



Ivy Sports Medicine
Life is Movement

CMI®



COLLAGEN MENISCUS IMPLANT

Rehabilitation Protocol



The CMI® is a type I collagen implant designed to facilitate growth of new tissue to replace removed or missing meniscus tissue in the human knee.



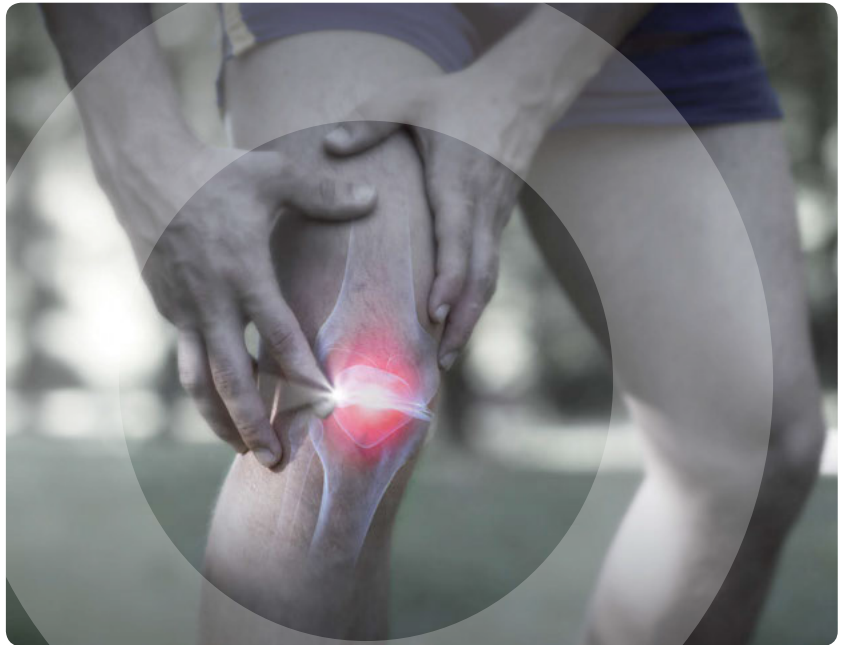
Introduction

After arthroscopic meniscus surgery, patients wish to return to their daily routines as quickly as possible. Adherence to a rehabilitation protocol following CMI implantation, or any other type of arthroscopic surgery, is therefore just as important as the surgery itself.

Patients who have undergone CMI implantation often feel able to return to their accustomed activities sooner than they had expected. It is vital to remind the patient that although the knee operated upon may not be causing discomfort, the actual healing process has only just begun.

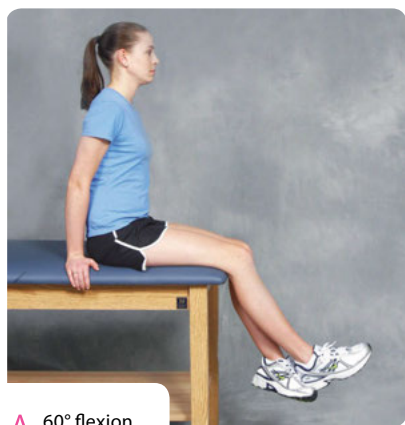
The exercise program for rehabilitation following CMI implantation covers a period of six months.

The program was designed by experienced CMI users and physiotherapists to serve as a guideline towards successful rehabilitation.

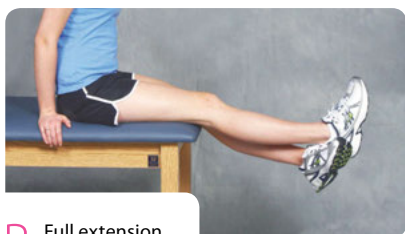


The rehabilitation protocol offers a balanced combination of strengthening and motion exercises providing protection for the newly formed tissue throughout the delicate process of regeneration. It is therefore critical to adhere strictly to the rehabilitation guidelines set out in this brochure, to ensure the best possible regeneration of the meniscus tissue.

