ottobock.

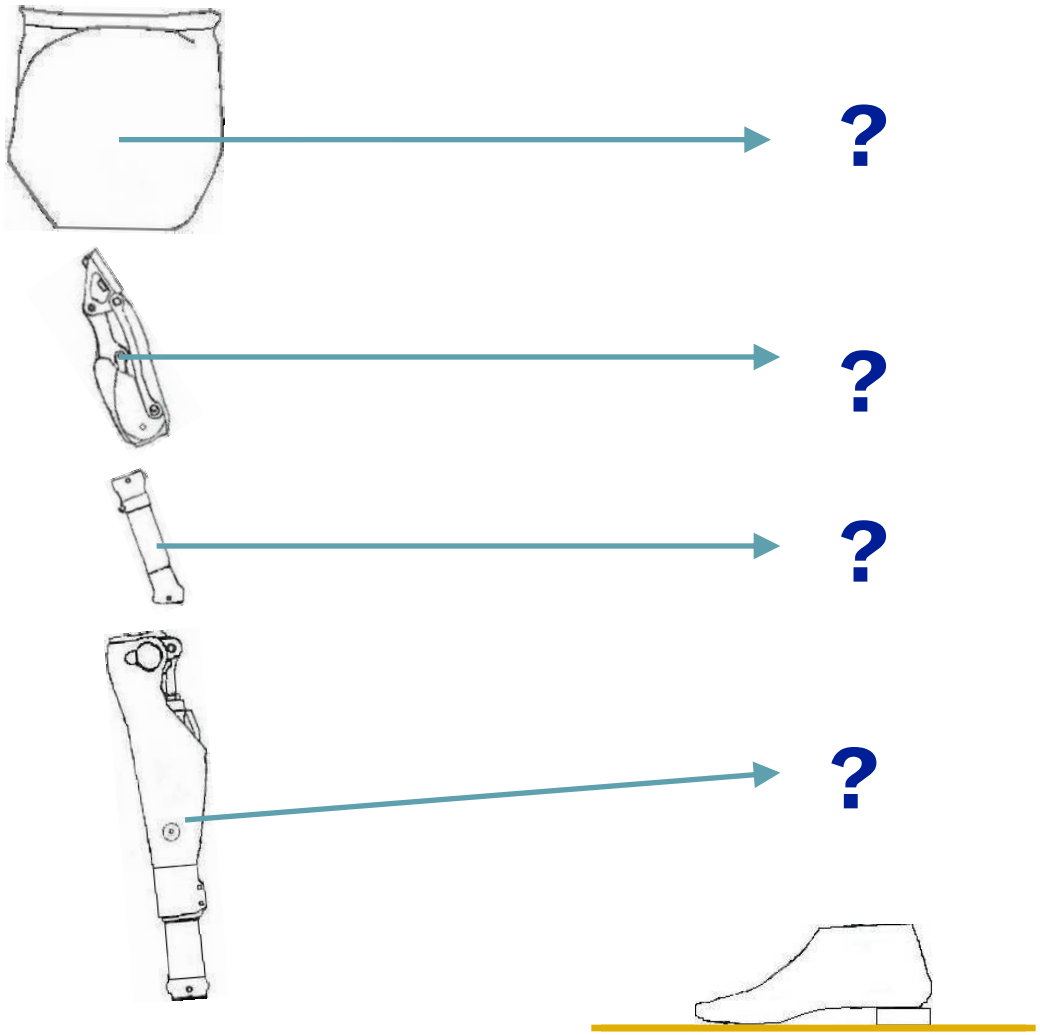
Helix^{3D}-Hüftgelenksystem

Aufbaurichtlinien

Academy

Quality for life

Alignment Instructions



Alignment Instructions

Aims

1. L.A.S.A.R. Assembly Alignment Instructions
2. L.A.S.A.R. Posture Alignment Instructions

Introduction

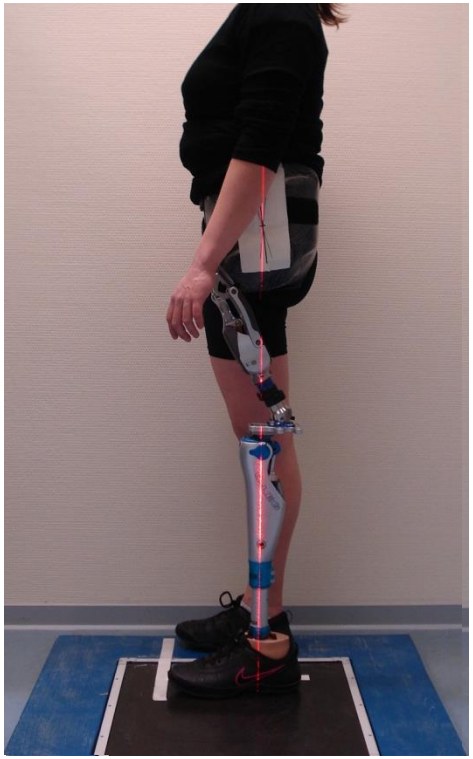
Complex of problems:

