

No Disclosures

2 Bracing for Acute Injury, Functional Activity, and Osteoarthritis of the Knee



Overview

- Bracing for acute knee injuries
 - What type to use
- Functional Bracing
 - Surgery and rehab are done, now what
- Osteoarthritis (OA) Bracing
 - Who really benefits from these



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Bracing for Acute Knee Injuries

Ligament vs Fracture – Surgical vs Non-Surgical

Brace Types

- Knee Immobilizer
- T-Scope
- Flexion/Extension Assist
- Long Hinged Knee Brace
- Patella Bracing



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Knee Immobilizer

- Reduce ROM and meant to keep knee in extension
- Come in many lengths
 14" 24"
- Adjustable side panels for circumference
- Issues with migration

- Most commonly dispensed in emergency departments
- Good for short term use
- Long term use can lead to atrophy and contractions
- Good for acute knee injures when patient can get to full extension

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T-Scope

- Gold standard of ROM bracing
- Allow for locking and unlocking
- Progress through ROM for nonop and post-op
- Adjustable for all heights and weights
- Better for long-term use
- DO NOT CUT STRAPS
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- Most commonly used for ACL pre and post op
- For PCL add posterior calf bolster
- Can add varus/valgus mold for MCL/LCL support
- Acute injury, locked in extension for WB and unlocked for ROM exercises



- Not normally for acute injury
- Best for quadriceps or hamstring injuries
- Can be used acutely after surgery
- Usually custom made
- Very expensive
- Can be spring assist or motorized
- Most commonly used in rehab for contracture issues

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Long Hinged Knee Brace

- Grade I/II MCL injury
 - MCL can heal well when supported
- Varus mold to support MCL
- Surgery not normally needed with bracing
- Allow full ROM as tolerated

- Wrap-around and pull-on designs
- Typically worn 3-8 weeks depending on severity



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Patella Bracing

- Acute patella dislocations
- Lateral bolster to prevent re-dislocation
- Many variations
- Should be pull on style
- Not for fracture management

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Red Flags

Things to be aware of when choosing a brace

- Knee Immobilizer
 - Must have full extension
 - Not for long term use
 - Skin breakdown
- T-Scope
 - Limit ROM for fractures

- Long Hinged Knee Brace
 - Rule out other ligamentous/meniscal injuries
- Patella bracing
 - Rule out any patella fracture
 - Rule out avulsion injuries

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Brace Adjustments

- T-Scope
 - Adjust posterior and anterior straps
 - Keep hinged parallel
 - As tight as tolerable
 - Extend distal arms to ankle for migration issues

- Knee immobilizer
 - Adjust side panels to not overlap
 - Use patella closure strap
 - Popliteal pad placed in back of knee
 - Center cutout around patella

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Brace Adjustments

- Long hinged knee brace
 - Varus/valgus mold for MCL/LCL support
 - Cut popliteal opening for relief or irritation
 - ROM stoppers for ROM limitations
- Patella Bracing
 - Adjust lateral patella bolster
 - L/U shape padding adjustable
 - Sew finger loops for easier doffing

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Functional Bracing for Knee

- Both functional and prophylactic knee bracing objectives are to allow normal joint kinematics while limiting unwanted displacements and rotations between the tibia and femur that might produce an intra-articular injury or strain a healing ligament or graft.
- Both off-the-shelf (OTS) and custom brace designs have been proven to significantly reduce ACL strain (with anterior-direct load (relative to femur) and internal and external torques on tibia)
- Functional knee bracing can also reduce the abnormal anterior-posterior laxity of ACL deficient knee, within the normal limits during non-weightbearing and weight-bearing activities.





Reduction of Re-Injury

- Functional bracing within first 12 months
 - Graft protection
 - Higher rate of reoccurrence in this time
- Recorded factors for increase in re-injury:
 - Lower outcome scores
 - Activity level
 - Females



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Reduction of Re-Injury

 Athletes who wear functional braces post ACL reconstruction have fewer recurrent knee injuries





Functional Knee Braces



Breg 888/372-4655 www.breg.com



Ossur 800/233-6263 www.ossur.com



MediUSA 800/633-6334 www.mediusa.com 800/432-3466 www.townsenddesign.com



800/336-6569 www.djoglobal.com



Common Concerns

- Muscle atrophy?
- Adverse performance effects?
- Constant wear?





When an acute problem becomes a chronic problem

- Multiple injuries to the knee and surrounding structures can cause prolonged issues
 - Laxity
 - Movement
 - Wears down the joint surfaces
- The wearing down of the joint can lead to pain and...



21 Presentation Title

Osteoarthritis

- Osteoarthritis develops gradually over a period of years and results in the gradual deterioration of the hyaline cartilage that covers the articulating surfaces of the knee joint. In most people, the disease is idiopathic but can also be hereditary or the result of trauma, which causes pain, stiffness, limited range of motion, and localized swelling in the knee
- No Cure Typically leads to knee replacement surgery
 - OA Bracing can help delay surgery
- That grinding elicits pain
 - Knee osteoarthritis is a leading cause of disability around the world
 - How much pain can you tolerate?

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Where does OA bracing fit in?

- Knee bracing offers a conservative, non-invasive treatment option to alleviate the symptoms of knee OA by decreasing biomechanical loads on the knee
- Can slow the progression of OA





How to use

- Pain is the chief complaint of most patients
- OA Braces have different pressure settings
 - Start low and go slow
- The goal is to find the most comfortable pressure setting when wearing the brace
 - Keep a pain journal
 - Return to setting where you had the lowest pain
 - Stop when you have no pain
 - Can wear as long as you feel comfortable
 - Daily wear progression

How the brace "unloads"

- PULL Allows the upright and hinge to be located on the same side of the affected knee joint compartment
- PUSH Allows the upright and hinge pressure to be located on the opposite side of the affected knee joint compartment







- Single Upright
 - Mild to Moderate OA
 - Smaller size
 - Low impact activities





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New Bracing Technology

The Breg DUO (Dynamic Unloading Osteoarthritis) brace is the only dual-upright dynamic OA brace on the market. It works to apply a corrective force in the last 30 degrees of extension when the most relief is needed. That load is removed as the knee moves into flexion and symptoms are no longer present.



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