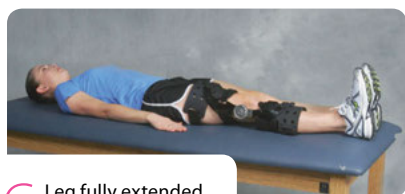
Notes



A 60° flexion



B Full extension



C Leg fully extended



D Leg raised



E 90° flexion

Day One through Week Four

MOTION

Only passive motion exercises on CPM machine or motion exercises using the well leg to support the operated leg.

- Range of motion: 0 to 60 degrees (setting CPM machine: 0-0-60 degrees)

EXERCISES IN SITTING POSITION

Healthy leg provides support and leverage (**Fig. A**). Using the healthy leg, raise flexed leg to full extension of affected knee joint, then lower slowly (**Fig. B**).

There should be no active muscle contraction in the affected leg.

- Range of motion: 0 degrees (full extension) to 60 degrees flexion
- Repeat exercise 500 times, three times daily
- Duration: approximately 10 to 15 minutes for each session

BRACE

Must be worn at all times except when performing passive motion exercises, unless otherwise specified

- Brace setting: full extension, 0 degrees

WEIGHT-BEARING

Crutches must be used at all times during ambulation.

Week One

No weight should be placed on the affected leg when ambulating with crutches. When standing, the affected leg may rest on the ground (corresponds to partial weight bearing of 10 to 15 kg).

Week Two

Partial weight bearing of up to 30% of body weight may be placed on the affected leg when ambulating with crutches.

Week Three through Four

Gradual increase of partial weight bearing from 30 to 50% of body weight on affected leg when ambulating with crutches.

PATELLA MOBILIZATION

Three times daily patella mobilization supervised by physiotherapist or following instructions of physiotherapist.

STRENGTHENING

Exercises in horizontal position

Exercise with leg outstretched. Start exercises as soon as muscle tone permits. Outstretch affected leg and raise repeatedly (**Fig. C and Fig. D**).

- Repeat exercise 30 times, twice daily
- Duration: approximately 5 minutes for each session

Week Five through Week Six

MOTION

Passive motion exercises on CPM machine or motion exercises using the well leg to support the operated leg.

- Range of motion: 0 to 90 degrees (setting of CPM machine: 0-0-90 degrees)

EXERCISES IN SITTING POSITION

Healthy leg provides support and leverage (**Fig. E**). Using the healthy leg, raise flexed leg to full extension of affected knee

joint, then lower slowly (**Fig. F**).

There should be no active muscle contraction in the affected leg.

- Range of motion: 0 degree (full extension) to 90 degrees flexion
- Repeat exercise 500 times, three times daily
- Duration: approximately 10 to 15 minutes for each session



EXERCISE PROGRAM

BRACE

Must be worn at all times except when performing passive motion exercises, unless otherwise specified.

- Brace setting: full extension, 0 degrees

WEIGHT-BEARING

Gradual increase of partial weight bearing from 50 to 90% of body weight on affected leg when ambulating with crutches.

PATELLA MOBILIZATION

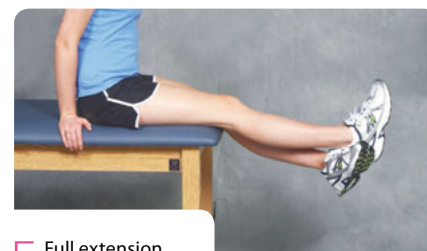
Three times daily patella mobilization supervised by physiotherapist or following instructions of physiotherapist.

STRENGTHENING

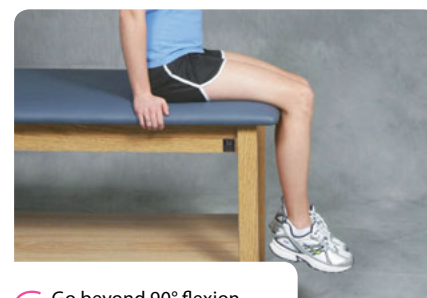
Exercises in horizontal position

Exercise with leg outstretched. Outstretch affected leg and raise repeatedly (**Fig. C and Fig. D**).

