Rebound® PCL

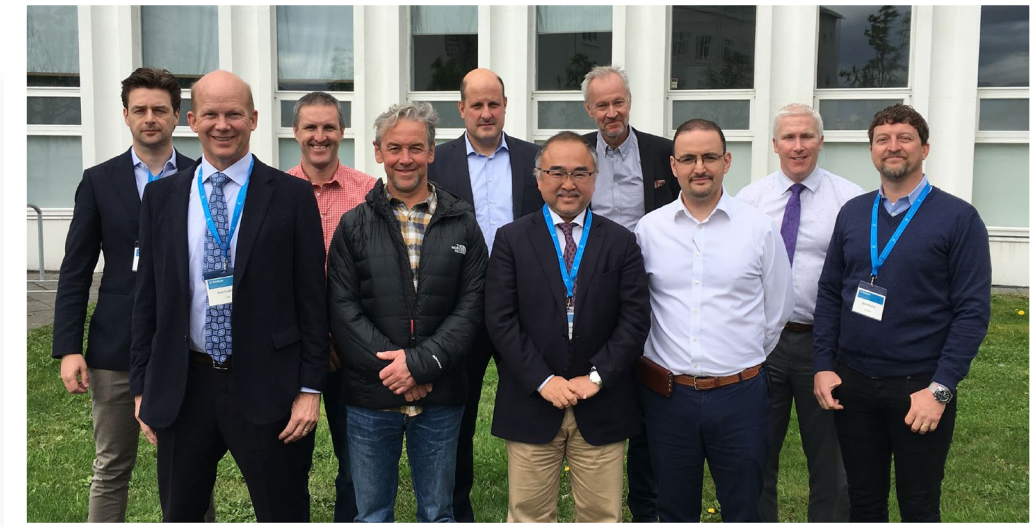
Supports successful rehabilitation following PCL injuries

In 2015, Össur launched the world´s first dynamic force posterior-cruciate ligament (PCL) brace. The unique Rebound PCL provides biomechanically stable positioning of the knee & physiological loading of the PCL throughout knee flexion and extension. Previous PCL braces have either not sufficiently supported the PCL or only provided a static force to support the PCL, leading to forces that are by far too high in knee extension, insufficient support at 90° of knee flexion, or a mix of both.

Until now, several clinical papers have been published on the biomechanical function of the Rebound PCL, and most recently its use as a recommended gold standard brace in PCL and posterior-lateral corner (PLC) rehabilitation.[1,2,3,4,5,6.]

REBOUND PCL BRACE – RECOMMENDED BY GLOBAL PCL EXPERTS

Since its launch, the Rebound PCL brace has been recommended in rehabilitation protocols for PCL injuries worldwide and is used by many Key Opinion Leaders. Therefore, Össur invited global experts for a face to face meeting to share best practices on utilizing the dynamic support that the Rebound PCL provides within rehabilitation protocols. An expert recommendation for the rehabilitation of isolated PCL injuries in conservative treatment, and isolated or combined PCL injuries in surgical treatment was developed.



Key Opinion Leaders Panel

[left to right]
Roy Hoogeslag (Netherlands),
Robert LaPrade (USA),
Christos Kondogiannis (Australia),
Hayden Morris (Australia);
Axel Schulz (Össur),
Nori Nakamura (Japan),
Karl Eriksson (Sweden)
Adil Ajuied (UK),
John Grant (USA)
and Björn Barenius (Sweden)

Based on the available biomechanical results and their clinical experience on the Rebound PCL, brace the experts consented recommendations for rehabilitation of PCL Injuries:

- Rehabilitation within conservative treatment of isolated PCL Injuries
- Rehabilitation following surgical reconstruction of isolated or combined PCL injuries

The Data:

1. LaPrade et al. Quantification of functional brace forces for posterior cruciate ligament injuries on the knee joint: an in vivo investigation; Knee Surg Sports Traumatol Arthrosc 2015 Oct;23(10):3070-6 **2.** Welch T. et al. The effect of a dynamic PCL brace on patellofemoral compartment pressures in PCL-and PCL/PLC-deficient knees; J Exp. Orthop.2017 Dec;4(1):10 **3.**Moatshe G. et al. Diagnosis and treatment of multiligament knee injury: state of the art; J ISAKOS June 26, 2 (3) 152-161 **4.** Owesen C. et al. Surgical reconstruction is a cost efficient treatment option for isolated PCL injuries; Knee Surg Sports Traumatol Arthrosc (2017) DOI 10.1007/s00167-017-4632-5 **5.** Dean et al. Paraskiing crash and knee dislocation with multiligament reconstruction and iliotibial band repair Am J Orthopaedics (2017) Oct./ November E301-7 **6.**Godin et al. Multiligament Knee Injuries in Older Adolescents: A 2-Year Minimum Follow-up Study The Orthopaedic Journal of Sports Medicine, 5(9), 2325967117727717 DOI: 10.1177/2325967117727717

Expert Consensus Rebound® PCL

ISOLATED PCL INJURY

Rehabilitation – conservative treatment

	PHASE I WEEK 1-2	PHASE II WEEK 3-6	PHASE III WEEK 7-12	PHASE IV > MONTH 3
Weight bearing	PWB (20% flat foot) Symptomatic control	WBAT	WBAT	FWB
Brace	Rebound PCL Day & night (within 4 weeks of Injury) grey shear knob	Rebound PCL (day & night; grey shear knob)	Rebound PCL (day & night) use white shear knob > week 10	Rebound PCL 4 months daily; + during RTP up to 6 months
ROM Limitation	Up to 0-0-90° (with brace) work on full extension	0-0-90° with brace	None	None
Physical Therapy	**Do:** Quad activation, edema control, closed chain, prone flexion 90° **Don't:** active flexion, hamstring activation	**Do:** Quads activation, edema control, closed chain, prone flexion, stationary biking with low resistance – (no toe clips) **Don't:** perform isolated hamstrings	**Do:** Increase resistance, agility and proprioception **Don't:** isolated hamstrings without brace, cycling with toe clips	**Do:** progress to full training. Ideally RTP month 4-6 **Don't:** RTP without specific training
Other	(kneeling) PCL stress x-rays if tolerated Follow DVT prevention guidelines	Follow DVT prevention guidelines	Follow DVT prevention guidelines	kneeling PCL stress x-rays
Recommendation for grade I PCL injuries: Use Rebound PCL only in case of professional sports athletes.				

Abbreviations: PWB: partial weight bearing, WBAT, Weight bearing as tolerated, FWB, Full weight bearing, RTP: Return to play

ISOLATED OR COMBINED PCL INJURIES

Rehabilitation – following surgical reconstruction

	PHASE I WEEK 1-2	PHASE II WEEK 3-6	PHASE III WEEK 7-12	PHASE IV MONTH 4-6
Weight bearing	NWB	NWB / PWB (20%) (No PWB in case of varus knee)	WBAT slower transition in case of small (auto-) graft size	FWB
Brace	Extension lock: a) Immobilizer (in case of PWB and / or swelling) or b) Rebound PCL day & night (grey shear knob)	Rebound PCL (day & night); use grey shear knob – also in case of combined PCL & ACL injury	Rebound PCL (day & night); use white shear knob > week 10 – also in case of combined PCL & ACL injury	Rebound PCL during day for +1 month, or activity, or ADL's w/ deep flex, wean off > month 6. Continue to wear for next sports season
ROM Limitation	0-0-90 prone / assisted	For NWB: 0-0-90 (with R PCL) For PWB: Extension locked	None Slower progression to full ROM in case of small (auto-) graft size	None
Physical Therapy	**Do:** Quad Activation, edema control, closed chain, prone flexion **Don't:** active flexion, hamstring activation	**Do:** Activation, edema control, closed chain, prone flexion, biking low resistance (no toe clips) Be careful **Don't:** perform hamstring activation, open chain	**Do:** Increase resistance, agility and proprioceptive training Slow down the rehab in case of flat tibial slope **Don't:** Open chain hamstrings, contact sport	**Do:** Progress to general strengthening, eliptical training & biking resistance as tolerated. > month 6 progress to full training RTP month 9-12 after sport specific testing
Other	Follow DVT prevention guidelines	Follow DVT prevention guidelines	Follow DVT prevention guidelines	Month 6: kneeling PCL stress x-rays

Abbreviations: PWB: partial weight bearing, WBAT, Weight bearing as tolerated, FWB, Full weight bearing, RTP: Return to play

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