1. **Unfunctional alignment** of the knee and foot components
   knee is far posterior ⇨ complicated initiation of swing phase
   knee is far anterior ⇨ uncontrollable kneeflexion during stance phase

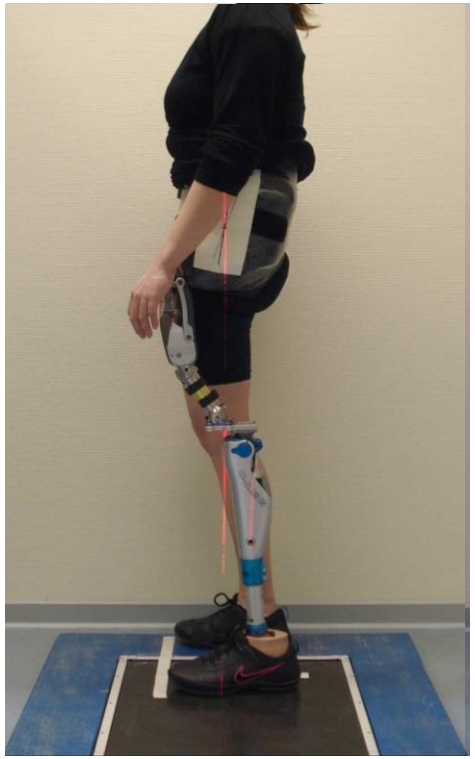
2. **unphysiological position of the socket**
   ⇨ constrained posture of the pelvis (forward or backward tilt)
   ⇨ compensatory posture of the spine (hyper- or hypolordosis)
   ⇨ **Various back problems in the lumbar spine section**

Significance of a physiological position of the pelvic socket for the function of the prosthesis

