

HIP Cast Casting Technique

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➤ The patient should wear 2 body protection stockinettes.

The seam of the first stockinette should be outside, the seam of the second stockinette should be inside.

➤ Measure the ischial tuberosity to ground distance.

➤ Set the proper height of the table: Tighten the screws!

In case of ischial containment technique: Determine the ramus angle, insert the casting form, and set the angle.

➤ Test the fit:

- **Correct the height**, adjust the casting form, if necessary
- **Adjust the tension belt.**
- **Isolate the casting table top.**
- **Prepare plaster bandages:** 1x 20 cm wide, 8-fold longuette / 1x 35 cm wide elastic plaster bandages / 3-4x 15 or 24 cm wide elastic plaster bandages

➤ Take the plaster cast:

- **Mark the centre of the body.**
- **Apply the longuette.**
- **Position the pressure blocks**, paying attention to proper seating orientation.
- **Remove the pressure blocks – the prosthesis wearer remains seated**
(apply 35 cm elastic bandage, 15 cm or 24 cm elastic bandage.)
- **Apply the tension belt:** Check the position on the front, tighten the strap.
- **Roughly cut the plaster negative:**

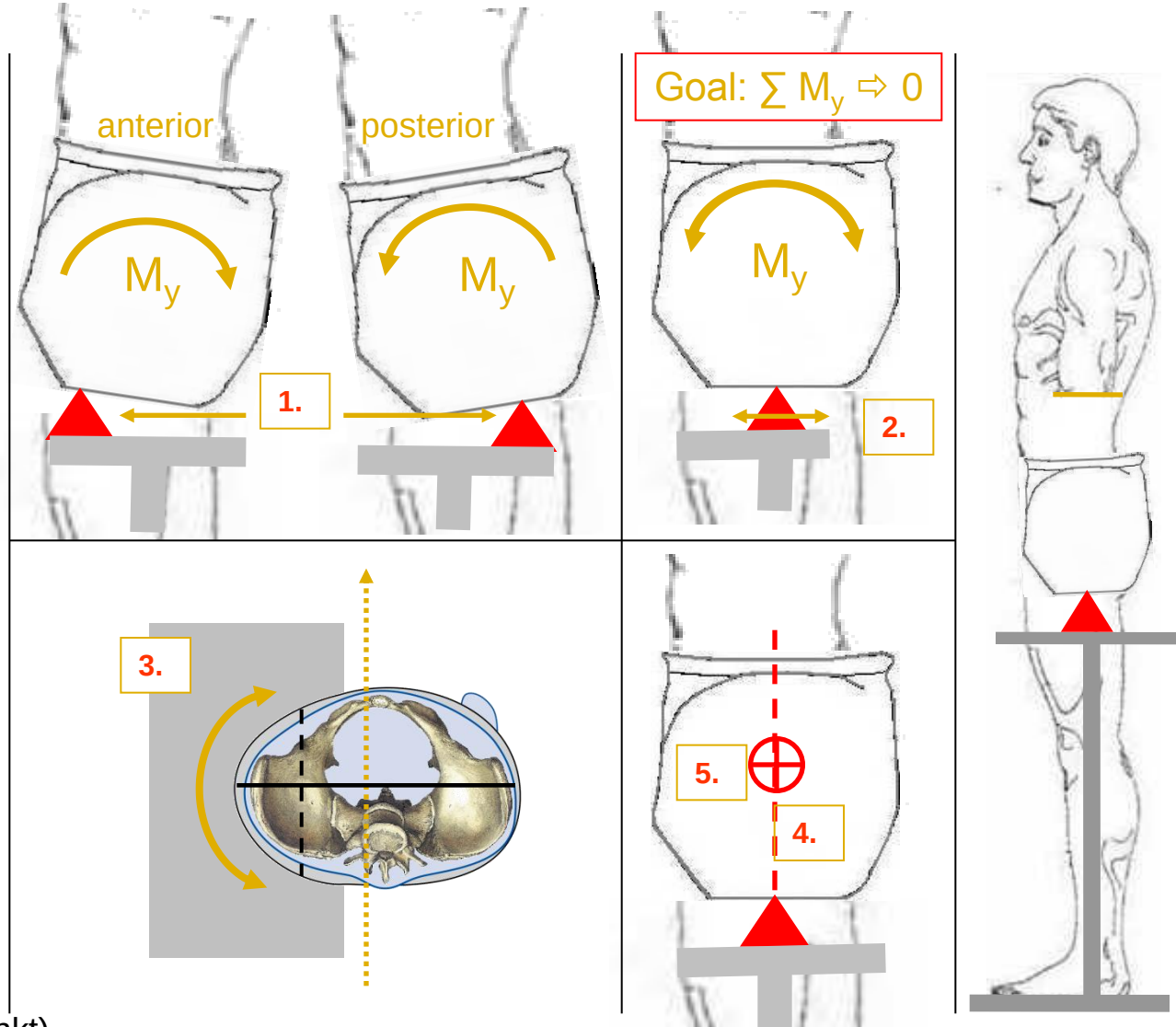
Mark and cut open the cast at the contralateral gluteus max.



