

# Prosthetics and orthotics

Z. Rozkydal

# Orthopaedics

- prosthetics and orthotics

Prosthetics - replacement of part of body

Orthotics - replacement of loosened function of part of body

Epithetics - cosmetic covering of part of body

Orthopaedic shoes

Adjuvatics – devices for independence

# Prosthetics

Replacement of part of body

Above knee limb



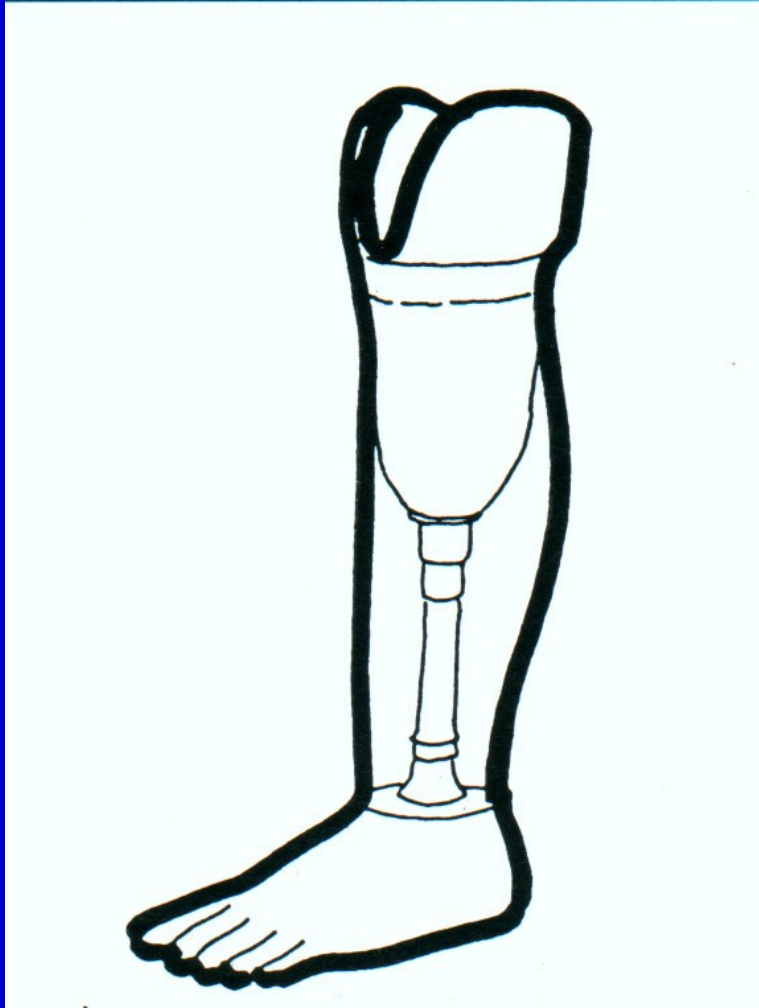
# Requirement for prosthetic limb

Static function  
Dynamic function  
Well controlled  
Light  
Durable  
Esthetic



Bandage of the stump

# Prosthesis



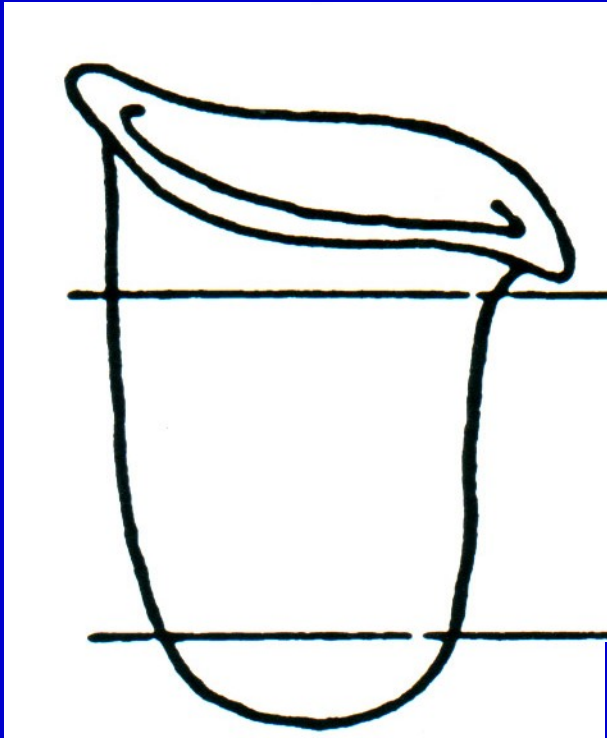
Stump bed- socket

Modular part

Adjuvans

Prosthetic limb

# Stump bed- socket

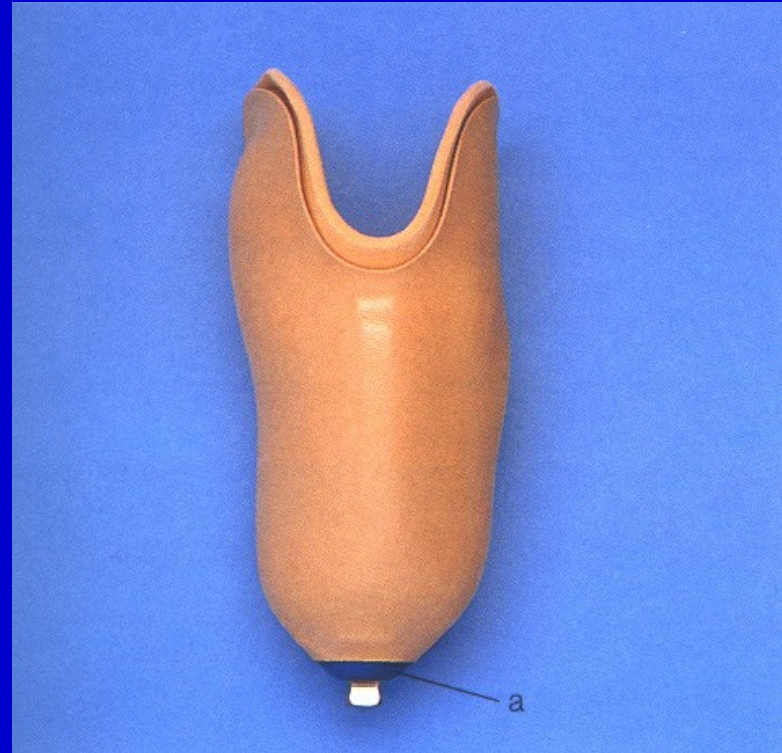


Scheme

Ring

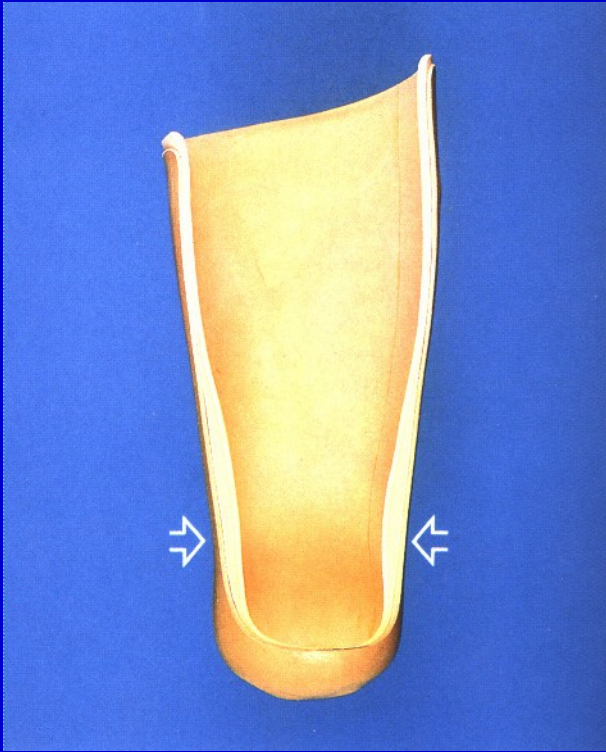
Walls

Bottom





# Adjustments of stump bed



Soft padding  
Good fitting  
to avoid pressure sores  
and skin irritation and aczema