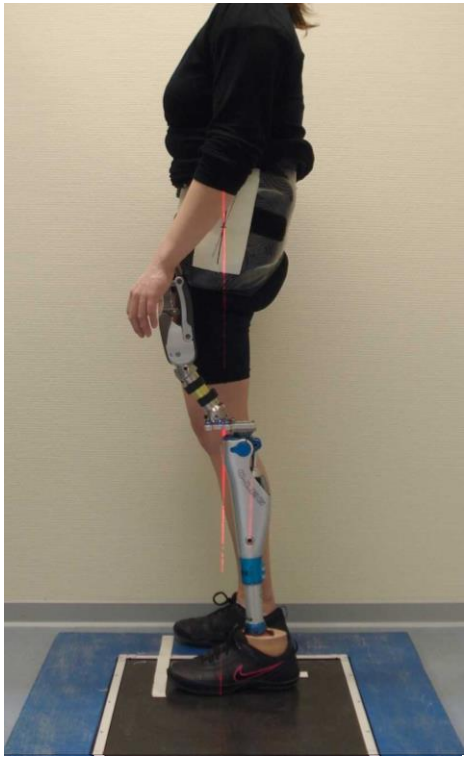
neutral vs.
10° forward



neutral vs.
10° backward

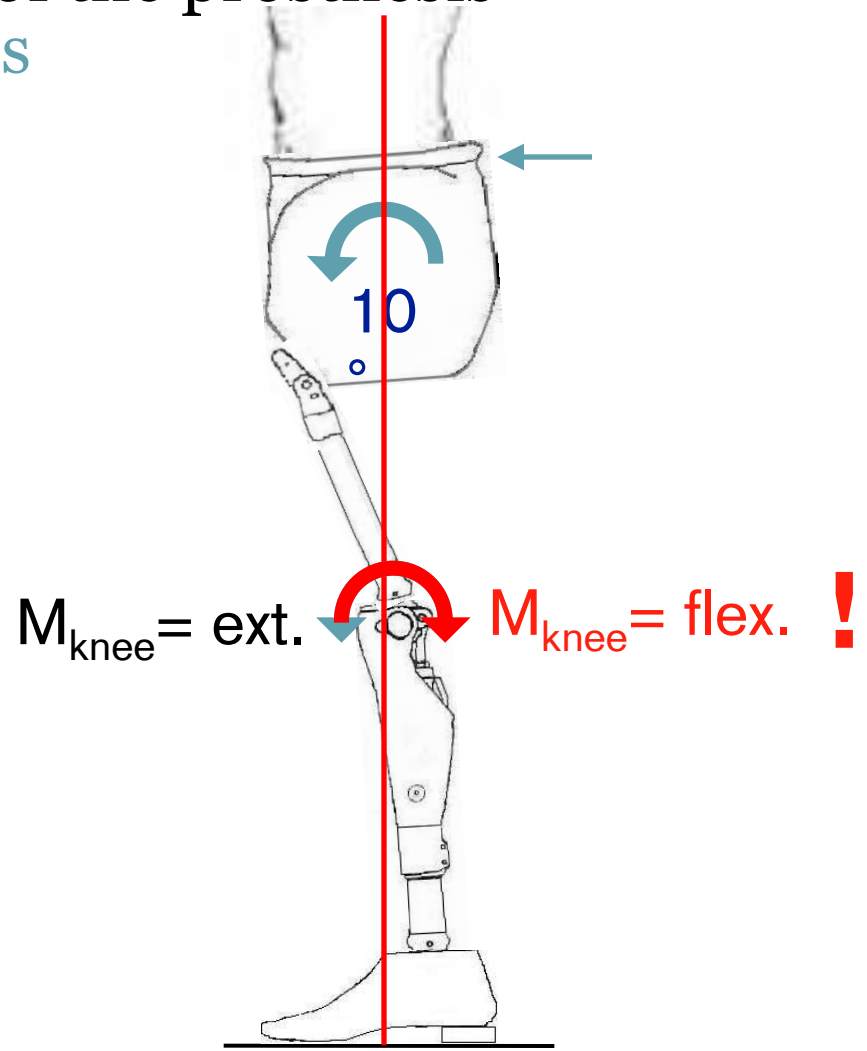


10° backward vs.
10° forward



Significance of a physiological position of the pelvic socket for the function of the prosthesis

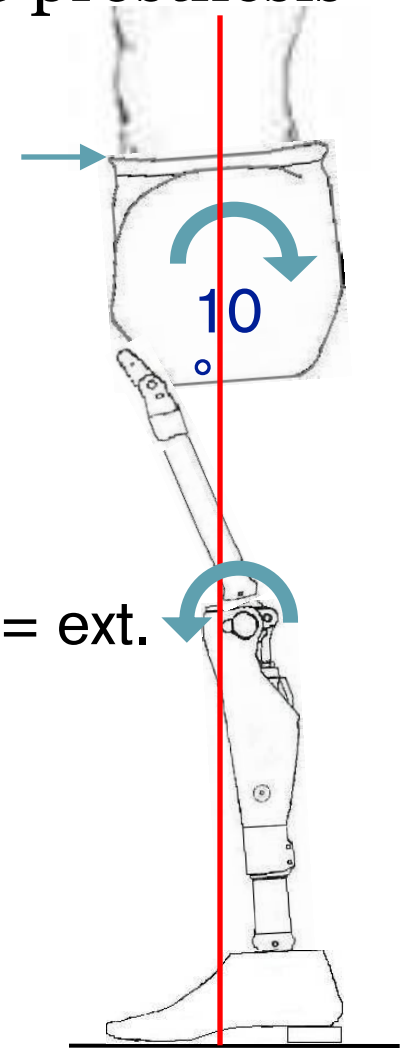
Forward tilt of the pelvis



L.A.S.A.R. Posture load line

Significance of a physiological position of the pelvic socket for the function of the prosthesis

Backward tilt of the pelvis



L.A.S.A.R. Posture load line

Study about static alignment

Study appraoch:
Standardized procedure for the sagittal positioning of a pelvic socket

26 patients involved
Fitted by strongly different socket technologies by customers

Study about static alignment

Biomechanical based procedure **for the sagittal positioning of a pelvic socket, …**

identification of:

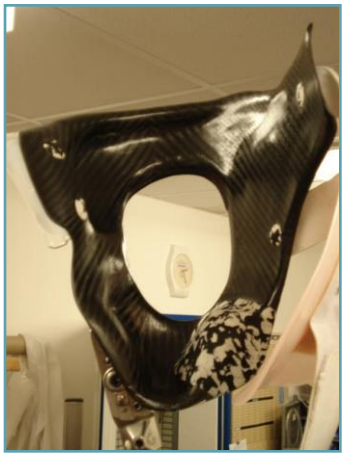
- **load balanced point***
- **neutral pelvic tilt** under load
- pelvic socket **position in a-p**

… that indepedent of the pelvic socket technology**,** patient`s constitution **and** mobility grade **leads to a bench alignment, which allows a** functional prosthetic alignment **only by minimal adjustments.**