Identification of the load balanced point TMS

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1. **Adjustment Tool** under socket maximum anterior and maximum posterior
2. **shift Adjustment Tool** incrementally in **a-p** for **determination** of $M_y \Rightarrow 0$ by patient's feedback
3. **Control of pelvic rotation**
4. **Marking the sagittal vertical TMS* reference line** through the middle of Adjustment Tool
5. **Marking the height** of the **contralateral trochanter**

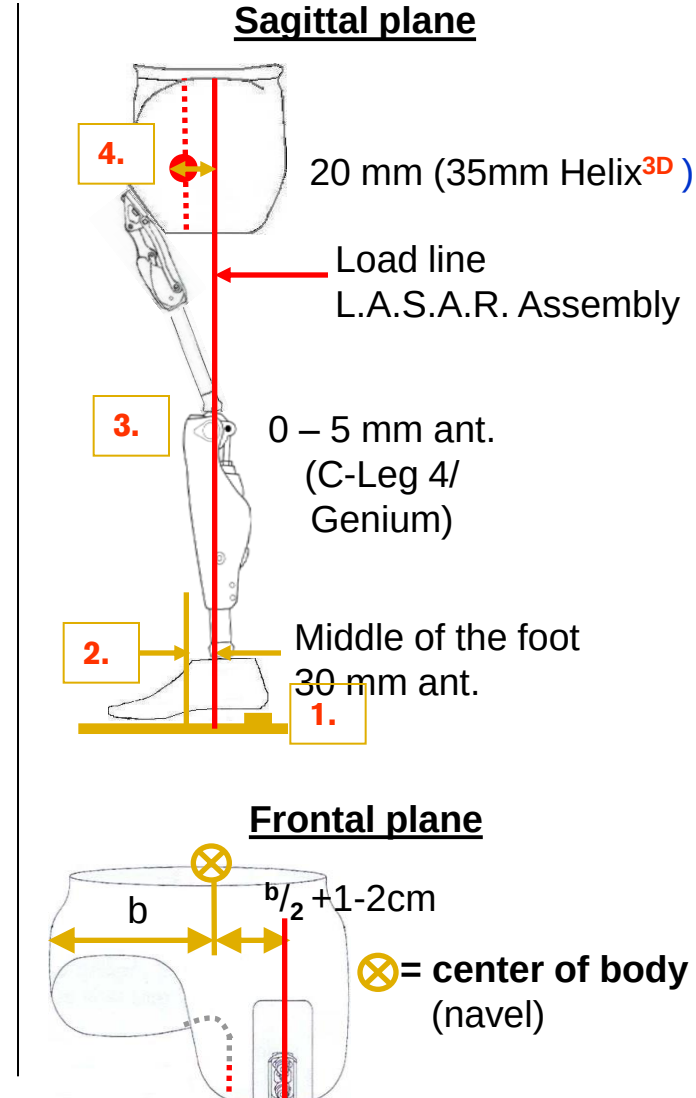


*(German: Teilmassensschwerpunkt)

