



@physicaltherapyresearch

# RAPID RESEARCH

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July 2021

## Inside This Week: Bracing for Pain & Injury Prevention

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- ✓ Can a Knee Brace Prevent ACL Reinjury?

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  - ✓ Effect of Bracing in Preventing Ankle Sprains

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  - ✓ Biomechanical effects of valgus bracing for knee OA



# CAN A KNEE BRACE PREVENT ACL RE-INJURY

[Full Text](#)

[Marois et al.](#)  
[2021](#)

[\(Click to Open\)](#)

This systematic review presented current findings on the effect of wearing a knee brace on preventing ACL reinjury after return to sport (RTS) in ACLR patients.



# KEY FINDINGS

A total of **1196 patients in 3 studies were included.**

Perrone et al. found that **14 patients (10%)** in their brace cohort had a graft failure as opposed to **29 graft failures (21%)** in the control cohort.

2 (14%) occurred within 1 year and 5 (36%) within 2 years following the surgery.

A **higher rate of re-injury was found for the younger patients** (i.e., 17 years and younger).

2 out of 3 studies showed that **Quality of Life Scores (KOOS) improved by 50%** and were higher overall at 2 years when prescribed a knee brace.

The effectiveness of knee bracing when **RTS remains ambiguous.**

## MAIN TAKEAWAYS

**Clinical uncertainty remains regarding prescribing functional knee braces when returning to sport.**

**No trends indicating a protective effect of knee braces against re-tear after ACLR were reported in this review.**

**Choosing to use a knee brace for RTS depends on patient or physician preference.**

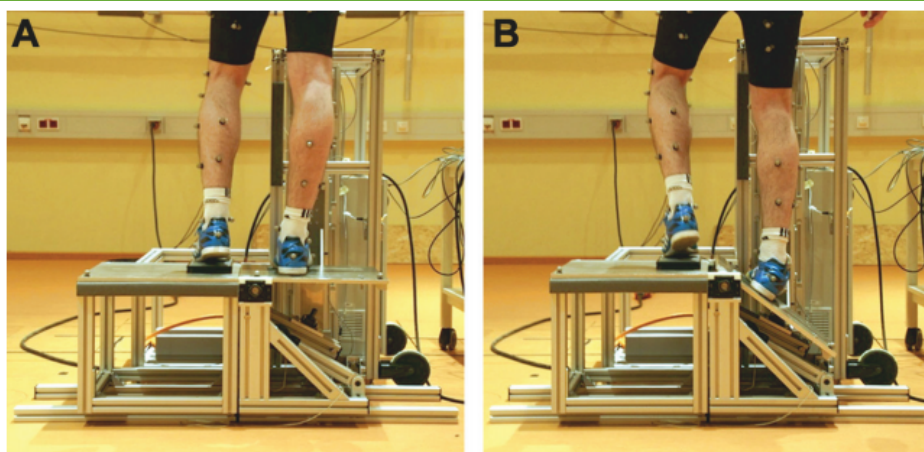
# EFFECT OF BRACING IN PREVENTING ANKLE SPRAINS

[Full Text](#)

[Agres et al.  
2019](#)

[\(Click to Open\)](#)

The study assessed the protective effect of an ankle brace that restricts inversion velocity during possible re-injury, taking into account the possible placebo effect of brace application.



# KEY FINDINGS

Only **active bracing reduced inversion angles** during a sudden ankle inversion vs. unbraced condition.

This reduction was apparent **between 65 and 140 milliseconds** after the initial fall.

**No significant differences in inversion angle were found between the passive placebo** brace and unbraced conditions during sudden ankle inversion.

Furthermore, **no significant differences were found among all tested conditions** in the sagittal plane kinematics at the knee and ankle.

# MAIN TAKEAWAYS

Only the actively protecting ankle brace limited inversion angles.

Sagittal plane knee kinematics appear to remain unaffected by bracing during single-legged landing.

Athletes prone to reinjury after lateral ankle sprain may benefit from brace designs that allow for full sagittal range of motion but restrict only frontal plane motion.



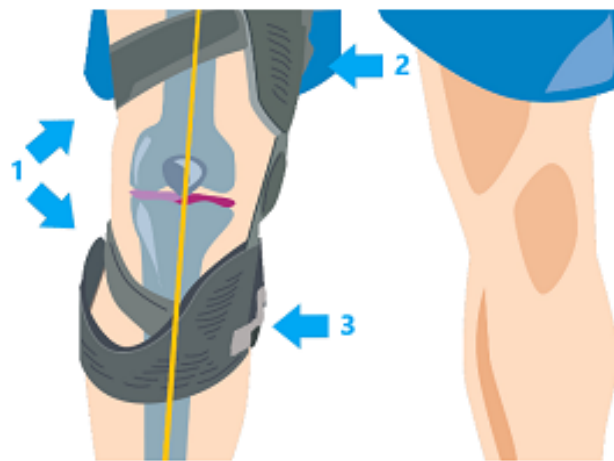
# BIOMECHANICAL EFFECTS OF VALGUS BRACING FOR KNEE OSTEOARTHRITIS

**Full Text**  
Moyer et al.  
2014  
[\(Click to Open\)](#)

This review synthesized the biomechanical effects of valgus knee bracing for patients with medial knee OA.



Knee OA without bracing (bone-on-bone contact)



The 3-Point Leverage System



Knee OA with bracing (space created between bones)



Levitation 2  
Spring Loaded Technology



Unloader One  
Ossur



OA Unloader  
Orthomen



Solus One  
Breg



OA Defiance  
Donjoy

**30 studies were included with 478 subjects.**

Various biomechanical methods suggested valgus braces can decrease:

Medial knee **compressive force**.

**Medio-lateral distribution** of load across the knee.

Quadriceps/hamstring and quadriceps/Gastrocnemius co-contraction ratios.

&

Increase **medial joint space during gait**.

A decrease in **knee adduction moment** during walking was found with a moderate-to-high effect size.

## MAIN TAKEAWAYS

Valgus braces can alter knee joint biomechanics through a combination of mechanisms.

However clinical significance is still in question, especially as brace compliance rates are low.

Further research should aim to define:

Optimal dosage while balancing patient comfort.

Patient characteristics of those likely to respond best.

Effects on disease progression and economic evaluations.

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