Soft plastic bed

# Stump bed- socket

The aim:

Weightbearing stump

Skin of good quality

Enough of soft tissues

Soft stump bed

Silicon sockets



Bellow knee prosthesis

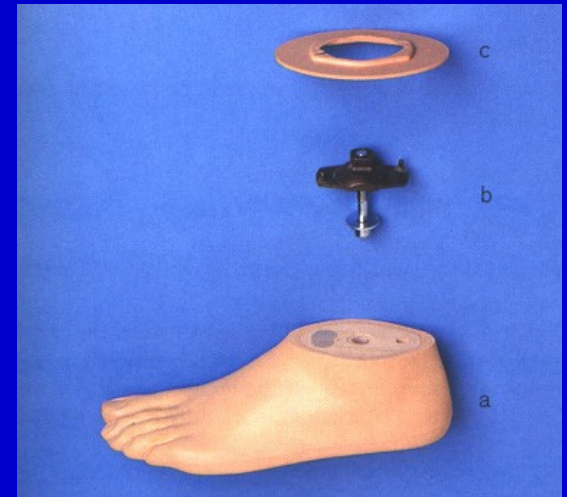


# Materials

Steel, titanium, wood  
Plastic, PVC  
epoxyd, rubber, polyester,  
termoplast, carbon.



Modular parts



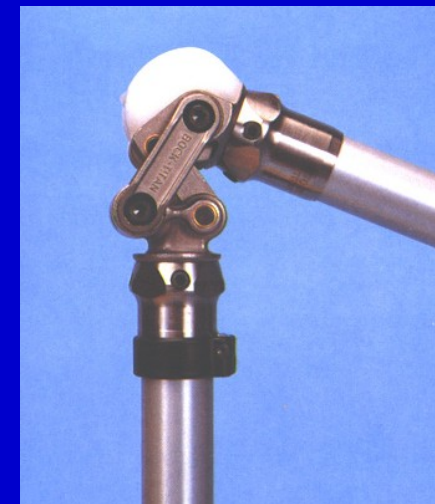
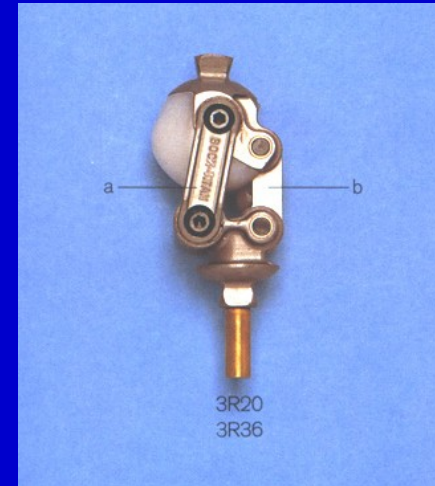
Adapter for dynamic walking

