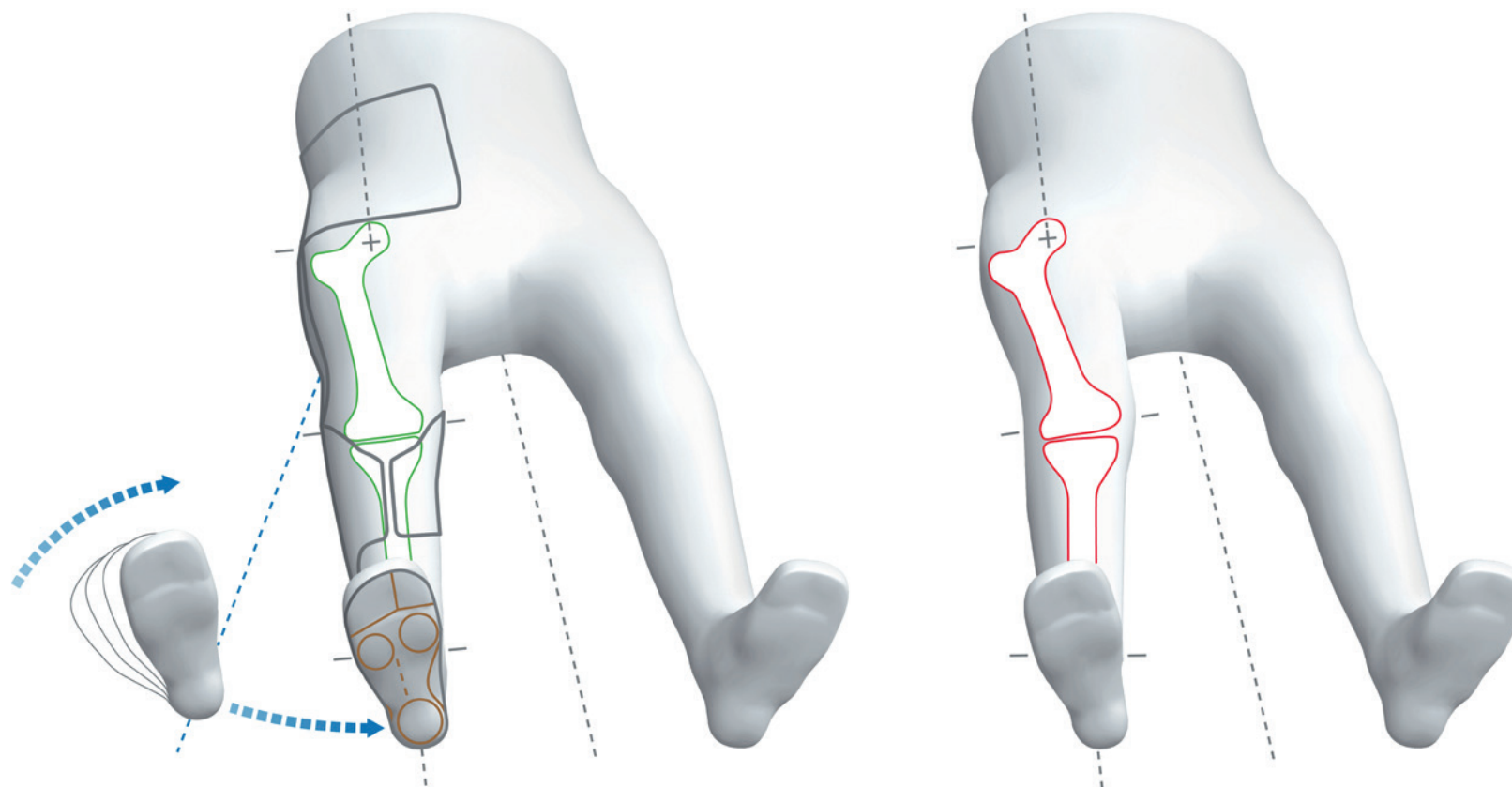


HKAFO – Casting and Positioning



For standing and walking, the correct positioning of all leg and foot joints is essential. Therefore, we recommend casting in the supine position, as it is the only position that allows for control over the entire joint chain and proper adjustment of the hip. Since the legs naturally rotate outwards when muscles are relaxed, in both the sitting and lying positions, the following example explains the procedure to ensure correct leg positioning. If the hip is not precisely adjusted, the orthosis will misalign the patient, as shown on the right.



Leg Position

To start, the leg is externally rotated and abducted at the hip.

Correct alignment

With the knee extended, the leg is brought into correct alignment by internally rotating and adducting in an arc.

Correct

Hip joint is neutral and not rotated.
Knee joint is slightly flexed and correctly aligned with the longitudinal axis of the leg and line of progression.
Ankle is correctly aligned with the longitudinal axis of the leg and line of progression. Foot is subtalar neutral and turned slightly outwards with the heel centered.

