



## NEW TECHNOLOGY

Navigation (Computer-Assisted Surgery)



### A Giant Step Forward In Joint Replacement

Dr. Bryan Frentz is among the first orthopaedic surgeons in the area to use computer-assisted surgery. Computer-assisted surgery is a giant step forward in joint replacement. Advanced computer-assisted surgical monitoring with the Stryker Navigation System helps your surgeon more precisely align your hip or knee implant with computer imaging. The Stryker Navigation System gives your surgeon 3-D imaging of your leg during surgery which may result in more exact placement of the implants.

While the medical and computer science behind the Stryker Navigation System is extremely complex, the system is relatively easy for your surgeon to use. Minimally invasive wireless "trackers" send data about your joint movement to the system's computer. It presents your surgeon with multiple views of your body and allows the review of your leg's range of motion with the implant installed in its final position. Armed with this information, the surgeon can make adjustments within a fraction of a degree, helping to ensure the best outcome.

### Computer-Assisted Knee Replacement

As with any moving part, alignment is key to smooth movement and long-term wear, just as wheel alignment affects the life of automobile tires. This is also the case with knee replacement. For years, surgeons have used X-rays,

specialized instrumentation, surgical techniques, and experience to ensure a proper fit and alignment of the knee implant.

While these technologies have served surgeons and their patients well, research has shown that accuracy to within one to two degrees and one to two millimeters is extremely important to the long-term outcome of your knee replacement. The Stryker Knee Navigation System was designed to assist the surgeon in achieving this degree of precision routinely and consistently.

### Computer-Assisted Hip Replacement

Similar to "global positioning systems," the Stryker Computer-Assisted "navigator" helps the surgeon align and orient the hip implant with more precision than ever before. The surgeon is able to view an interactive display of the lines, angles, and measurements needed to position your hip implant. This combination of computers with wireless cameras and infrared technology is significantly improving medical technology for orthopaedic surgery.

### How Does Computer Navigation Work?

- In the operating room infrared optics and tracking software continually monitor the position and mechanical alignment of the joint replacement components relative to your specific anatomy.

- Minimally invasive smart wireless instruments send data about to the joint movements (kinematics) to a computer.
- The computer analyzes and displays the kinematic data on the screen in the form of charts and graphs.
- These images provide your surgeon with the angles, lines, and measurement needed to best align your hip or knee implant.

### What Are The Potential Benefits?

- It allows your surgeon to make adjustments to within a fraction of a degree, helping to ensure optimal "fit" for your joint.
- It provides your surgeon with a comprehensive view of your joint mechanics.
- It helps your surgeon correctly position your joint in situations where it is otherwise difficult to get a good view of your anatomy.
- It may lead to improved stability for your joint and optimal range of motion for you.\*

\* Source: Widmer KH, Grutzner PA. Joint Replacement Total Hip Replacement with CT-based Navigation. Injury. 2004 June; 35 Suppl 1:S-A8-9.

For more information about this procedure please visit: <http://bryanfrentz.com/newtech>



# HAMILTON MEDICAL GROUP

General Orthopaedics



Sports Medicine



Computer Assisted Joint Replacement



Minimally Invasive Total Knee Replacement



Minimally Invasive Total Hip Replacement



Fracture Reconstruction



Pediatric Fracture Care



Disorders of the Foot and Ankle



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## A GUIDE FOR PATIENTS

Dedicated to Helping Restore Active Lifestyles



### Minimally Invasive Surgery

Minimally invasive surgery (MIS) is a general term used to describe any surgical procedure that utilizes a smaller incision than conventional surgery. In some MIS procedures, the amount of soft tissue (muscles and tendons, etc) that are disrupted during surgery may also be reduced. MIS for joint replacement is a relatively new development despite the fact that MIS procedures have been developed years ago for many other areas of surgery including cardiac, gall bladder and spinal surgery.

Stryker has partnered with surgeons worldwide to develop MIS procedures, implants and surgical instruments that will help you achieve lifestyle recovery.

Hamilton Medical Group