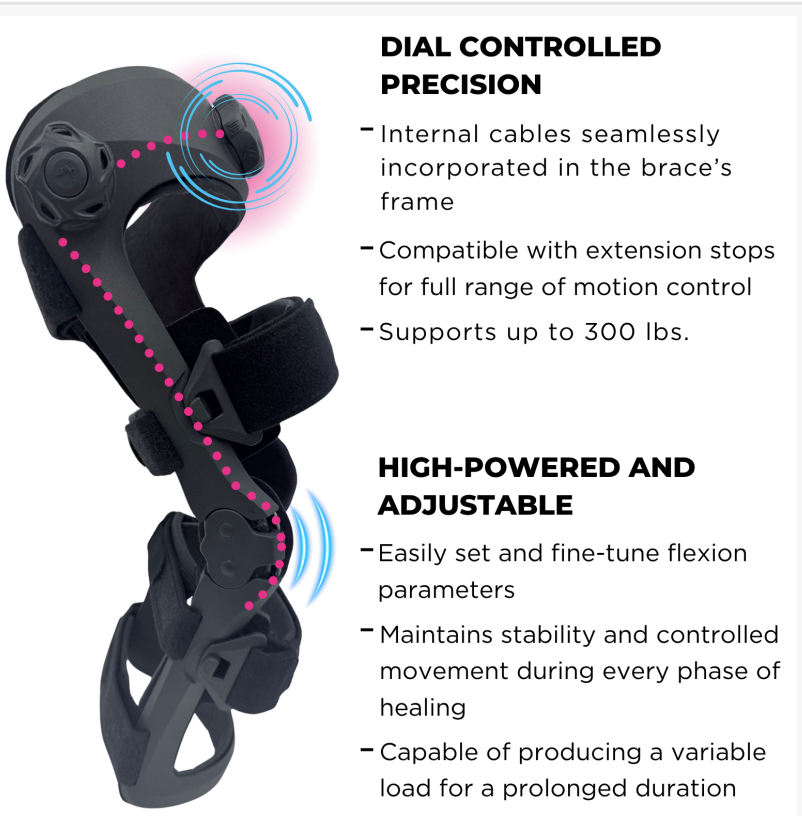
Icarus Medical Introduces Unparallelled Control to Adjust Knee Flexion Across Orthotic Care

New Flexion Control Dial expands how clinicians can manage knee flexion across rehabilitation and complex orthotic care.

CHARLOTTESVILLE, VA, UNITED STATES, September 7, 2026 /EINPresswire.com/ -- Icarus Medical, a developer and manufacturer of digitally designed and 3D printed orthopedic bracing solutions, has introduced the Flexion Control Dial, or FCD, a new mechanical system designed to give clinicians a faster way to adjust permitted knee flexion on knee orthoses and knee ankle foot orthoses.



The Icarus Medical Flexion Control Dial adds adjustable knee flexion control to select Icarus orthoses, with integrated cable routing, compatibility with extension stops, and independently adjustable mechanical support.

The FCD expands the clinical applications of Icarus Medical's growing orthotic bracing technology by adding adjustable flexion control for postoperative rehabilitation and patients with more complex lower extremity weakness and instability.

Icarus develops lightweight custom orthoses using digital scanning, engineering and additive manufacturing to create patient specific bracing solutions. Its technology is designed to customize both the fit and mechanical function of an orthosis to the individual patient. The FCD builds on that approach by adding another adjustable component clinicians can use to manage permitted knee flexion.

Addressing Different Flexion and Stability Requirements

The amount of knee flexion a patient can safely or functionally tolerate can vary significantly depending on the diagnosis, stage of rehabilitation, and degree of muscle weakness or

instability.

In postoperative rehabilitation, clinicians may need to restrict knee flexion early in recovery and progressively allow additional motion as the surgical protocol advances. Traditional postoperative braces commonly manage these changes through adjustable hinges, preset range of motion settings, or interchangeable mechanical stops. While effective, these systems can require manual hardware changes or repeated reconfiguration as the patient's needs evolve.