***German:** T**eil**m**assen**s**chwerpunkt (**TMS**)**

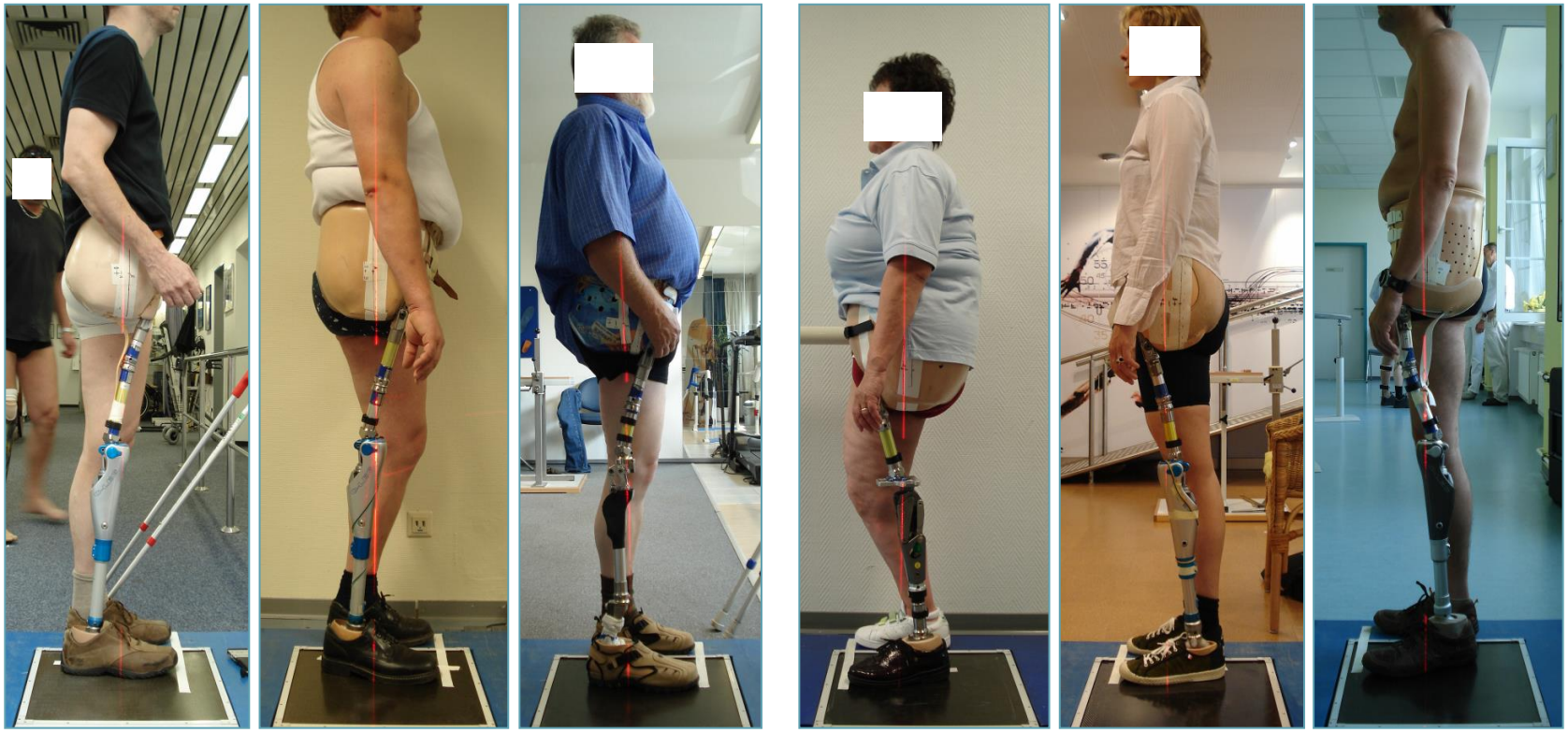
Study about static alignment

Different socket shapes

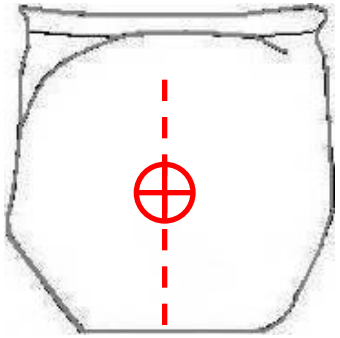


Study about static alignment

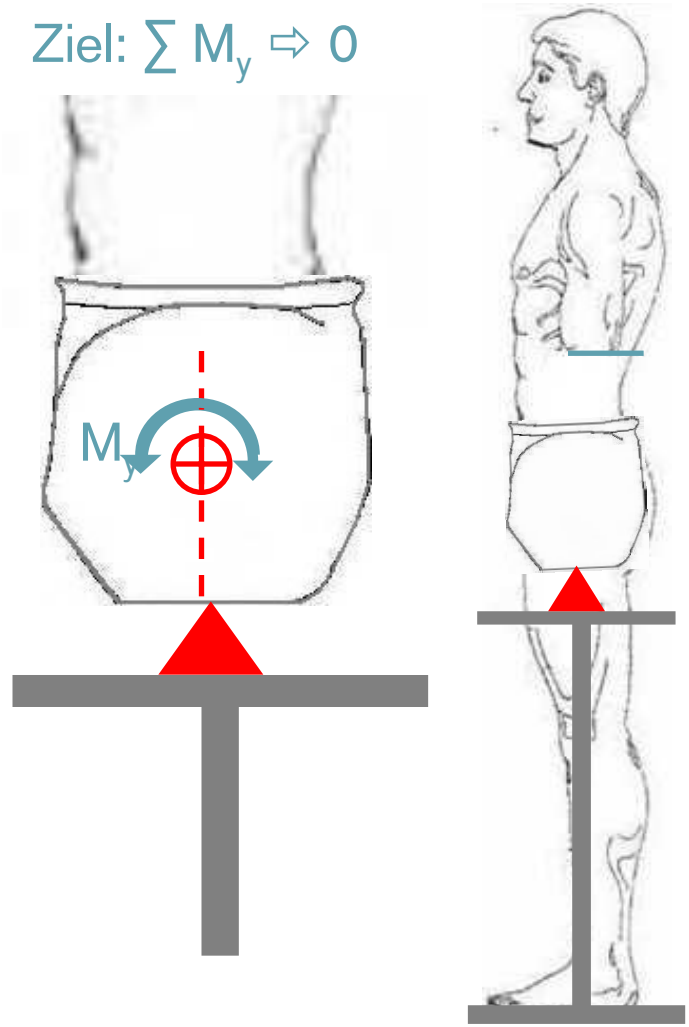
Different constitutions



Identification of the socket reference line

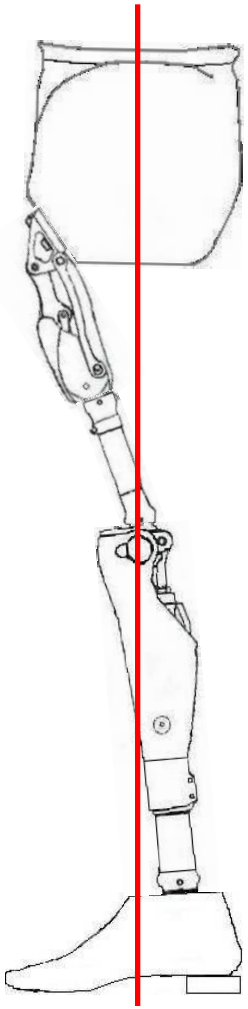


Identification of the socket reference line



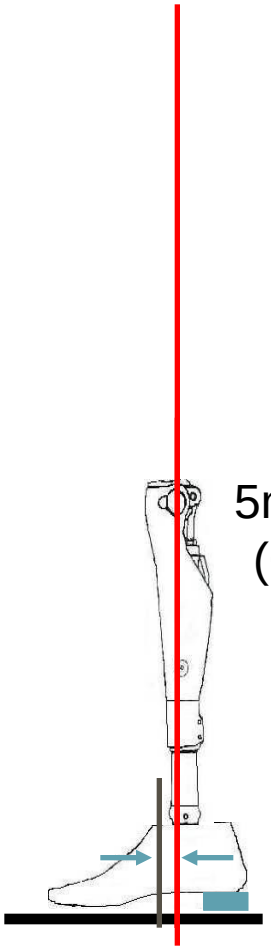
1. **Starting position** for Adjustment Tool in **a-p** is vertically above middle of contralateral foot
2. **Sagittal positioning of Adjustment Tool** under socket:
   1. maximum posterior
   2. maximum anterior
3. **shift Adjustment Tool** incrementally in **a-p** for **determination** of **M_y ⇨ 0** by patient`s feedback
4. Control of **pelvic rotation**
5. Marking the **vertical TMS* reference line** through the middle of Adjustment Tool
6. Marking the **height** of the **contralateral trochanter**

Bench Alignment



Bench Alignment

L.A.S.A.R. Assembly (sagittal plane)

