

KNEE AND HIP REPLACEMENT INFORMATION SHEET

Each year, more than 600,000 knee replacements¹ and 270,000 hip replacements² are performed in the United States. Yet, people experiencing severe hip and knee pain wait, on average, seven to 11 years before undergoing joint replacement surgery due to fear, misinformation or a lack of awareness about treatment options.³ Therefore, education about joint replacement options is important.

About the Knee and Hip Joints

The Knee Joint:

The knee is the largest joint in the body. It is a hinge joint and is much more complex than other joints. It not only bends and straightens, but also rotates and turns as it bends. The knee joint is made up of three individual bones, including the shin bone (tibia), the thigh bone (femur) and the kneecap (patella). The knee joint is lined with cartilage to protect the bones from rubbing against each other. This cartilage ensures that the joint surfaces can glide easily over one another.

The Hip Joint:

The hip joint forms where the top of the thigh bone (femur) meets the socket of the pelvic bone (the acetabulum). The top of the femur is shaped like a ball and fits snugly in the socket formed by the acetabulum. Similar to the knee joint, the hip joint is covered with a layer of smooth cartilage, which cushions and protects the bones while allowing smooth movement.

Ligaments connect the bones of the joint to hold them in place and add strength and elasticity for movement. Muscles and tendons play an important role in keeping the joint stable and mobile.

The hip and knee joints play an important role in movement and maintaining balance. They also support weight while we are standing, sitting, running or walking.

Arthritis:

Arthritis is the leading cause of disability in the United States. In fact, it's estimated that 1 in 5 people in the United States has some form of arthritis. Two-thirds of the people who have been diagnosed with arthritis are under the age of 65.¹ Of the more than 100 types of arthritis, the following three are the most common causes of joint damage:

Osteoarthritis is a disease which involves the wearing away of the normal, smooth joint surfaces. This results in bone-on-bone contact, producing pain and stiffness.

Rheumatoid arthritis is a systemic disease because it may attack any or all joints in the body. It affects women more often than men and can strike young and old alike. Unlike osteoarthritis, rheumatoid arthritis causes destruction of the joint through severe inflammation. The body's immune system attacks and destroys the synovial lining covering the joint capsule, the protective cartilage and the joint surface. This causes pain, swelling, joint damage and loss of mobility.

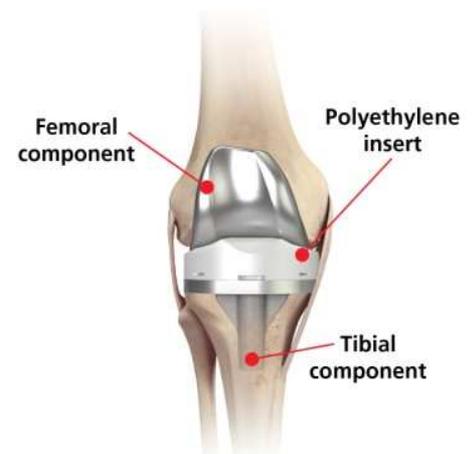
Trauma-related arthritis results from damage to the joint from a previous injury. It also results in joint damage, pain and loss of mobility.

What is Joint Replacement?

When medication, physical therapy and other conservative methods of treatment no longer relieve pain, orthopaedic surgeons may recommend joint replacement. Joint replacement is a surgical procedure that removes and replaces the damaged bone and cartilage with implants. Total joint replacement helps relieve pain and may allow patients to perform activities that they previously have engaged in but stopped because of limitations due to pain.

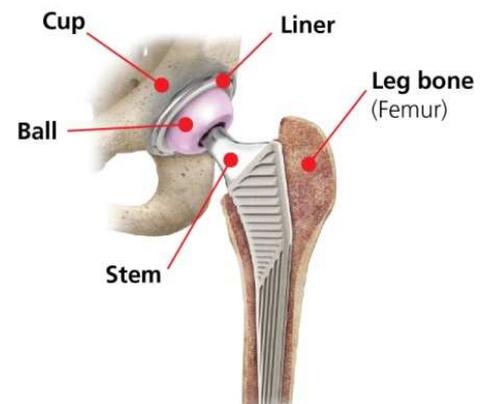
Knee Replacement:

Knee replacement surgery involves removing the arthritic bone on the bottom end of the femur (thigh bone) and the top end of the tibia (shin bone) and covering the ends of these bones with new implants. The surgeon places the implants over the ends of the femur and tibia and attaches to the bone. Next, a liner is inserted to provide a cushion between the two implants. This liner is made out of polyethylene. Surgeons may also replace the kneecap (patella) if needed.



