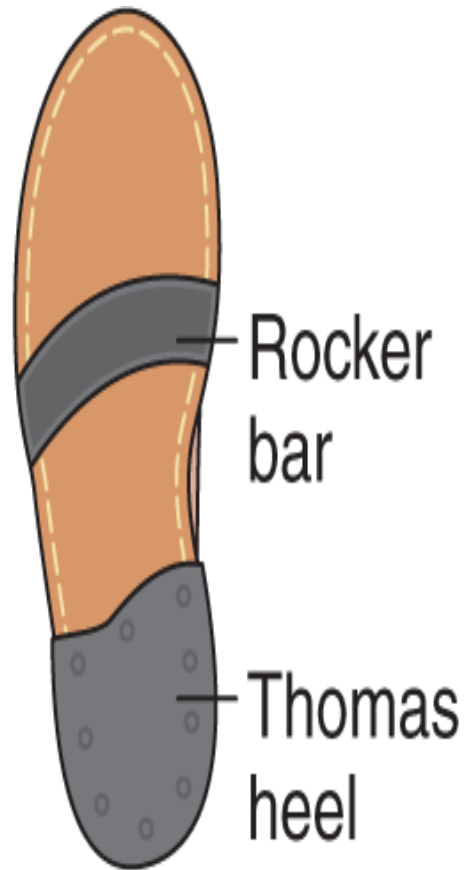
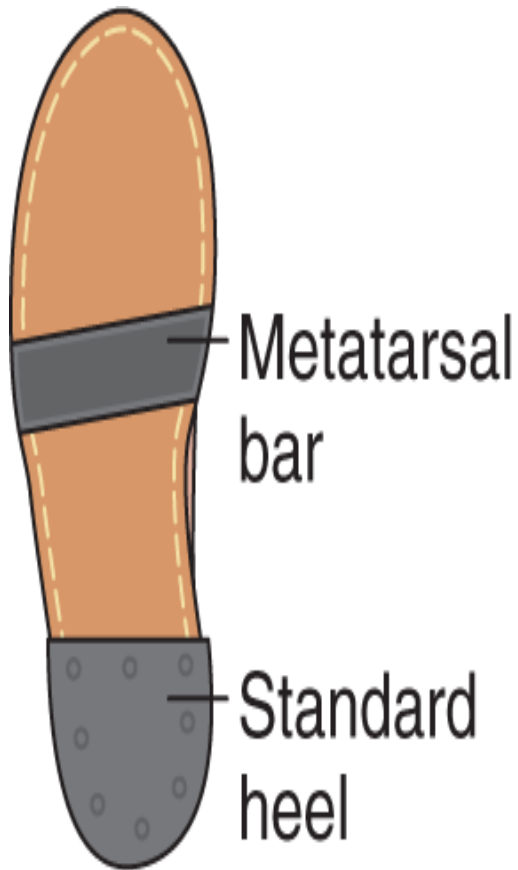
Alter medial-lateral metatarsal alignment

# Sole wedge



# Metatarsal bar

- Flat strip of leather or other firm material placed posterior to the metatarsal heads
- At late stance, the bar transfers stress from MTP jt to metatarsal shafts.
- Rocker bar is a convex strip.... Affixed to the sole proximal to the metatarsal head
- pt with leg length discrepancy of more than  $\frac{1}{2}$  in. will walk better with a shoe lift made of cork or light weight plastic



Source: Susan B. O'Sullivan, Thomas J. Schmitz,  
George D. Fulk: Physical Rehabilitation, Sixth Edition  
www.FADavisPTCollection.com  
Copyright © McGraw-Hill Education. All rights reserved.