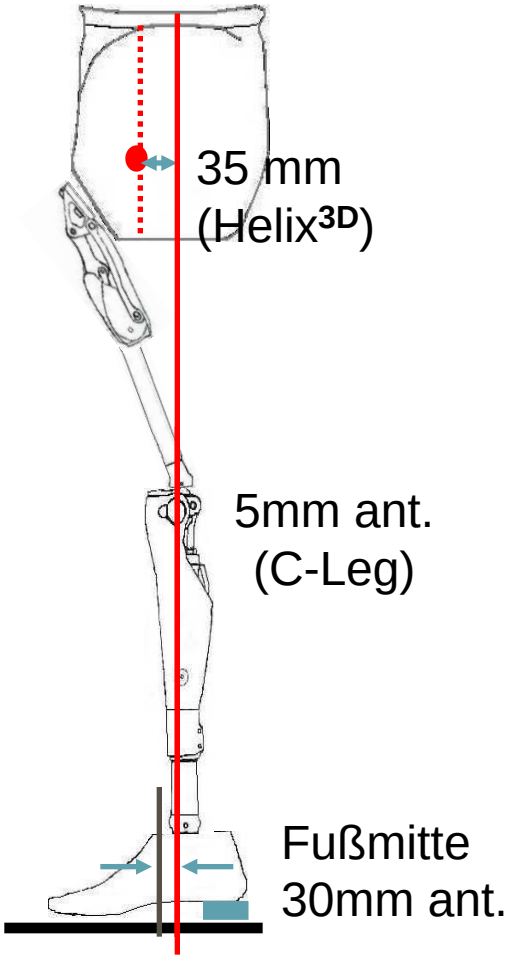


1. **Set the heel height** (effective shoe heel height plus 5 mm)
2. Foot center: 30 mm anterior to alignment reference line (outward rotation of about 7°)
3. **Knee joint**: anterior placement of 0-5 mm (height of the knee rotation axis analogous to the contralateral side ⇨ 20 mm proximal of MTP (medial tibia plateau)

Alignment reference linie
L.A.S.A.R. Assembly

Bench Alignment

L.A.S.A.R. Assembly (sagittal plane)



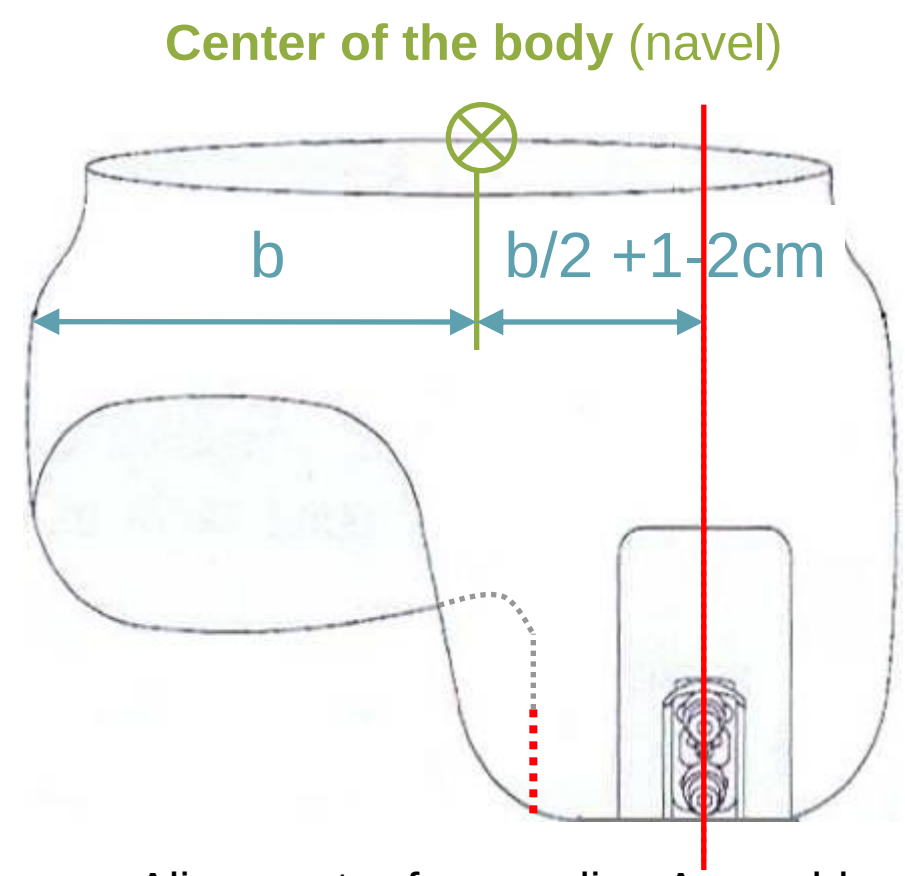
4. **Socket**:
    1. **TMS reference line 35 mm anterior** and **parallel** to alignment reference line (L.A.S.A.R. Assembly)
    2. **height** of **socket bottom** analog to casting table (control during dynamic trial fitting, if necessary 15mm shorter)

