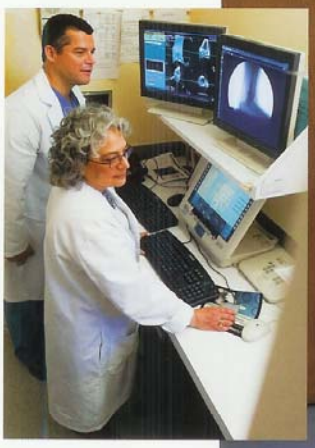
STANDING up for digital imaging

The Department of Radiology and Imaging, which is recognized worldwide for musculoskeletal, orthopedic, and rheumatologic clinical and research imaging, is once again at the forefront of applications for musculoskeletal imaging that are likely to prove a breakthrough for clinical care. In collaboration with Philips, the Department is helping to develop a new use for three-dimensional axial weight-bearing fluoroscopy, which provides digital X-ray images of a patient's pathology while standing. Hospital for Special Surgery is the only site in the country applying this technology for orthopedic diagnostics, which was originally approved by the Food and Drug Administration for use in cardiac studies.

"This is the first time we can look at a patient's knee or ankle when it is in a weight-bearing position and construct a 3-D representation of the body part in an X-ray mode," says Helene Pavlov, MD, Radiologist-in-Chief. While a CT scan – which can only be performed with the patient lying down – gives important information, upright fluoroscopy provides what a CT scan cannot – the effect of forces on a joint. "This is truly emerging technology, and it is providing a more comprehensive evaluation of pathology that was not previously available to us."

An image taken of a joint while the patient is standing reveals very different information from an image of a joint at rest. For example, if an image of a knee joint is taken while the patient is supine, it could show adequate space in the joint. But the joint space narrows considerably under the load of standing weight, providing some very telling diagnostic information about cartilage degeneration and the cause of pain.

"Subtle misalignment in a joint might be missed when the patient is imaged lying down," adds Dr. Pavlov, "so applying gravity holds enormous potential."



Above: Dr. Helene Pavlov and Mario Solano, radiology technologist, review images taken with the new weight-bearing 3-D fluoroscopy unit. Within seconds, images taken of the patient while standing can reveal important information of a patient's pathology, not otherwise evident.

Above: These 3-D images reveal how weight-bearing forces on an ankle joint provide important diagnostic information.

Left: Teresita Leynes, MSN, NP, Assistant Director of Radiology and Imaging, demonstrates how the new imaging application is used for diagnosing ankle disorders while standing.