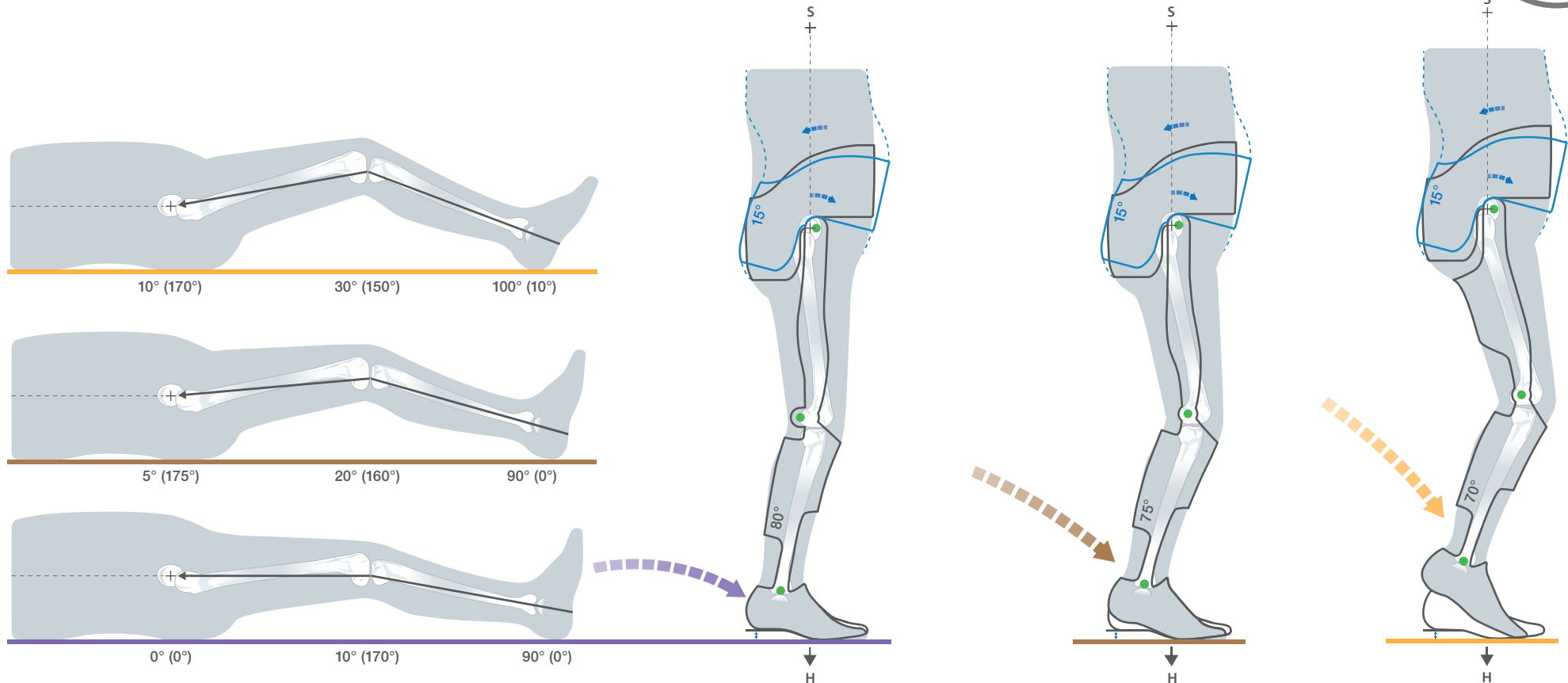
An optimized foot bedding for the orthosis is essential. Position of the foot is critical for stabilization, posture control and loading.

Incorrect

Hip joint is rotated.
Knee and ankle joints are not aligned with the longitudinal axis of the leg or along the line of progression.
Foot is pronated.

HKAFO – Casting and Alignment

Here the relationship between casting in the supine position and static alignment of the orthosis is demonstrated (cast becomes the aligned orthosis). In a balanced stance, the shoulder (S) is usually in line with the hip reference (H). The below examples assume orthotic fittings on both legs with varying contractures in the ankle, knee or hip. Patient-specific fine-tuning is necessary for secure standing and efficient gait.



We recommend casting in one piece. Modifications, padding and joint bending take place on the positive model as a whole. The model can then be separated into 3 pieces to ease fabrication (trunk and legs).

To improve independence and ease donning of the orthosis, a thigh cuff should be avoided where possible (see “Proper Support with the 3-Point Pressure System”).

No range of motion limitations

Limited motion hip joints and free posterior offset knee joints with/without extension assist. Double action ankle joints with foot retaining function or dorsiflexion assist.

Patient stands resting on the flexion stops, the degree of which is determined by step length. The patient uses hyperlordosis to align himself accordingly.

Hip extension occurs during the gait cycle at the end of stance phase.

Knee flexion contracture

Limited motion hip joints and locked knee joints with/without extension assist. Double action ankle joints with foot retaining function or dorsiflexion assist.

Patient stands resting on the flexion stops, the degree of which is determined by step length. The patient uses hyperlordosis to align himself accordingly.

Hip extension occurs during the gait cycle at the end of stance phase.

Knee flexion contracture and equinus

Limited motion hip joint and locked knee joint. Double action ankle joint with foot retaining function or dorsiflexion assist. Due to increased flexion, the knee joint is further supported with the addition of a thigh cuff (see “Proper Support with the 3-Point Pressure System”).

Patient stands resting on the flexion stops, the degree of which is determined by step length. The patient uses hyperlordosis to align himself accordingly.

Hip extension occurs during the gait cycle at the end of stance phase.