Bench alignment with L.A.S.A.R. Assembly

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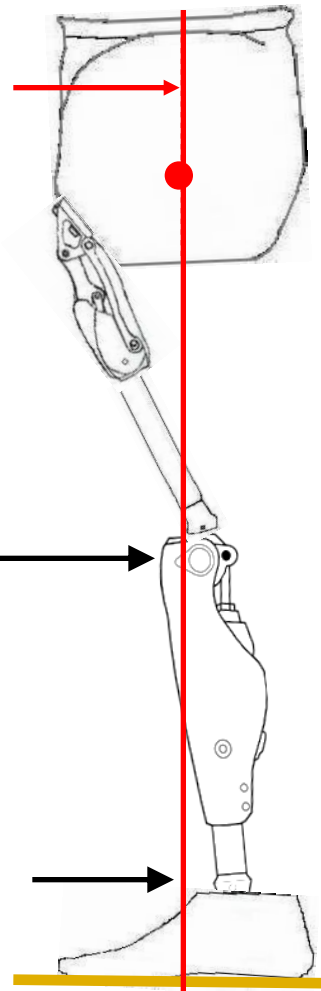
1. **Set the heel height** (effective shoe heel height plus 5mm)
2. **Middle of the foot:** 30 mm anterior to alignment reference line (outward rotation of about 7°)
3. **Knee joint:** anterior placement of 0-5 mm (height of the knee rotation axis analog to the contralateral side $\Rightarrow$ 20 mm proximal of MTP (medial tibia plateau))
4. **Socket:**
 1. **TMS reference line** on socket **35 mm Helix^{3D}** or **20 mm 7E9 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, 15mm shorter)
 3. **Pelvic rotation:** impression of the casting table edge (medial medial edge of the socket in the line of progression)
 4. **m-l-position** of lamination plate in a distance of $b/2 + 1\text{cm}$ from center of body to lateral



Alignment Optimization with L.A.S.A.R. Posture

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



Priority:
Knee rotation axis
30 mm post.

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

TMS

$0 \pm 10 \text{ mm}$

↑
additional control
measurements

↓
Ankle adapter

50 mm posterior of load line
 $\pm 10 \text{ mm}$
(depends on foot size/typ)

Basic Settings Helix^{3D} / C-Leg-4

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Free Swing Phase (FSW)

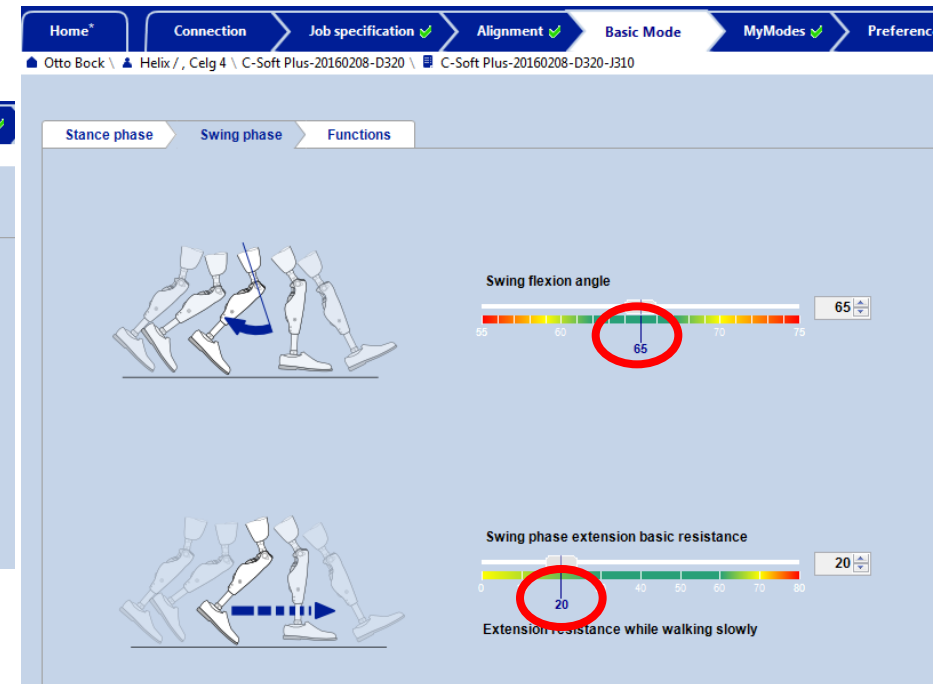
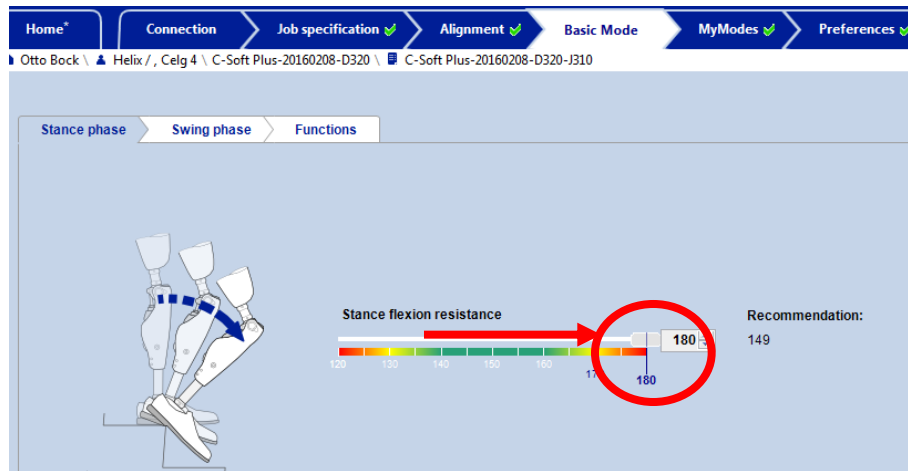
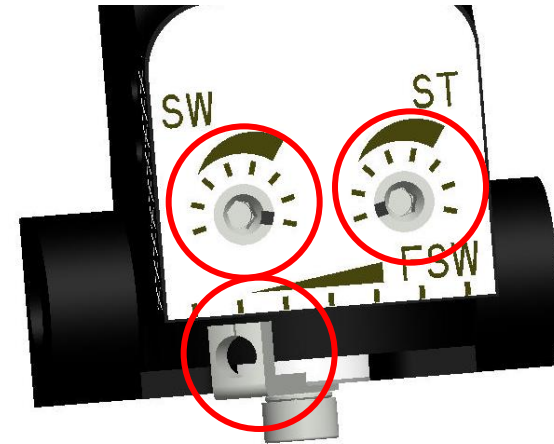
minimum

