

Treating the aging knee as an organ

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The human body is made up of several organs composed of tissues that enable them to perform a particular function. The heart circulates blood; the brain is the micro-neuro center of the body; the lungs bring in oxygen and release carbon dioxide.

The failure of any one of these tissue systems can cause serious health issues, even death. When components of the organ are fixed, typically the organ functions better. For instance, unclogging a blocked artery with a balloon stent improves [blood circulation](#) to and from the heart.

Henry Ford Hospital researcher Fred Nelson, M.D., suggests that viewing the knee as an organ in the same way doctors examine the heart for heart disease could lead to better therapies for treating osteoarthritis, one of the five leading causes of disability in elderly men and women. The American Academy of Orthopaedic Surgeons asserts that the risk for disability from osteoarthritis of the knee is as great as that from cardiovascular disease.

An exhibit that in part examines degenerative [knee arthritis](#) as an organ in failure will be displayed at the annual meeting of the American Academy of Orthopaedic Surgeons Feb. 15-18 in San Diego.

"For years we've looked at the aging knee strictly from a mechanical perspective recognizing the critical role of articular cartilage. We keep forgetting that other structures about the knee are also affected," says Dr. Nelson, director of Henry Ford's Osteoarthritis Center. "The underpinnings of research about a [degenerative disease](#) like osteoarthritis

should take into account the bone, cartilage, ligaments, nerves and circulating chemicals and how these components collectively work together to affect the function of the knee."

Osteoarthritis of the knee is a leading cause of disability and loss of independence. It is most typically a slow, progressively degenerative disease in which the joint cartilage gradually wears away due to trauma, aging or infection. As the cartilage thins, the surrounding bone may thicken. Often bones rub against one another and may be the individual's source of pain. In most cases, normal activity becomes painful and difficult.

Current treatments include drug therapies like anti-inflammatory medication or pain relievers, physical therapy, support devices, health and behavioral modifications such as weight loss, and joint replacement surgery.

"Our strategies are directed at anti-inflammatory and pain medications. Yet, we don't look at the origins of pain, which can be a product of dysfunction of joint tissue, bone and nerves," Dr. Nelson says.

"The feed back of nerve signaling can have a direct effect on the cartilage cell itself. Knowledge of the back and forth messaging between the tissue components may lead to better interventions for pain. But we can't know that until we start looking at the knee with a broader view."

Provided by Henry Ford Health System

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