# Joints

## Hydraulic



Monocentric joint



Polycentric joint

# Prosthesis

1. Immediate fitting
2. First prosthesis
3. Standard prosthesis



Immediate prosthesis

# Prostheses of lower limb

Shoes

Bellow knee limbs

Above knee limbs

After disarticulation in knee joint

After disarticulation in hip joint



Bellow knee prosthesis



# Prosthesis of the foot



Multiaxial movements  
Simple lift off



# Carbon prosthesis of the foot



Carbon fiber

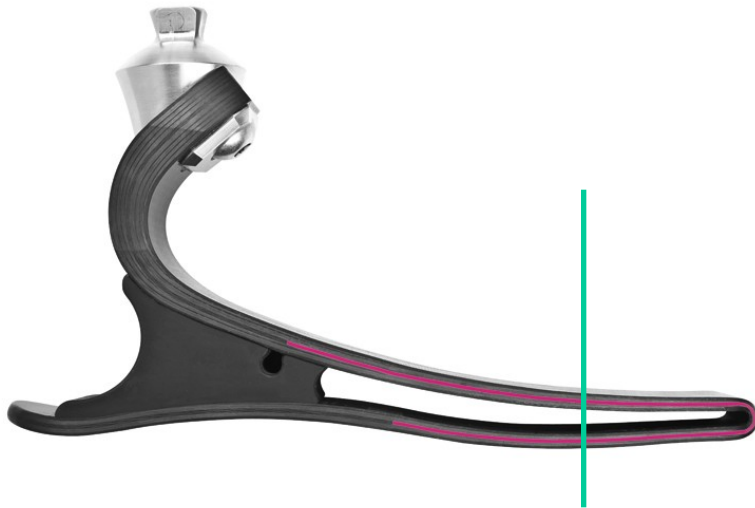
Dynamic forefoot

Soft heel

Multiaxial movements



# Prosthesis of the foot



Multiflex Ankles

Flexfeet

Adjustable Heel Height Feet



Prosthesis after Pirogov amputation

# Bellow knee limbs

Pediatric Limbs

