

## Better braces, better business.

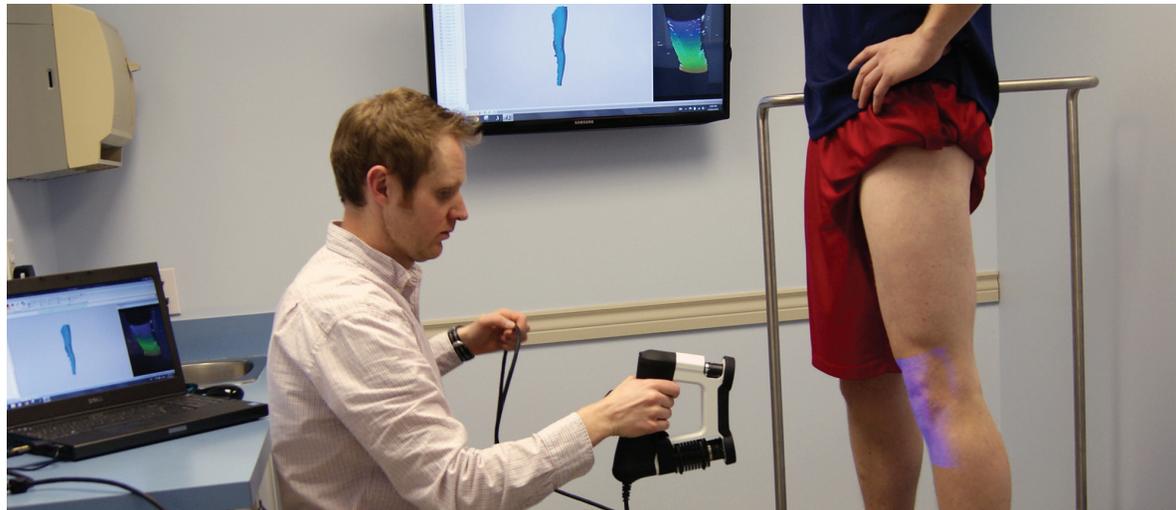
Custom knee brace manufacturer achieves better-fitting braces, happier patients, and a 450% efficiency gain.

### At a Glance

#### Karl Hager Limb & Brace

Operate The Knee Centre clinic in Edmonton  
Central fabricator for clinics across Canada  
[www.khager.com](http://www.khager.com)

- 450% productivity boost
- Better-performing braces improve patient quality of life
- Technology and innovation attract patients and referring physicians



**“An architect could not compete today without using computer-aided design tools, and the same will soon be true for custom orthotic and prosthetic providers. It’s time for our industry to join the digital age.”**

*Nolan Hayday, Business Manager, Karl Hager Limb & Brace*

Karl Hager Limb & Brace produces hundreds of custom knee braces each year, both for their own patients and as a central fabricator for clinics and hospitals across Canada. In 2015, they partnered with Vorum to implement a complete orthotic and prosthetic (O&P) computer-aided design and manufacturing (CAD/CAM) solution. The results have been remarkable.

**“No patient contact, no heavy plaster work, and a clinician productivity boost of over 450%. The game has changed.”**

“Using the old plaster-based process, it took 90 minutes to cast a patient, create a plaster positive mold, and modify the mold for brace fabrication,” explains Mr. Hayday, describing the efficiency gains being realized with the Vorum solution. “Now, we optically scan the patient’s leg, modify the shape on the computer, and automatically carve the positive mold in foam, all in under 20 minutes of hands-on staff time. That gives us an impressive efficiency gain of 450%, and enables our staff to see more patients, provide faster turnarounds, and better



Nolan Hayday, Business Manager,  
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serve our patients, referring physicians, and central fabrication customers.”

**“Our patients and staff both love the ease, speed, and accuracy of optical scanning.”**

“Our patients love the Spectra scanner. Its blue-light technology is very similar to a camera’s flash, so they feel safe during scanning. They’re also impressed that so much detail is captured in such a short time. When we used plaster casts, the mold of a patient’s leg shape was ‘smoothed-out’ and much of the detail was lost. Now, in less than one minute, Spectra captures 200 megapixels of data: that’s an entire leg scan in enough detail to distinguish a bump or contour change as small as 0.1 mm, the thickness of a human hair.”

“What’s more, we can scan the patient in the standing position, with their muscles engaged and contracted. When we used plaster casts, patients had to sit or lie down, meaning their muscles were relaxed and did not represent the true shape of their leg when walking or running. But with the Spectra scanner we can get an accurate picture of a patient’s knee shape in active use. That lets us build better-fitting braces: we can reduce excess joint movement, avoid pressure points, and eliminate gaps within a brace that might cause a decrease in support to the affected limb. That makes for happy patients.”

**“Vorum gives our orthotists tools to design with greater precision.”**

“Our patients don’t see what comes next, but it’s just as revolutionary as the scanner. Our orthotists use Vorum’s 3D design software to transform ultra-accurate knee scans into brace designs that correct for misalignments due to Osteoarthritis (OA) and provide support where needed. Rather than eyeballing adjustments by manually adding or removing plaster, our practitioners can work with unparalleled precision, quickly and consistently applying the exact amounts of bend, rotation, expansion, and contraction that a design requires.”

**“We’re making better braces that improve the lives of our patients.”**

“We’re delighted by the many ways this service has improved our patients’ lives. We’ve helped athletes to improve performance and take their sporting achievements to the next level. We’ve built great-fitting OA braces that provide pain relief to patients with osteoarthritis in the knee and provide users the freedom to move with confidence. By being braced, many patients are able to delay getting a knee replacement and use the brace while they are awaiting their surgery. We have helped older patients to walk and play with their grandchildren again. It’s wonderful to hear how happy our clients are with the results.”

**“CAD/CAM has revolutionized our business.”**

“Our central fabrication customers can use a Vorum scanner to accurately capture the knee shape of their patient in less than a minute, then immediately email us the scan file. We receive it in seconds, instead of waiting four or five days for the expensive courier-delivery of a cast,” commented Mr. Hayday. “We quickly modify the design on a computer, carve a foam mold, and make a brace. That means faster turnaround, lower cost, and better-fitting braces. Those are big advantages for us and our central fabrication customers.”

“When making the switch to CAD/CAM, we chose Vorum because they offer the most complete, reliable technology platform and they back it up with comprehensive training and the best support. They have also been the global leader in O&P digital technology for over 26 years and have pioneered every major advancement in the field, a track record we knew we could trust. We’re very happy with the results—Vorum are great partners, and their CAD/CAM solution has revolutionized our business,” concluded Mr. Hayday.