Hip Replacement:

Hip replacement surgery begins by making an incision in the skin to access the ball and socket joint of the hip, which are surrounded by layers of muscle and fibrous tissue. The surgeon will then remove the arthritic femoral head (ball). Surgical instruments are then used to shape the hip socket so a cup can be inserted. Next, the surgeon shapes the top of the femur (thigh bone) so a femoral stem can be inserted down the hollowed out bone. This stem can be attached inside the femur with or without bone cement. After the implants are placed, a prosthetic head (ball) is placed on the top of the stem and then into the cup to complete the procedure.



Options for Knee and Hip Replacement

Surgeons can choose from a variety of different knee and hip replacement options. To determine which type of implant is appropriate for a specific patient, surgeons will often consider the following:

- Range of motion (the amount of movement available at a joint¹)
- Joint stability
- The severity of the disease
- The type of material used to make the implant
- The patient's lifestyle, age and weight

Because the knee and hip joints are vital to maintaining mobility and an active lifestyle, it is important to consider the type of implant that offers the best match for a person's lifestyle.

Advancements in Joint Replacement Surgery

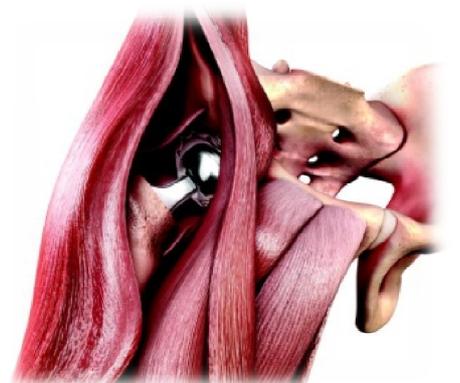
TRUMATCH® Personalized Solutions for Knee Replacement:

Positioning and alignment are crucial to the overall performance of the implant.^{4,5,6,7} TRUMATCH® Personalized Solutions, only available with SIGMA® Knee Replacements from DePuy Orthopaedics, Inc., uses a three-dimensional computerized scan of the leg to create customized surgical guides that are designed to deliver a personalized solution based on the patient's unique anatomy. DePuy Orthopaedics, Inc. developed TRUMATCH solutions to help surgeons achieve consistency in placing and positioning the knee replacement.



Anterior Approach for Hip Replacement:

The Anterior Approach is a technique that offers the potential for less pain, fewer movement restrictions right after surgery and faster recovery when compared to the traditional approach to surgery.^{8,9,10} This approach allows the orthopaedic surgeon to enter the hip joint from the anterior (front) of the thigh and work between muscles and tissue without cutting or detaching them from either the hip or thighbone. DePuy Orthopaedics, Inc. is a leading global provider of hip and knee replacement and provides extensive surgeon education and training on the Anterior Approach.



Important Safety Information

The performance of hip or knee replacements depends on a patient's age, weight, activity level and other factors. There are potential risks and recovery takes time. People with conditions limiting rehabilitation should not have these surgeries. Only an orthopaedic surgeon can determine if hip or knee replacement is necessary based on individual patient's condition.

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¹ American Association of Orthopaedic Surgeons. Total Knee Replacement – Your Orthopaedic Connection.

<http://orthoinfo.aaos.org/topic.cfm?topic=a00389> Accessed August, 2011.

² Thomas Healthcare. Market Scan Research Data, 2007.

³ DePuy Hip: A&U/Segmentation. Final Report January 2008. Data on file.

⁴ Werner, F. et al. "The effect of valgus/varus malalignment on load distribution in total knee replacements." *Journal of Biomechanics*. 2005;38:349-355.

⁵ Cates, H. et al. "Intramedullary Versus Extramedullary Femoral Alignment Systems in Total Knee Replacement." *Clinical Orthopaedics and Related Research*. 1993;286:32-39.

⁶ Ritter, M. et al. "Postoperative Alignment of Total Knee Replacement." *Clinical Orthopaedics and Related Research*. 1994;299:153-156.

⁷ Sorrells, B. et al. "The effect of varus and valgus deformity on results of cementless mobile bearing TKA." *The Knee*. 2007;14:284-288.

⁸ Comparison THA procedure data on file at DePuy Orthopaedics, Inc.

⁹ Matta, J.M. and T.A. Ferguson. "THA After Acetabular Fracture." *Orthopedics* 28(9), September 2005: 959-960.

¹⁰ Matta, J.M., C. Shahrddar and T. Ferguson. "Single-Incision Anterior Approach for Total Hip Arthroplasty on an Orthopaedic Table." *Clinical Orthopaedics and Related Research* 441, December 2 005: 115-124.