Cosmetic Limbs

Sport Limbs

Swim Limbs

Conventional Sockets

Silicone Suction Sockets

Carbon Fiber Sockets

Thermo Plastic Sockets

Ultra Light Modular Setups





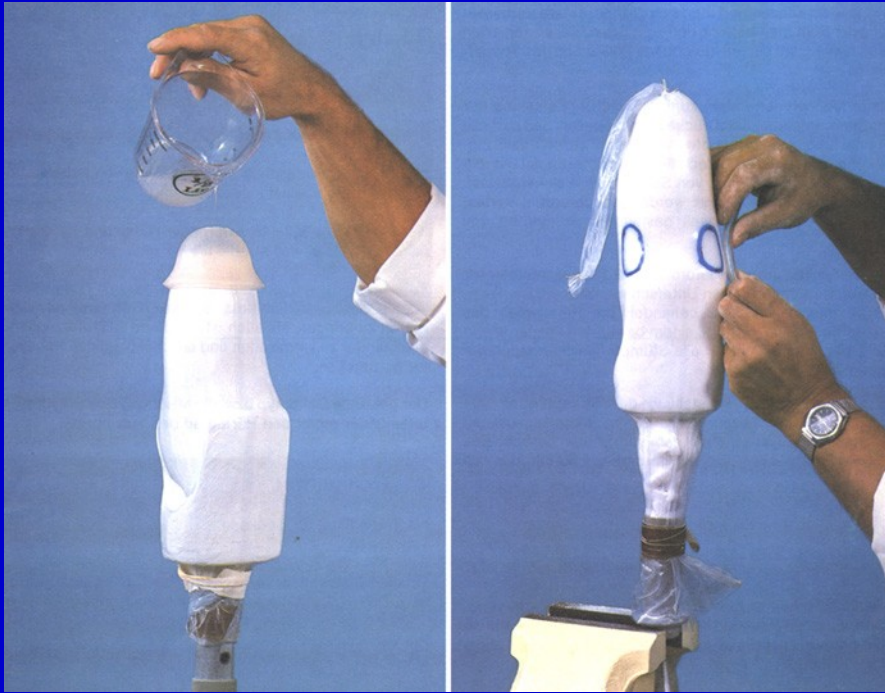
# Processing



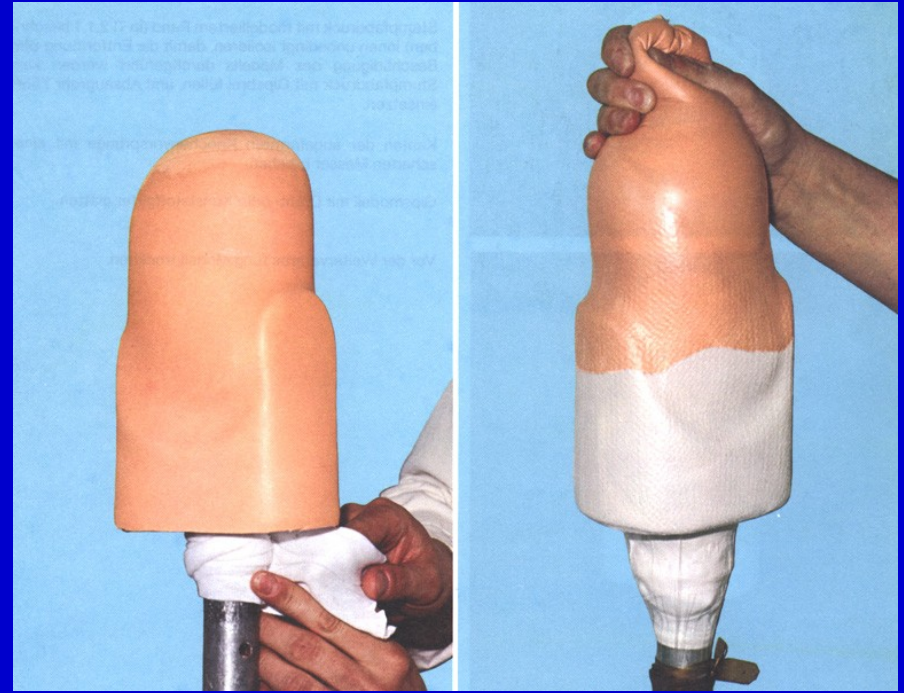
Plaster negative

Plaster positive

# Processing



Prosthetic socket from silicon



Prosthetic socket from thermoplast



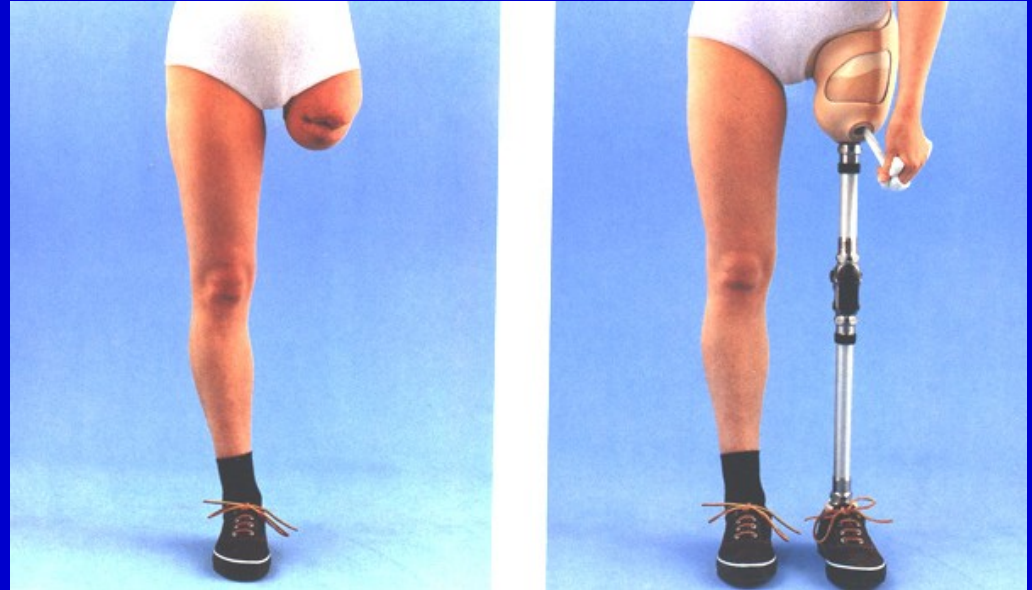


Bellow knee limb from thermoplast

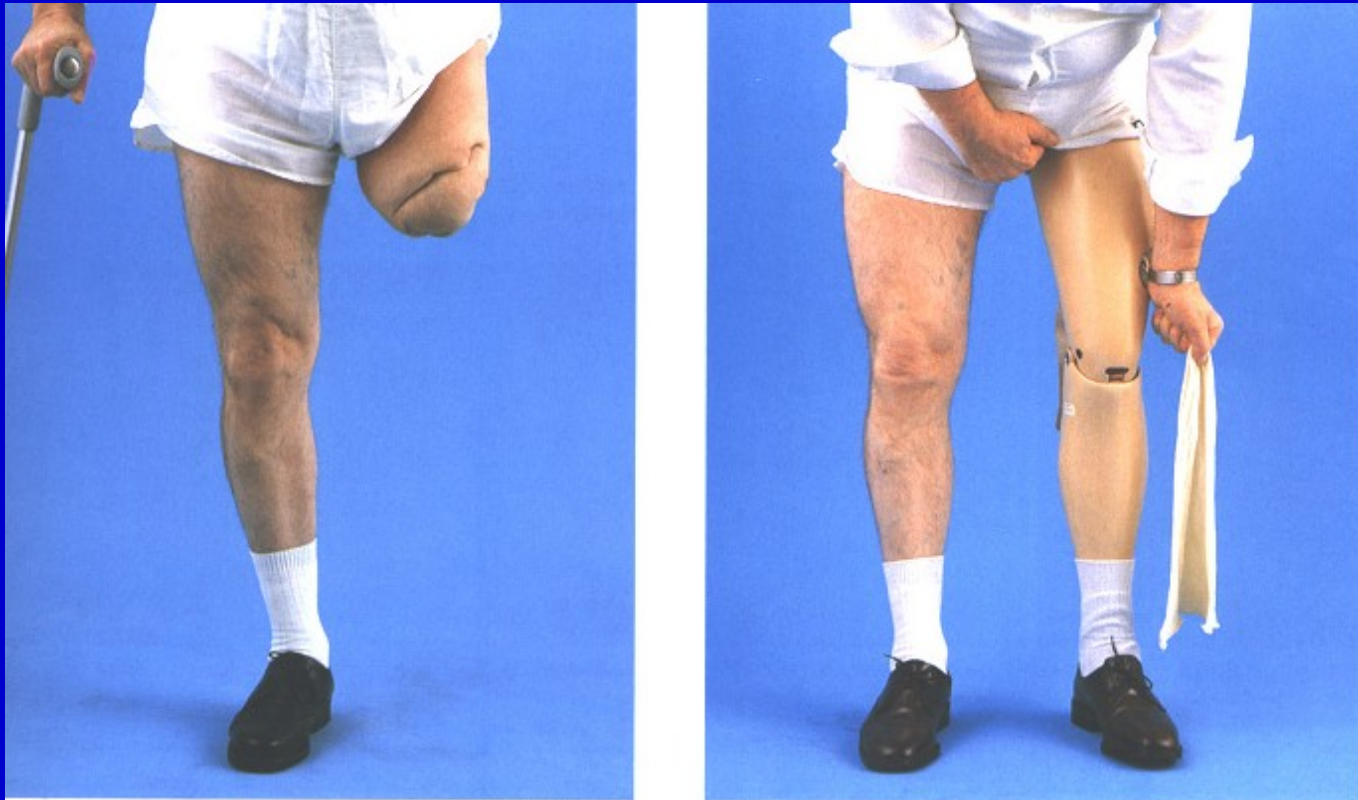


# Above knee limbs

Conventional AK Limbs  
Pediatric Limbs  
High Tech Sport Limbs  
Suction Sockets  
Silicone Suction Sockets  
Hydraulic Knee Units  
Polycentric Knee Units  
Microprocessor Knee Systems



