

# **Knee Physiotherapy Guidelines**

**Joint+rep<sup>®</sup>**

## General assumptions

This document is intended to serve as a guideline for the recommended physiotherapy regime to be used following implantation of the JointRep™ device. It is in line with the current state of the art, although it allows for a less conservative approach if the treating surgeon is willing to apply an accelerated regime. The assumptions are:

- At the end of the surgical procedure, the treating surgeon has straightened the leg after the implantation of JointRep™ and followed the recommendation to keep the leg in extension for the first 24 hours using a post-op brace. Alternatively, if the treating surgeon wants to test the stability of the implant, he/she must wait for the implant to gelate *in situ* (approx. 3 mins) and then carry on 2-3 full cycles of flexion-extension followed by arthroscopic inspection to ensure that the implant is still in place.
- A 12-14 weeks formal physiotherapy program is advised as a minimum, with 2-3 sessions per week and daily in-home exercises.
- The usual measures for pain, oedema control and increasing ROM can be used with these guidelines as there are no specific restrictions for these matters due to the implant itself, so those will not be mentioned within the guidelines. The same applies for regaining proprioceptive control of the knee as well as for muscle strengthening strategies. Open chain exercises are always preferred over closed chain ones. If available, early aquatic exercises are suitable.
- The treating surgeon, alongside the physiotherapist, should adapt the recommendations depending on:
  - Age of the patient
  - Previous activity level
  - General physical condition
  - Body Mass Index
  - Nature of the treated lesion (number of lesions, size, localization within the joint, biomechanical particularities, associated pathologies)
  - Concomitant procedures performed

**Phase I**  
**Protection of implant-Granulation tissue development and cell proliferation**  
**Week 1-6**

**Weight bearing**

**Day 1-2**

- No weight bearing for the first 48 hours
- As tolerated, a light toe-touch approach can be initiated after such period
- Moving with 2 crutches
- Soft extension brace worn continuously during the first 24 hours, and thereafter for 14 days during all movement (except during physiotherapy) and at night

**Day 3 onto week 6**

- Partial weight bearing: pursue the toe-touch approach with progression to 20%-40% of body weight for the first 3 weeks. Then start progressing as tolerated up to 80% of the body weight.
- Ensure correct gait pattern assisted with crutches is reinstated as soon as feasible.
- Continued use of 2 crutches. Use of single crutch might be started after week 4 if pain-free weight bearing is achieved.

**Week 6 and beyond**

- Weight bearing: 80-100% of body weight
- Ensure correct gait pattern
- Use of single crutch once pain-free weight bearing is achieved.

**Range of Motion**

**Day 1**

- No movement for the first 24 hours, with the use of a post op soft brace as indicated previously.
- After the first day, passive-assisted mobilisation can be initiated up to 30° of flexion.

**Day 2 to 7**

- Passive and passive-assisted ROM, according to tolerance, with the goal of reaching up to 110° as early as possible.
- Patellar mobilisation in all directions. If the lesion is within the femoro-patellar joint, caution with these exercises must be used.

**Week 2 to 6**

- Stationary cycling, without resistance, allowed once flexion reaches 110°
- Passive-assisted and active-assisted ROM of operated knee with the goal of reaching full ROM before week 4.
- Re-education using aquatic therapy strengthening, if available

From the mid part of this phase, the goal is also to reinforce the mechano-transduction signals which are responsible for modulation of biological activity within the maturing granulation tissue.

**Phase II**  
**Biomechanical stimuli of growing tissue**  
**Transition to normal gait-Full weight bearing**  
**Week 6-8**

**Weight bearing**

- Ideally, full weight bearing and a near normal gait pattern should be in place at this time, without walking auxiliaries
- Physical activity without impact such as walking, swimming and stationary bicycle with light resistance is advisable, for periods of 20 minutes, 3-4 times a week

**Range of Motion**

- Full, active and passive ROM should be already in place at this time

**Proprioception**

- Exercises in this area might be started when total weight bearing is pain free. Examples are crossed walk on a straight line, back and forth and bipodal standing. It is nevertheless expected that if aquatic therapy is being used, such exercises have been started earlier.

**Phase III**  
**Remodeling phase early stages**  
**Week 8-14**

**Weight bearing:**

- Normal weight bearing as well as gait pattern need to be normal or near normal.
- Physical activity without impact such as walking, swimming and stationary bicycle with light to low moderate resistance is advisable, for periods of 20 minutes, 3-4 times a week

**Proprioception:**

- Balance drills such as unipodal standing on flat surfaces, cross walk on straight lines back and forth and balance board.
- Aquatic exercises are strongly advised.

**Phase IV**  
**Remodeling phase-Maturation**  
**From week 14 on**

**Sports & activities**

- Fitness sessions 3 times a week recommended following the end of formal physiotherapy, preferably with a supervising trainer.
- Aquatic exercises are strongly recommended from early post op on when available and all along the rehabilitation process. This includes swimming.

- No impact sports (football/soccer, basketball, American football, rugby, martial arts) or sports with a high component of compressive, shear and torsional loads (tennis, squash, volleyball, and running) before 1 year post-operative unless advised by the treating surgeon.
- Moderate cycling activity on flat terrain could be initiated. After 9 months, moderate climbs could be started using low effort gear combinations.

## Bibliography

- **Reinold M.M et al.** Current Concepts in the Rehabilitation Following Articular Cartilage Repair Procedures in the Knee. J. Orthop Sports Phys Ther. 36(10):774-794, 2006.
- **Wilk K.E, Macrina L.C, Reinold M.M.** Rehabilitation following Microfracture of the Knee. Cartilage, 1(2):96-107, 2010.
- **Edwards P.K, Ackland T, Ebert J.R.** Clinical Rehabilitation guidelines for Matrix-Induced Autologous Chondrocyte Implantation in the Tibiofemoral joint. J Orthop Sports Phys Ther, 44(2):102-119, 2014.