- Repeat exercise 30 times, twice daily
- Duration: approximately 10 to 15 minutes for each session



F Full extension



G Go beyond 90° flexion as tolerated



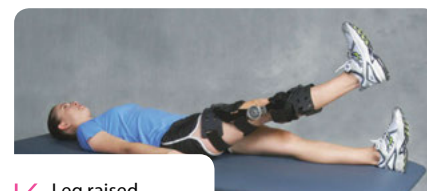
H Full extension



I 20° downward flexion



J Leg fully extended



K Leg raised

Week Seven through Week Eight

MOTION

Begin active motion exercises and gradually increase to full range of motion as tolerated.

EXERCISES IN SITTING POSITION

Actively raise flexed leg to full extension of affected knee joint, then lower slowly. Keep foot flexed during entire exercise. Independent exercise of affected leg, without support of a healthy leg (**Fig. H**).

- Range of motion: 0 degrees (full extension) to full flexion as tolerated (**Fig. G and Fig. H**)
- Repeat exercise 500 times, three times daily

BRACE

Must be worn at all times except when performing motion exercises, unless otherwise specified.

- Brace setting: 0 to 90 degrees

WEIGHT-BEARING

Increase to full weight bearing on the affected leg while ambulating with crutches. As soon as patient is able to walk without a limp, the crutches can be discarded.

PATELLA MOBILIZATION

Three times daily patella mobilization supervised by physiotherapist or following instructions of physiotherapist.

STRENGTHENING

Exercises in horizontal position

Repeated raising of outstretched leg (**Fig. J and Fig. K**).

- Repeat exercises 30 to 50 times, twice daily

Short arc quadriceps extension exercise

Flex outstretched affected leg to 20 degrees, then slowly return to full extension (**Fig. I**).

- Repeat exercise 30 times, twice daily
- Duration: approximately 5 minutes for each session

Cycling (home trainer) without resistance

Brace must be worn during exercise.

- Day 1: cycle for 3 minutes
- Day 2: cycle for 5 minutes
- Increase by up to 5 minutes daily as tolerated to a maximum of 45 minutes



L Knee bends



M Lateral agility exercise



N

Week Nine through Four Months

MOTION

Unrestricted full range of motion.

BRACE

Discontinue use of brace.

WEIGHT-BEARING

Full unrestricted weight-bearing.

STRENGTHENING

Cycling (home trainer) with increased resistance

- Duration without brace: maximum 45 minutes, daily

Shallow knee bends

Range of motion: 0 to 30 degrees (**Fig. L**)

- Repeat exercise 20 times, twice daily

Water exercise (optional)

Run in deep water using a floatation vest. Make sure that the water is deep enough that the foot does not touch the bottom of the pool.

- Day 1: 5 minutes
- Increase by up to 5 minutes daily as tolerated to a maximum of 45 minutes

Five Months to Six Months

STRENGTHENING

Exercises with elastic resistance cord

Lateral agility exercises using an elastic resistance cord, e.g. Sport Cord® (**Fig. M and N**).

Repeat exercises at same tension:

- Week one through two: repeat 20 times, once or twice daily, every other day.
- Week three through four: repeat 30 times, once or twice daily, every other day.
- At two-weekly intervals, increase to a maximum of 50 times, twice daily, every other day.

The rehabilitation protocol following CMI implantation is usually completed after six months. Please note, however, that this protocol is a general guideline. The protocol should be adapted to meet the patient's specific needs.





Ivy Sports Medicine
Life is Movement

Manufacturer:

Ivy Sports Medicine

545 Penobscot Drive · Redwood City
CA 94063 · USA

Distributor:

Ivy Sports Medicine GmbH

Lochhamer Schlag 17
D-82166 Gräfelfing
Tel.: +49 (0)89 - 5 50 54 59-0
service@ivysportsmed.com

www.ivysportsmed.com

CMI® is a registered trademark of Ivy Sports Medicine LLC, One Paragon Drive, Montvale NJ 07645, USA. The CMI® has received a CE Mark and is cleared for sale in the EU and certain other countries. CAUTION : In the U.S.A., the CMI® is an investigational device limited by United States law to investigational use only. This brochure is not intended for distribution in the U.S.A.