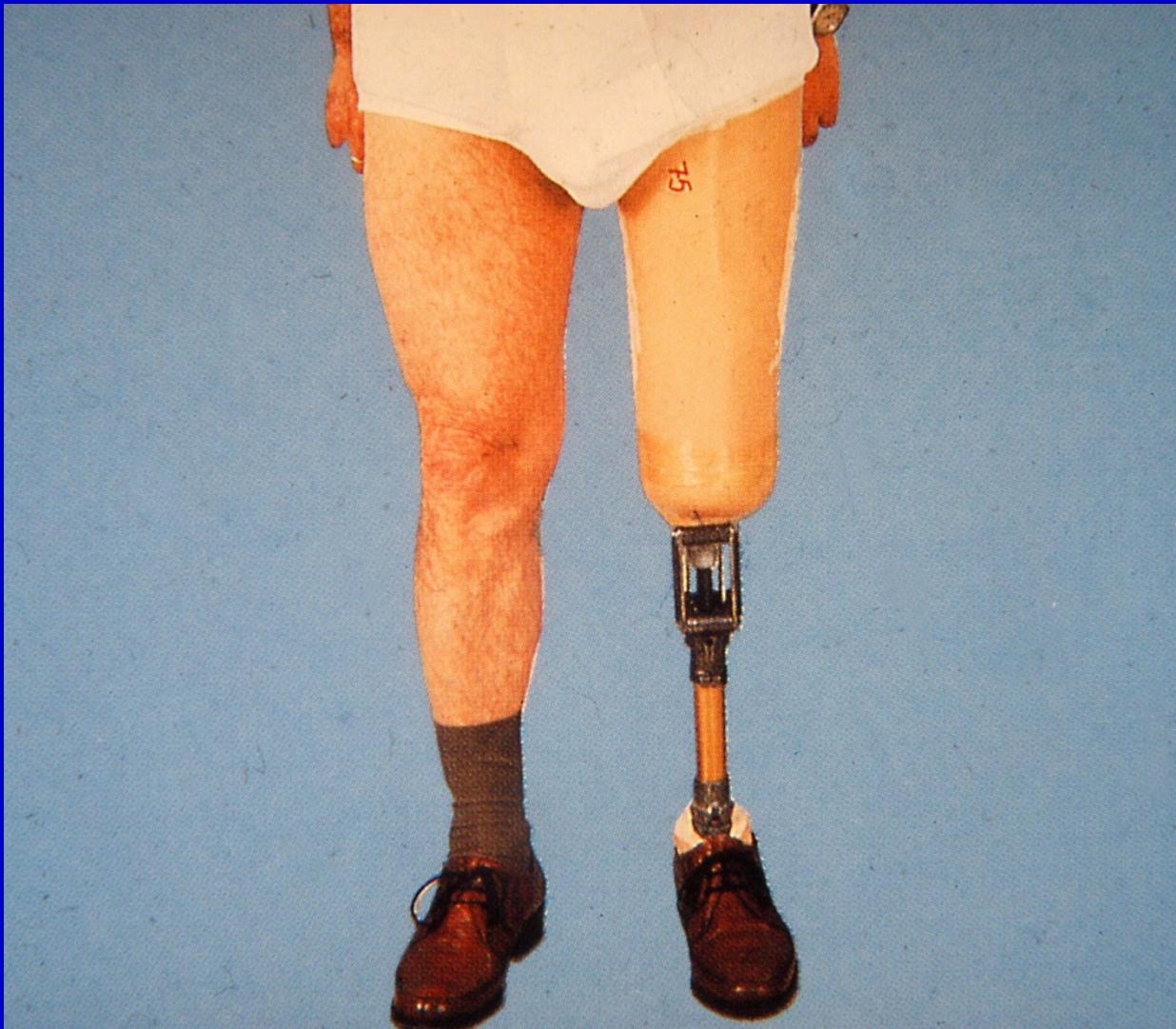
Modular above knee limb



Placement of the stump into the socket



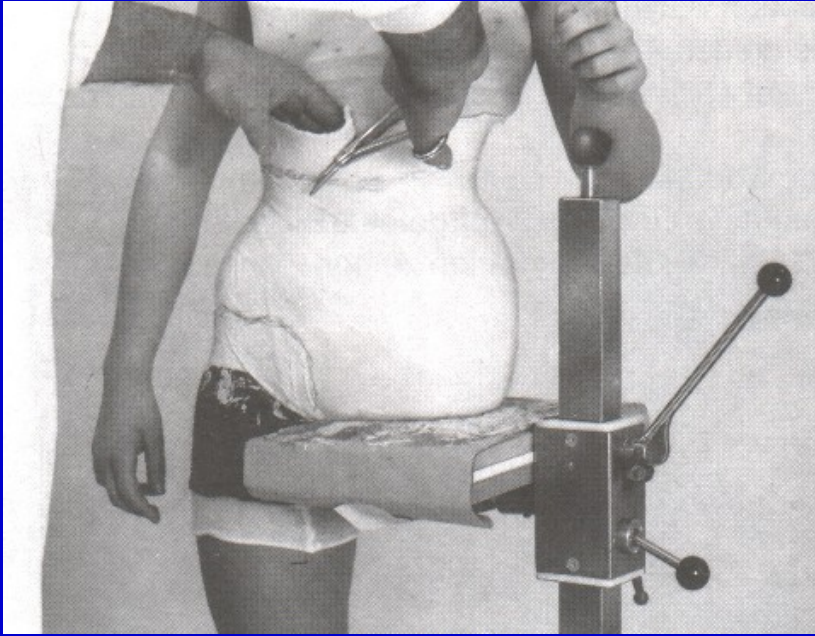
Modern above knee prosthesis



Prosthesis in knee disarticulation



# Processing

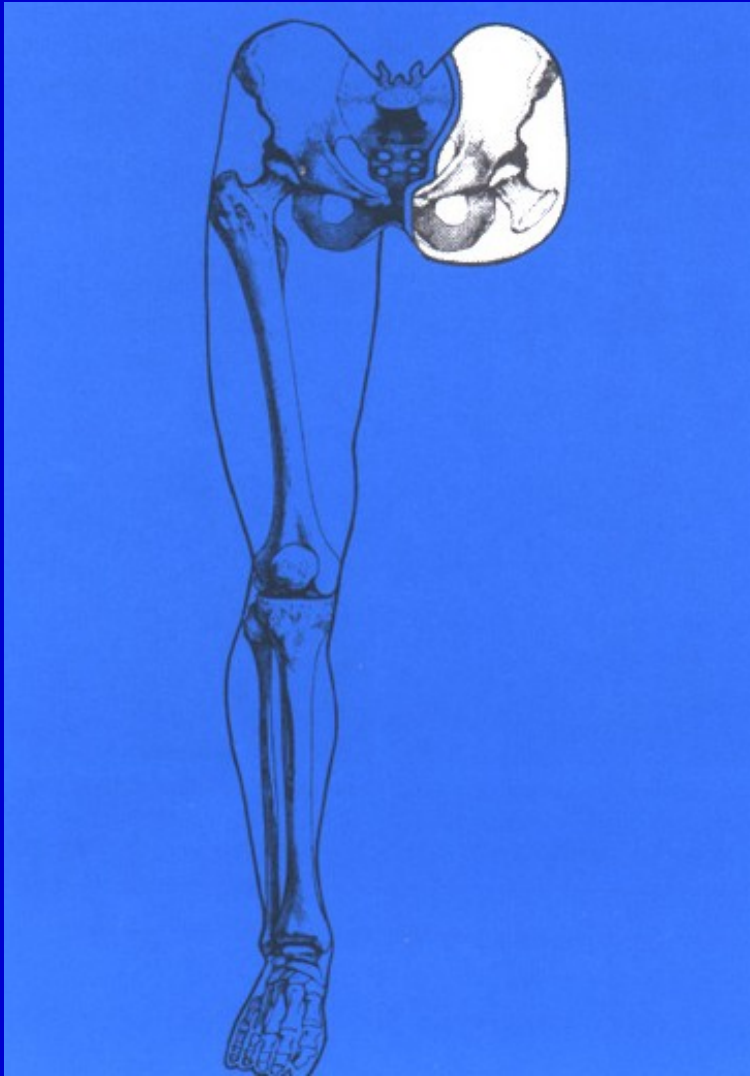


Plaster negative

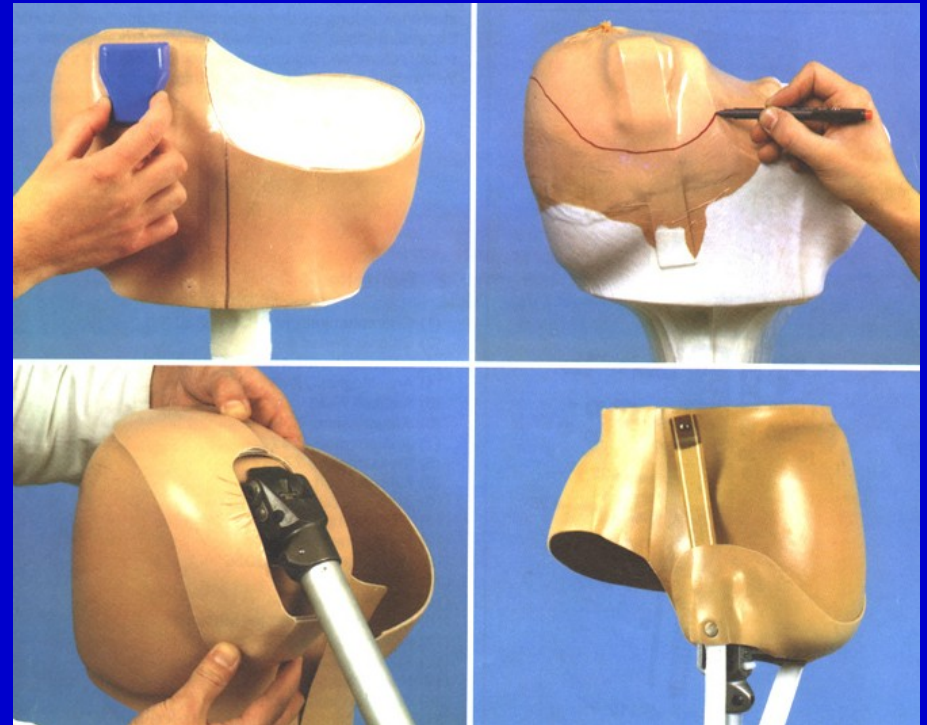
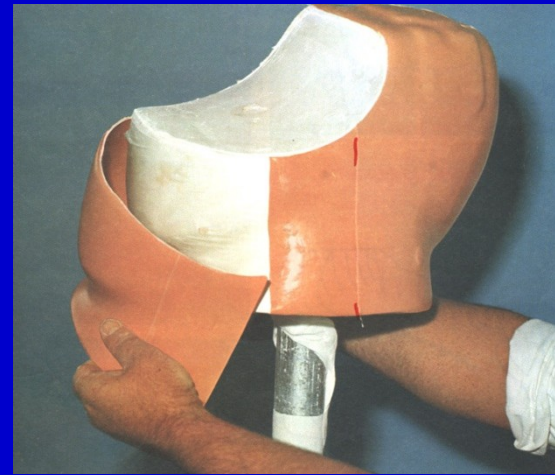