..... TMS reference linie

——— Alignment reference linie L.A.S.A.R. Assembly

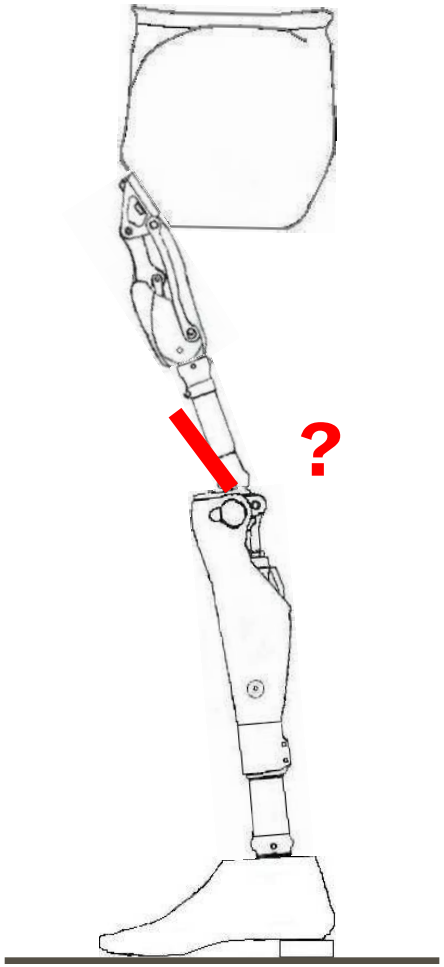
Bench Alignment

L.A.S.A.R. Assembly (frontal- and transversal plane)



3. Pelvic rotation: impression of the casting table edge (medial edge of the socket in the line of progression (LOP))
4. m-l-position of lamination plate in a distance of b/2+1-2cm from center of body to lateral

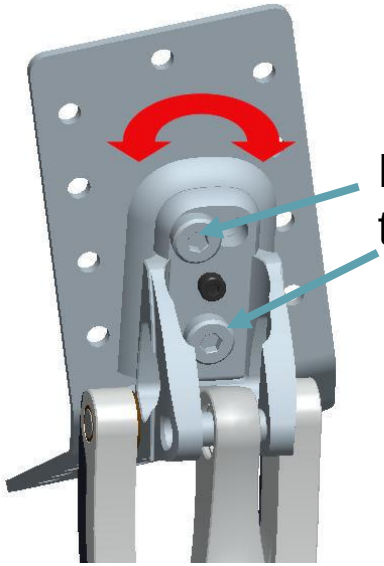
Adjustment possibilities



Adjustment possibilities

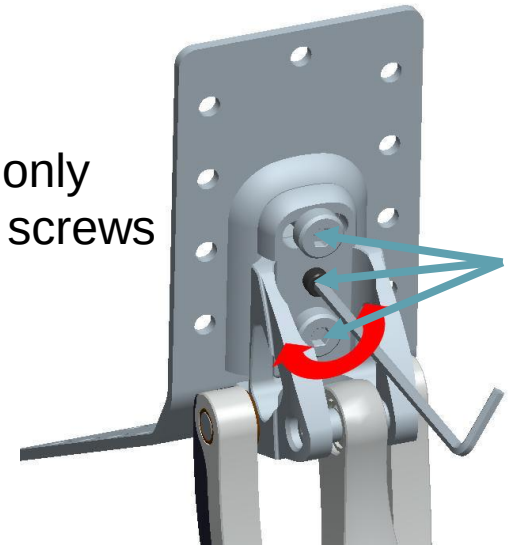
Distal adjustment of the hip joint

Ab -, Adduction



Loosen only this two screws

Rotation



Loosen all screws bevorehand mark the ab-/adduction

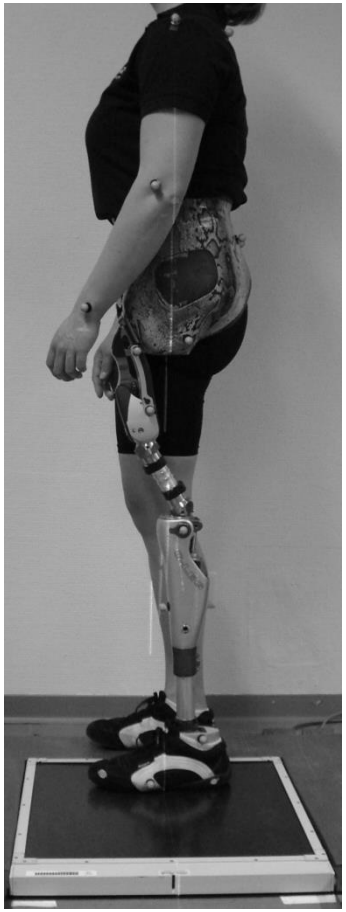
The adjustment possibilities are twice as big as at the 7E7

Adjustment possibilities

10°	20°	**neu: 30°**
		
4R56	4R56=1	**4R56=2**

If you use this adapter please clean the tube and the adapter with acetone first!

