

Mission

The Palo Alto VA Bone & Joint Rehabilitation Center of Excellence reflects a long-standing commitment by the Department of Veterans Affairs (VA) to advance the well being of American veterans through support of a full spectrum of rehabilitation research, from concept to clinic.

Established in 1978, the focus of the B&JR Center is to reduce pain and improve function in patients suffering from impairments involving the musculoskeletal system. Primary areas of investigation are:

- Developing novel physical interventions for prevention of bone loss due to disuse, and the restoration of normal bone density.
- Halting the progression of osteoarthritis and reversal of cartilage degeneration.
- Improving the rehabilitative course and ultimate outcome of orthopedic techniques.

Resources

The B&JR Center's most valuable resource is its skilled, highly motivated staff. Dedicated investigators and support personnel work together to achieve the Center's mission. The Center's affiliation with the Stanford University Schools of Engineering and Medicine provides a fertile intellectual and academic atmosphere, and fosters many professional collaborations and student interactions.

Laboratories within the B&JR Center's 19,000 square-foot building, as well as within the VA Palo Alto facility and Stanford University, provide facilities for research from the molecular and computational level to applied biomechanics, gait studies and human clinical trials.

The B&JR Center is funded by a competitive renewal award from the Department of Veterans Affairs. In addition, Center investigators compete for peer reviewed research funding, both intra- and extra-mural to the VA.

Address and Contact information



**Bone and Joint Rehabilitation
Center of Excellence**

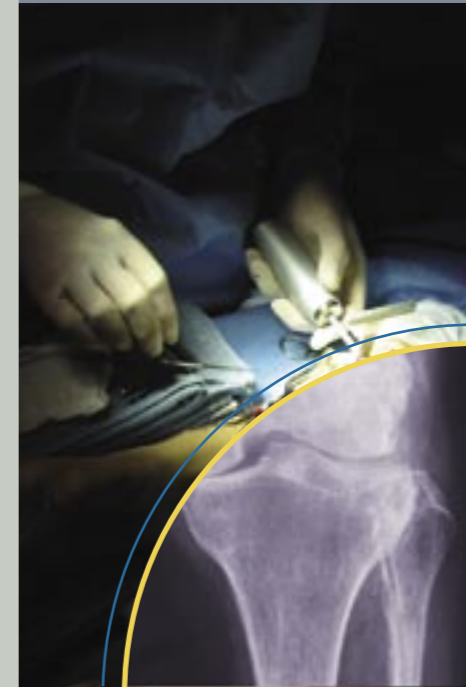
Department of Veterans Affairs Health Care System
3801 Miranda Avenue, Building 51, Mail Code 153
Palo Alto, CA 94304-1207
Telephone: (650) 858-3991
URL: www.vard.org/cent/centers.htm



VA PAHCS
Veterans Affairs Palo Alto Health Care System



Bone and
Joint
Rehabilitation
Center of
Excellence



**Working to
Preserve and
Restore
Bone and
Joint Health**



*To advance
knowledge and
technology
that optimizes
rehabilitation
health care*

From Concept to Clinic

At the B&JR Center, we believe that successful rehabilitation strategies are grounded in a firm scientific understanding of the underlying impairment and that a multi-disciplinary team most effectively accomplishes bone and joint rehabilitation research. By conducting a full range of research from basic science to clinical studies of the mechanisms responsible for orthopedic impairments, we create a strong basis for developing new clinical treatments that reduce the disability of veterans and improve the effectiveness and efficiency of healthcare delivery by VA clinicians.

Basic Science

At the basic research level our investigations are aimed at identifying the molecular mechanisms that affect skeletal health. Increased understanding of these relationships can lead to clinical and pharmacological treatments of diseases such as osteoporosis and osteoarthritis.

Translational Research

We engage in translational research using innovative techniques including motion capture, computational modeling and gait analysis. These techniques provide the practical knowledge needed to design therapeutic interventions ranging from surgical techniques to physical therapy that can aid patients suffering from pain, fractures, and loss of mobility and function.

Clinical Studies

At the clinical trial stage we conduct human trials to test and refine new medical techniques and surgical procedures that result from our research.

We apply the “concept to clinic” approach to address problems related to loss of function from arthritis and osteoporosis, two of the most common skeletal diseases in the elderly. Our efforts are directed towards identifying new design concepts for longer lasting joint replacements, improving cartilage repair and regeneration, and developing therapy devices and protocols that will preserve and restore bone and joint health.

A. Peripheral quantitative computed tomography (pQCT) can be used to obtain detailed three-dimensional information about cross-sectional geometry and density within bones in living subjects. This information can be used to predict fracture risk in individuals with low bone density and osteoporosis.

B. The effects of load bearing body weight support using treadmill training (Lokomat) are being studied to improve gait in persons with post-stroke hemiparesis.

C. Surgeons and engineers test the strength and stiffness of different fracture fixation constructs to improve healing and reduce surgical risk.

D. Scientists analyze the kinematics of gait to understand the mechanical factors influencing osteoarthritis and osteoporosis development. Novel devices and rehabilitation treatments are evaluated for efficacy in improving walking biomechanics for these and other musculoskeletal conditions.

E. Clinicians and engineers collaborate to improve outcomes of upper extremity surgical reconstructions using biomechanical models and patient assessments.



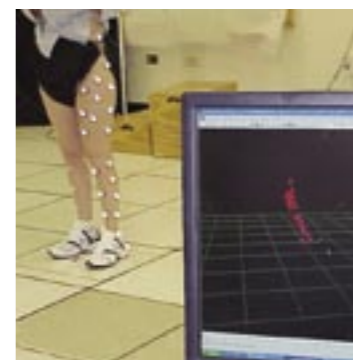
A



B



C



D



E