Swing Phase Resistance (SW)

maximum

Swing Phase Resistance (ST)

minimum



Systematic adjustment of the components

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Static alignment: alignment reference line (plumb)

= 35 mm Helix^{3D}/20mm 7E9 posterior to defined socket reference line (TMS)

= 5 mm posterior to centre of rotation of knee

= 30 mm posterior to middle of the foot / effective heel height + 5 mm

Procedure: Helix^{3D} / C-Leg[®]

1. C-Leg-4: increase of stance phase to maximum / activate 1st MyMode (extended standing)
2. Helix^{3D} - maximum safety - FSW to minimum / SW to maximum / ST to minimum -
3. Patient with prosthesis - checking of length of prosthesis in parallel bars
4. Patient with prosthesis on L.A.S.A.R. Posture / correction, if required **exclusively** by adjusting the foot (plant.-flex. / dors.- ext.)

Load line: Focus -> **30 mm anterior to centre of rotation of knee joint**

50 mm anterior to **foot** adapter ±10 mm

±10 mm referring to defined reference line of **pelvic girdle (TMS-Line)**

Adjustment Helix^{3D} and C-Leg[®]

1. **C-Leg-4:** Calibration while user is standing upright, adjust swing phase extension basic resistance while patient is walking slow (≤ 2 Km/h) on even ground
2. **Helix^{3D}:** Increase hydraulic resistance for free swing range **FSW** (step length) until the step length of the prosthetic side corresponds approximately to the contralateral side (must not exceed).
3. **Helix^{3D}:** Reduce hydraulic resistance for swing phase **SW** until flexion becomes clearly perceptible, but is still comfortable. To consider: The adjustment parameters of SW and FSW have interacting effects.
4. **C-Leg-4:** Incrementally reduction of Stance phase resistance for sitting down, then level ground / stairs / ramp

ATTENTION: stance flexion of C-Leg[®] will set in

5. **Helix^{3D}:** Increase of stance phase damping **ST** step by step. The patient shall have the opportunity of getting used to damping – in stance phase he should slowly sink into hip extension. Maximum hip extension should be reached just before pre-swing phase.