With the turn of a dial, clinicians can quickly adjust permitted knee flexion directly on the orthosis, making it easier to adapt support as patient needs change.

KAFO patients present a different challenge. Significant quadriceps weakness or lower extremity instability may allow the knee to flex or buckle under load, often requiring clinicians to balance mobility with greater mechanical stability. In many conventional systems, increasing that stability can mean moving toward a more rigid or locked configuration, limiting the ability to fine tune flexion control within the same orthosis.

> We believe the FCD marks an important advancement for the orthotics industry, expanding how clinicians can manage knee flexion and adapt support around changing patient needs."
>
> *Dave Johnson, CEO and Founder of Icarus Medical*

The FCD introduces a different approach. By adding a secondary, dial controlled mechanism alongside Icarus Medical's dynamic energy return system, clinicians can adjust permitted knee flexion directly on the brace without changing individual mechanical stops or switching to a different brace configuration. Flexion control and the energy return system can be adjusted independently, giving clinicians a more adaptable way to configure the orthosis as patient needs change.

Postoperative Range of Motion Management

Following knee surgery, clinicians may need to limit motion early in recovery and progressively increase range of motion as healing advances. Until now, clinicians have often relied on multiple braces to accommodate changing needs throughout rehabilitation. Protocols following procedures such as ACL reconstruction, meniscal repair,

cartilage procedures, osteotomy, ligament reconstruction and other knee surgeries may prescribe specific limits on knee flexion during different phases of recovery.

When integrated into the Icarus Kronos Knee Brace, the FCD allows clinicians to adjust permitted knee flexion directly through the dial as rehabilitation needs change. Whether a patient requires full extension lockout, moderate flexion during recovery, or greater flexion for weight bearing activities, the permitted range can be adjusted with the turn of a dial. This gives clinicians a simple way to modify flexion settings throughout rehabilitation without changing individual mechanical flexion stops.

The result is a knee brace configuration designed to accommodate changing postoperative range of motion requirements while remaining within the same functional bracing platform.



The Icarus Medical logo represents the company's commitment to advancing orthopedic bracing technology through innovation, biomechanics, and additive manufacturing.

Mechanical Support for Complex Lower Extremity Instability
KAFO patients often present with different clinical challenges than postoperative knee patients. Significant quadriceps weakness, neuromuscular weakness, lower extremity instability, or recurrent knee buckling can make it difficult for a patient to maintain knee stability during weight bearing and functional mobility.

The Hercules and Zeus KAFOs are designed for patients who require greater mechanical support across the knee and lower extremity. The addition of the FCD gives clinicians another way to configure that support when unwanted knee flexion is part of the patient's presentation. By combining lightweight design with dynamic assist and flexion control hinges, these technologies may bridge the gap between traditional drop-lock or stance control KAFOs and microprocessor KAFOs.

Depending on the patient's requirements, the FCD can be used to restrict permitted knee flexion or provide full extension lockout when greater stability is needed. For patients who require greater mechanical stability at the knee, adjustable flexion control provides an additional level of support within the Icarus KAFO platform.

This allows clinicians to consider the patient’s strength, stability, functional ability, and tolerance for knee flexion when configuring the orthosis.
Ongoing research with the Richmond VA Medical Center through a CRADA is exploring applications of the FCD as a stroke recovery solution, designed for rehabilitation of veterans for phased recovery post-stroke.

For additional information about the Icarus FCD visit: https://icarusmedical.com/icarus-products/flexion-control-dial/

About Icarus Medical
Icarus Medical is a Charlottesville, Virginia based medical technology company focused on developing innovative orthopedic bracing solutions that help patients stay active, improve mobility and reduce pain. The company combines biomechanics, software and additive manufacturing to create advanced orthopedic technologies for osteoarthritis, postoperative recovery, neurological conditions and lower extremity mobility challenges.

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