L.A.S.A.R. Posture – Alignment optimization



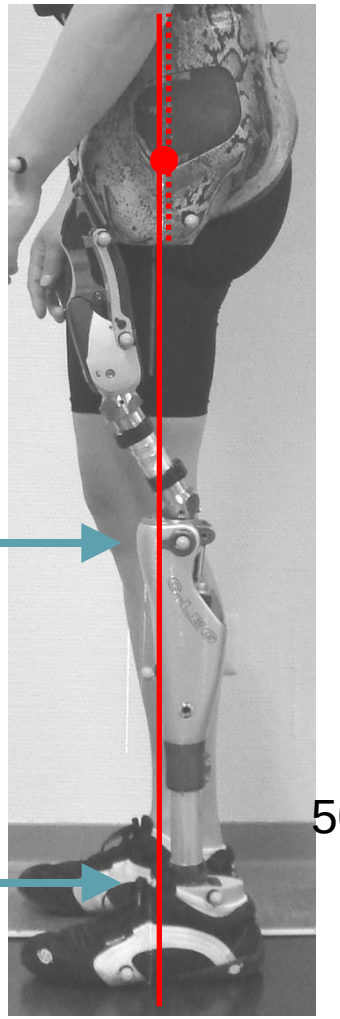
Alignment optimization

L.A.S.A.R. Posture sagittal

Priority:

Knee rotation axis

30 mm post.



TMS

0 ± 10 mm

additional control measurements

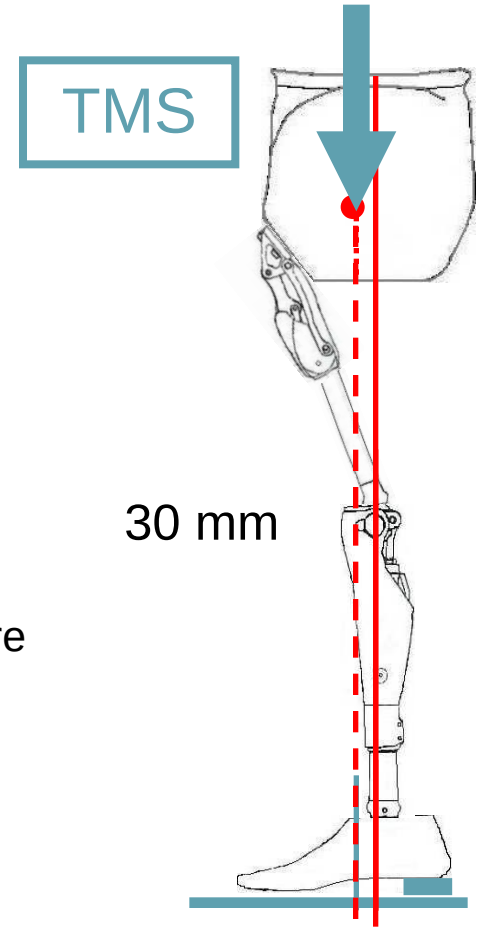
Ankle adapter

50 mm post. ± 10mm (depends on foot size/typ)

Exclusively use **plantar flexion** to adjust the distance between load line and knee rotation axis!!!

Alignment optimization

Correlation between TMS and Load Line



35 mm
(Helix^{3D})

30 mm

5mm ant.
(C-Leg)

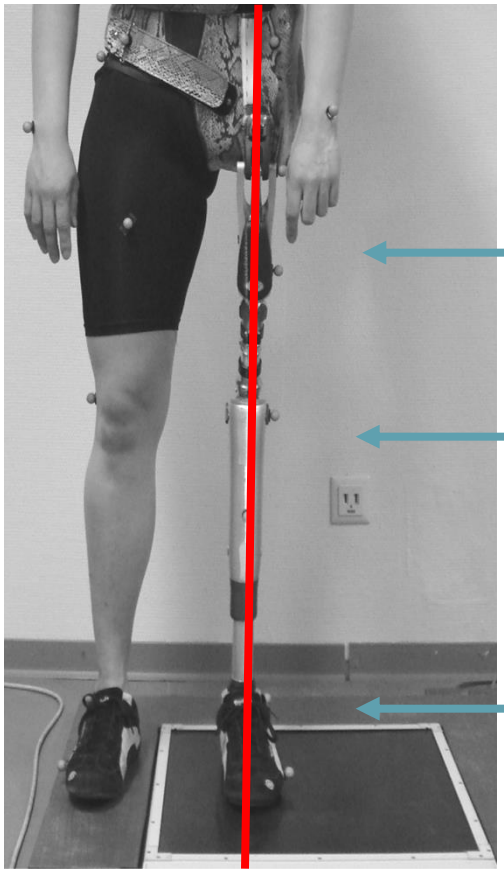
Load Line L.A.S.A.R. Posture

Alignment reference line
L.A.S.A.R. Assembly

Middle of the
foot 30 mm ant.

Alignment optimization

L.A.S.A.R. Posture frontal



Characteristics of the load line:

central to lateral of the hip

central to lateral of the knee

central to lateral of the ankle adapter

Load Line L.A.S.A.R. Posture

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Referent

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