Al-Mustaqbal University

Collage of Engineering

Prosthetics and Orthotics Engineering

Second Stage

PROSTHETICS I

Asst. Lec. Muntadher Saleh Mahdi

2st term – Lecture 1

2024-2025

Muntadher.saleh.mahdi@uomus.edu.iq

Dynamic Response Syme Feet

Newer Prosthetic Designs

1 **Impulse® Syme's Foot by Ohio Willow Wood:**

Structure: (Kevlar keel)
(carbon deflection toe-spring plates)

Manufacturing: Ensures optimal orientation of carbon fibers, avoiding issues like wrinkling and deformation

Alignment Adjustability: Notable for better gait and energy conservation

2 Carbon Copy II Syme Foot by Ohio Willow Wood:

Features:

- Various heel heights and toe resistances available

- Designed for patients up to 250 lb.

YouTube

3 Steplite Foot by Kingsley:

Key Features:

- Compressible heel and buoyant carbon keel

- Durable and suitable for most Syme amputees

- Low prosthetic clearance needed

- Versions available: "Strider" and "Flattie" to fit different footwear

4 Ossur's Low Profile:

For active amputees: Up to 285 lb

For low-activity amputees: Up to 365 lb

Features:

- Flexible double-spring keel

- Fenestrated heel to reduce shock

heel with holes

5 **Seattle Light Foot by Seattle Orthopedic Group:**

Feature: Dynamic elastic foot

Ideal for: Active individuals

Addressing Alignment Issues

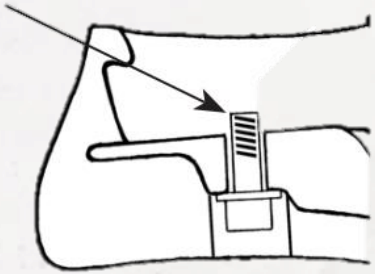
Challenges:

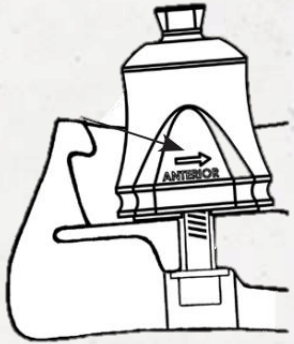
Alignment during dynamic movement is crucial but difficult due to limited space.

Advances:

1 **Impulse Syme Functional Alignment Device:**

Allows dynamic alignment adjustments during fitting, offering versatility and customization.



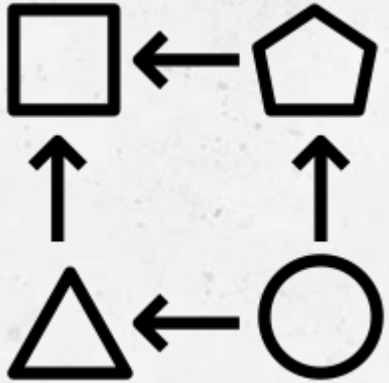


Advances:

2

SL Profile & Lo Rider Syme Feet by Otto Bock:

Provides angular adjustability, though might be too tall for some users.



Advances:

3 **<u>1C20 ProSyme</u> by Otto Bock:**

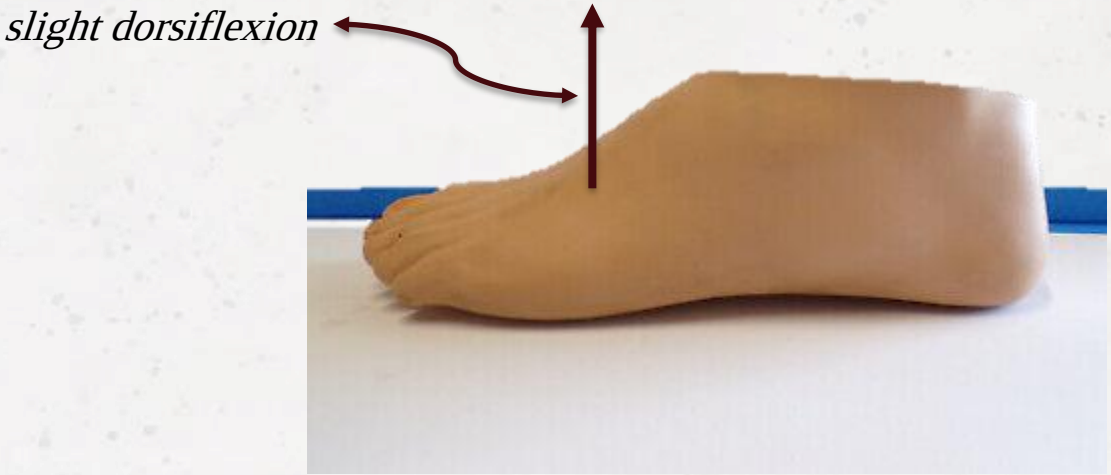
Offers:

- broad alignment adjustability

- changes in heel height.

Optimal Alignment Insights

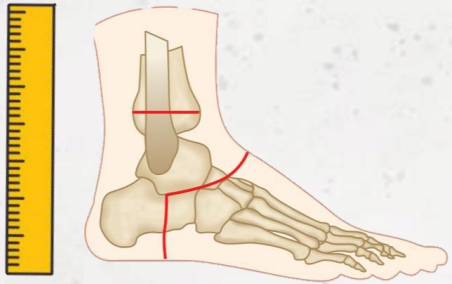
Natural Gait: The Syme foot should be in slight dorsiflexion (pointing upwards) relative to the shin for a more natural walk.



Optimal Alignment Insights

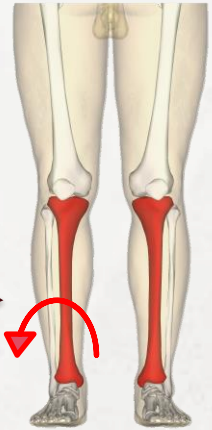
Important Factors:

- Residual Limb Length



- Knee Flexion Contractures

- Tibial Adduction Angles



MCQ

1) What is the main component of the Impulse Syme's foot by Ohio Willow Wood?

a) Kevlar keel with carbon deflection toe-spring plates

b) Aluminum keel with rubber toe-spring plates

c) Carbon keel with titanium toe-spring plates

d) Plastic keel with steel toe-spring plates

2) Which prosthetic foot is designed especially for patients weighing up to 250 lb?

a) Impulse Syme's Foot

b) Carbon Copy II Syme Foot

c) Steplite Foot

d) Ossur Low Profile

MCQ

3) What feature does the Steplite Foot by Kingsley have?

a) Flexible double-spring keel

b) Compressible heel and carbon keel

c) Dynamic elastic foot

d) Articulated plantar flexion

4) Which company's offering is tailored for both active amputees up to 285 lb and low-activity amputees up to 365 lb?

a) Ohio Willow Wood

b) Kingsley

c) Ossur

d) Seattle Orthopedic Group

MCQ

5) What challenge do most Syme prosthetic feet face?

a) Alignment during static movement

b) Limited space for alignment during dynamic movement

c) Excessive height making it uncomfortable

d) Lack of durability in materials used

6) Which feature of the Carbon Copy II Syme Foot helps cater to varying patient needs?

a) Compressible heel design

b) Different heel heights and toe resistances

c) Dynamic elastic foot

d) Fenestrated heel

MCQ

7) What specific advantage does the Ossur Low Profile offer?

a) Fewer alignment adjustments needed

b) Notable for different footwear use

c) Designed for low-profile shock reduction

d) High weight capacity and flexibility

8) What are the benefits of having adjustable alignment in Syme prosthetics?

a) Reducing prosthetic height

b) Enhancing shock absorption

c) Allowing for better gait and energy conservation

d) Increasing prosthetic durability

MCQ

9) Which company is known for the SL Profile and Lo Rider Syme Feet?

a) Kingsley

b) Ossur

c) Otto Bock

d) Seattle Orthopedic Group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Thank you