Plaster positive

# Processing

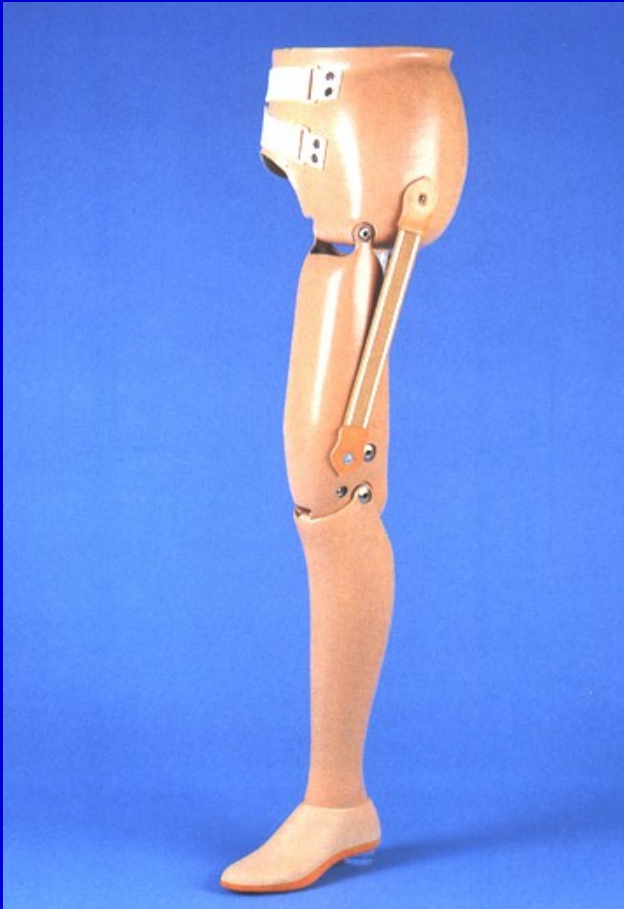


Disarticulation in hip joint



Pelvic ring

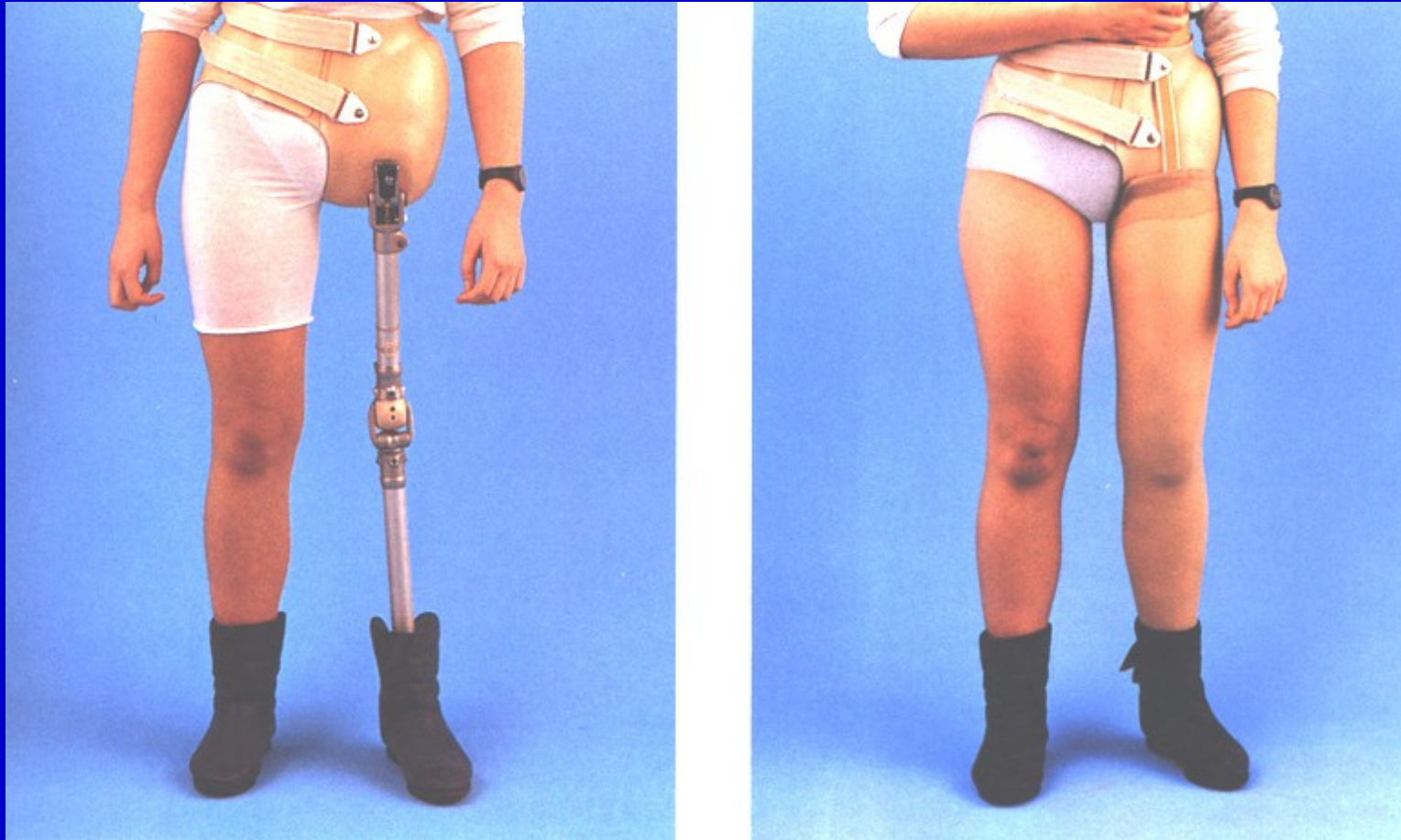




Prosthesis after disarticulation  
in hip joint  
Rigid pelvic ring



Flexible pelvic ring



Rigid pelvic ring

# Physiotherapy with prosthetic limb

Standing

Proprioception

Balance

Coordination of movements

Gait

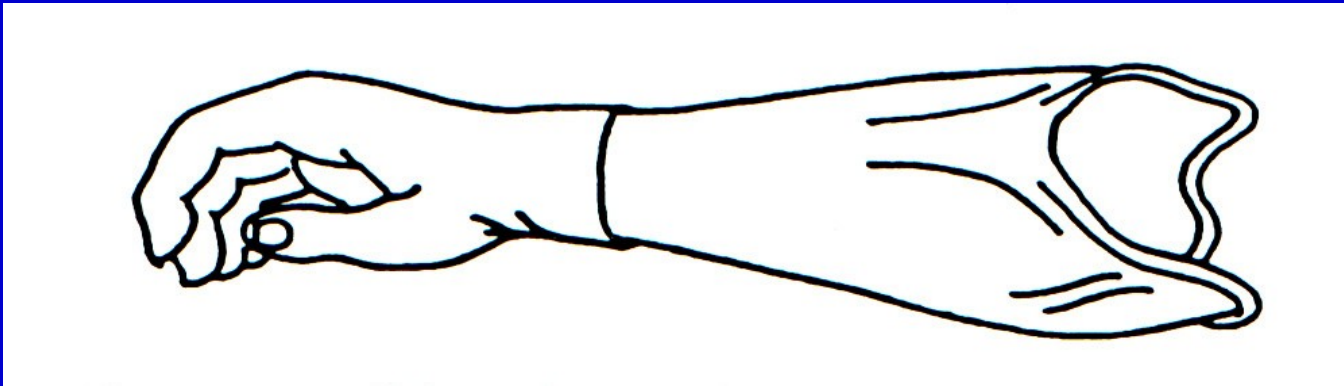


# Prosthesis of upper extremity

Cosmetic

Mechanical hand

Bioelectric



Cosmetic prosthesis

# Prosthesis of upper extremity

Above & Below Elbow Prostheses

Passive Limbs

Functional Limbs

State-of-the-art Myoelectrics

Bionic Hands and Digits

Custom Gloves

Partial Hand Prostheses

Cosmetic Restorations

Hands & Fingers

Feet & Toes



Cosmetic prosthesis





Cosmetic prosthesis of the hand





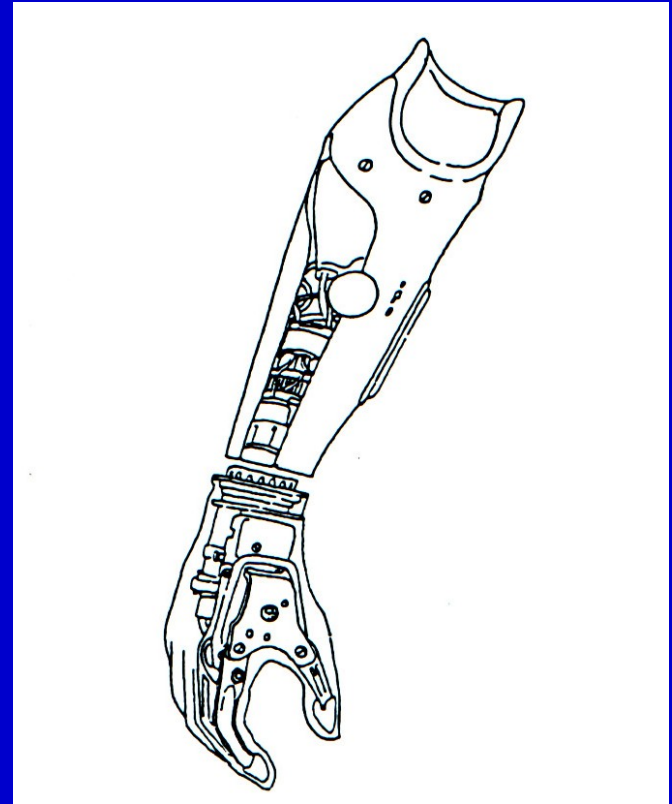
Prosthesis with dynamic arm

# Bioelectric prosthesis

Power:

Movements of the body

Muscle contractions at the stump



Myoelectric prosthesis

# Orthosis

Stabilisation

Correction of malalignment

To correct asymetry



Orthosis of the knee joint

# Orthosis

Passive



Lumbar orthosis

Active



Orthosis of the knee



# Orthosis of the trunk



Jewett orthosis



Cheneau orthosis

# Collars



Soft collar



Philadelphia collar

# Orthesis of lower extremity



Rigid



Active

# Orthosis of upper extremity



Elbow orthosis



Orthosis of the wrist joint





Orthesis of the hip joint

# Orthopaedic shoes

## Functions of ortopaedic shoes

1. Correction of malalignment
2. Immobilisation
3. Aleviation of pain



Orthopaedic shoe

# Types of orthopaedic shoes

Adjustment of standard shoes

Professional shoes

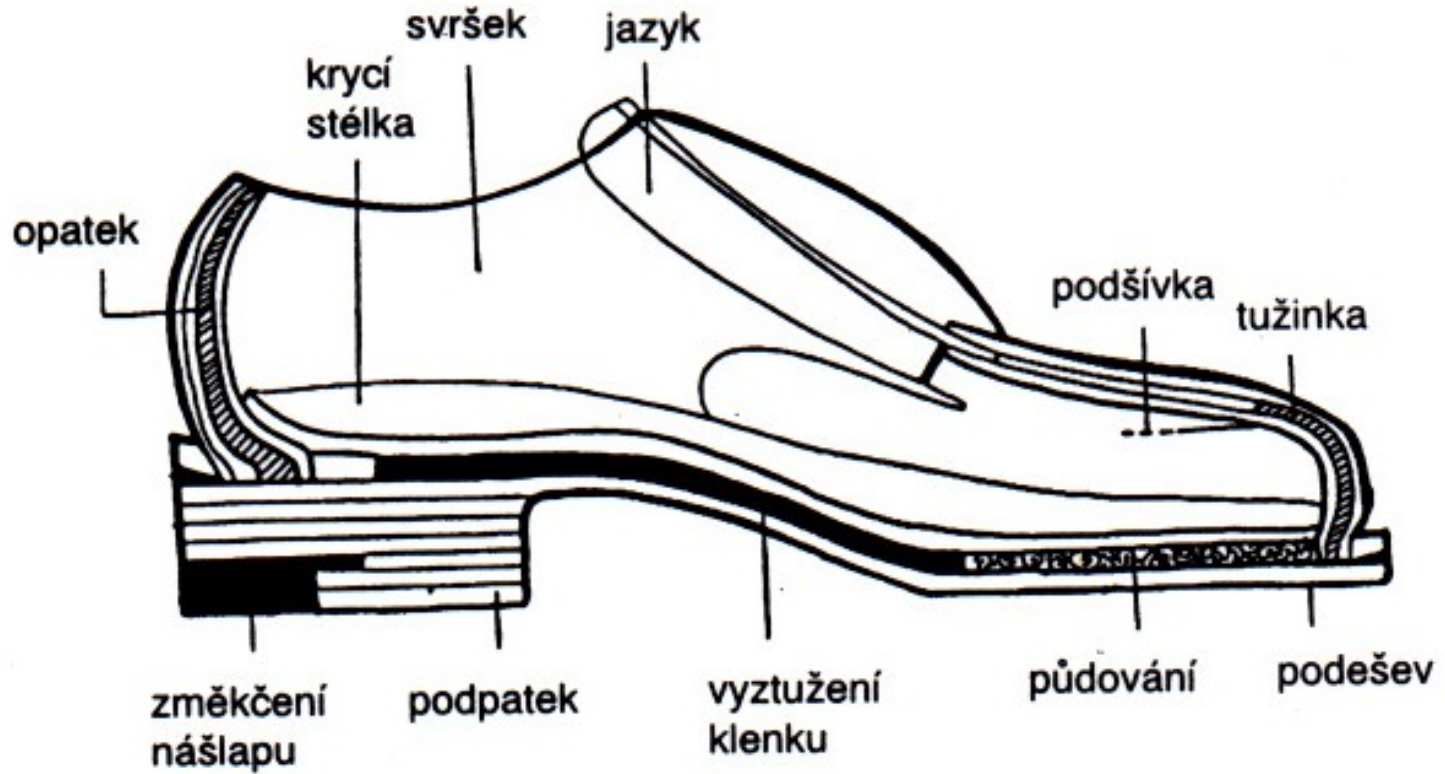
Ortopaedic shoes

Diabetic shoes



Diabetic shoes

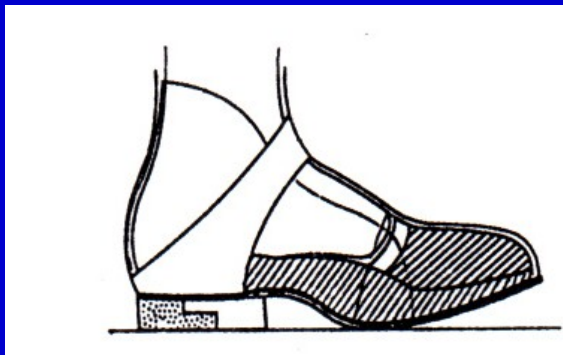
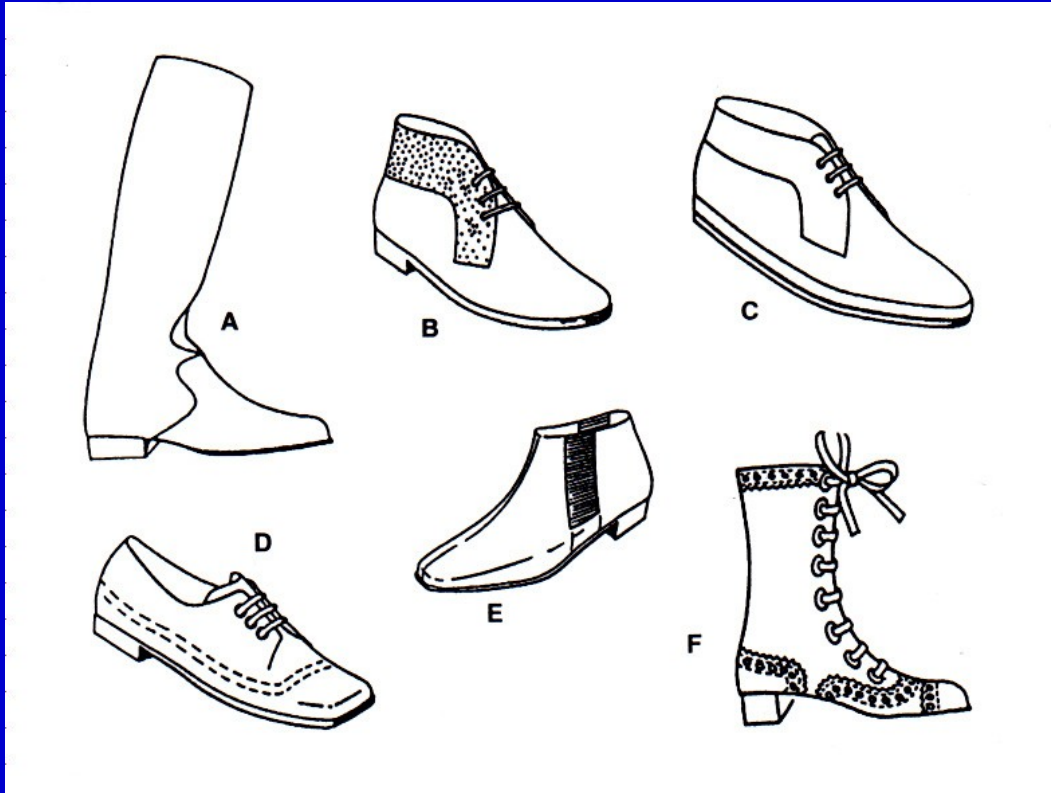
# Parts of the shoe



Scheme



# Types of the shoes



Shoe after amputation in the forefoot

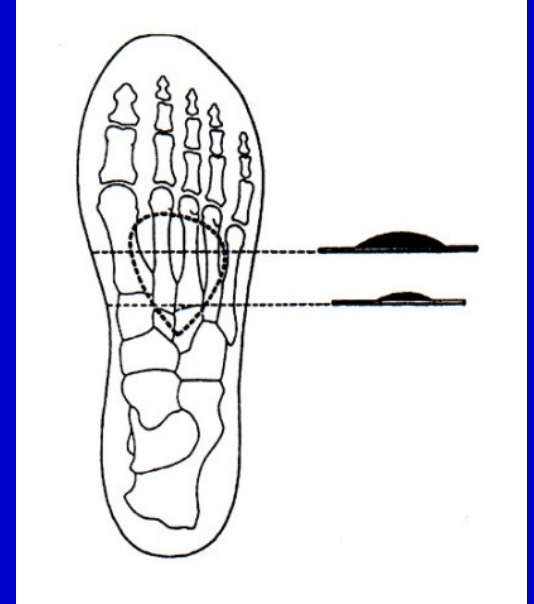
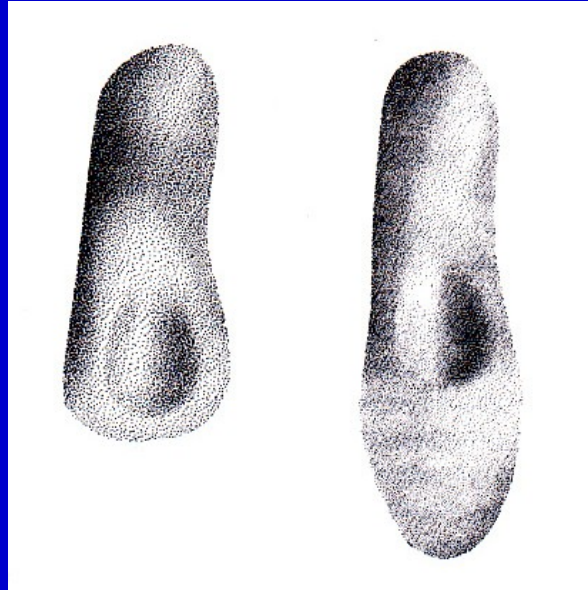
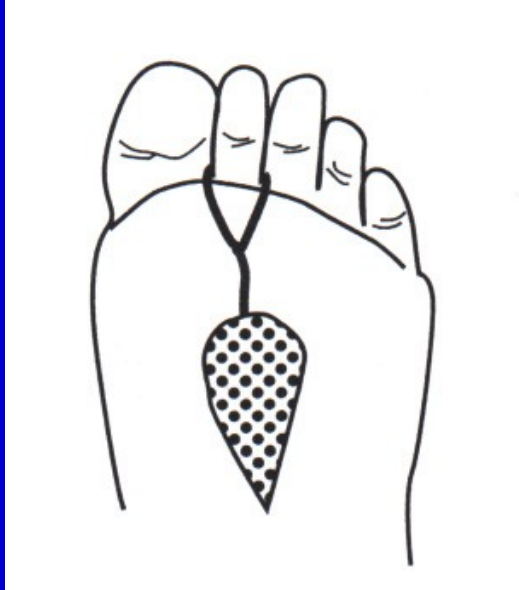
# Principles of the shoes for kids

1. 1 cm longer than the foot
2. Wider parts for the forefoot
3. Flexible in the middle part
4. Firm heel

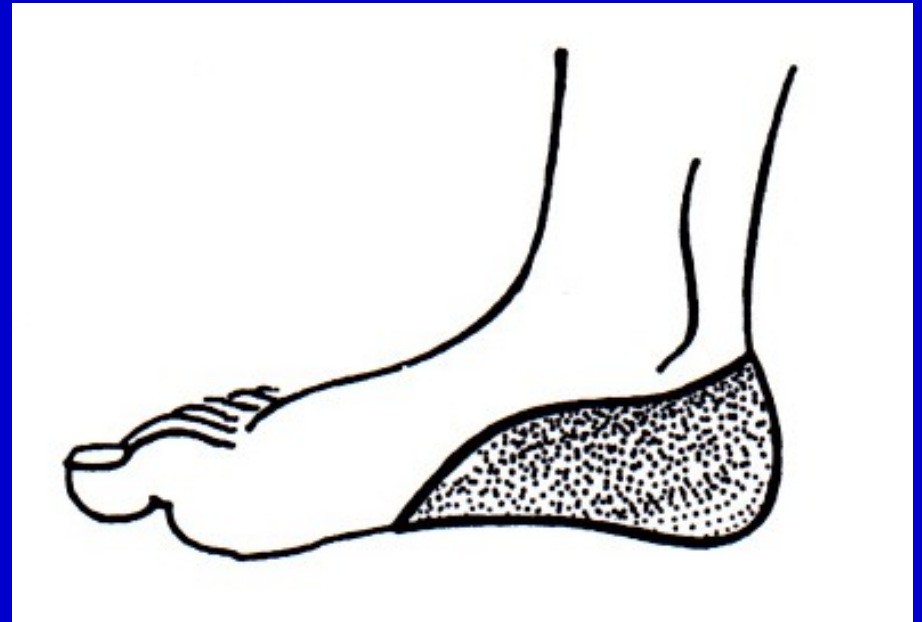


Children shoes

# Padding

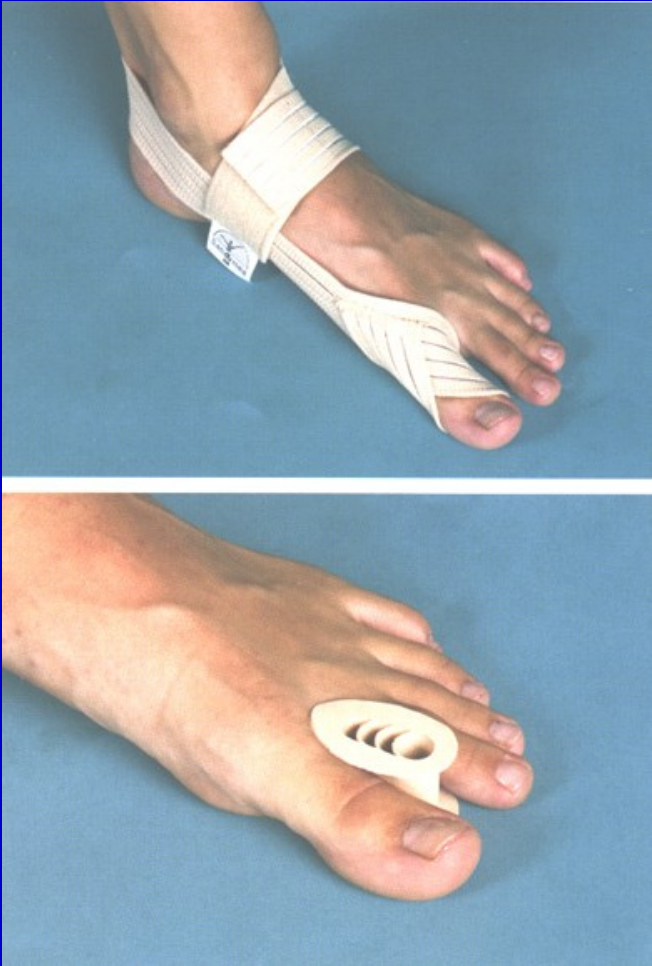


# Padding





# Corectors



Bunion



Calcaneal spurs

# Adjuvatics

Crutches  
Walkers  
Toilet chairs

