Peripheral arterial disease (PAD) is a deficit of oxygen to the extremities caused by a lack of proper blood flow. Over time, this lack of oxygen and the resulting toxic byproducts causes myopathy, a structural breakdown in muscle and nerve tissue — called myopathy. And pain.

Dr. Sara Myers, Ph.D., is UNO’s lead researcher on the disease as part of the university’s nationally-recognized biomechanics research team. Her research focuses on the body’s lower extremities — more specifically, the effects of PAD on a person’s gait. Contributing to Dr. Myers’ research are VA vascular surgeons Iraklis Pipinos and Jason Johanning from Nebraska Medicine.

The research subjects come from among the patient ranks at the VA Medical Center.

“Recruiting from the VA Medical Center allows us to see many patients with the same condition, which is much easier than recruiting from dozens of medical centers,” Dr. Myers says. “The VA sends essentially all veterans in Nebraska and Western Iowa to Omaha for advanced vascular problems, so I can recruit from veterans here,” said Dr. Myers.

“It seems that veterans are very willing to volunteer in order to help others with similar medical conditions,” Dr. Myers says.

They’re invited to the new Biomechanics Research Building on UNO’s campus for analysis. Numerous little reflector bulbs are attached to subjects, acting as anatomical reference points that are digitally captured by a dozen cameras fixed around the motion capture laboratory. Assistants operate the computer’s imaging and motion capture software, which displays movement real-time on a large monitor behind them.

Testing includes walking on a treadmill and over a portion of the floor — both of which are equipped with sensor plates that quantify the force with which subjects push into the ground. Researchers use the data to measure the effects of varied methods of treatment.

“The ability to digitally display and map the infinite paths of human movement variability is invaluable to this kind of research,” Myers says.

It’s just one of the many types of research that helped the lab in August be designated as the home for the world’s first Center for Research in Human Movement Variability. That will be supported by a $10.1 million grant from the National Institutes of Health (NIH), the largest research grant in university history.

Dr. Myers anticipates her work lasting into the next decade — and hopes she can bring relief to PAD sufferers.

“There will always be new treatments to analyze,” Dr. Myers says.

— Matt Barros, University Communication

Vets Helping Vets

They’ve already served their country. Now, veterans are helping UNO... help veterans — and others who suffer from Peripheral arterial disease.

In a collaboration with the Nebraska-Western Iowa VA Medical Center (VAMC) and with support from the Department of Veterans Affairs, members of UNO’s Biomechanics Research team are discovering more efficient treatment options for those suffering from this painful condition.

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Labor of Love

John Kretzschmar isn’t likely to be running into burning buildings any time soon — if ever. But he’s still “one of the guys” in the eyes of unionized firefighters.

Last June, the Washington State Council of Fire Fighters named Kretzschmar an honorary firefighter during its annual convention, recognizing the help he’s provided the organization and its member unions.

That came through Kretzschmar’s work as director of UNO’s William Brennan Institute for Labor Studies (WBILS), which for 35 years has served the educational needs of Nebraska’s labor movement through non-credit programming. The institute is one of 29 similarly situated university- and college-based labor education programs across the nation. The WBILS was established in 1980 as a result of collaboration between the Nebraska labor movement and the University of Nebraska.

It’s mission, says Kretzschmar, is “to help the men and women of organized labor protect and promote meaningful democracy in the workplace.”

Though the institute’s mission is statewide, it sometimes extends beyond Nebraska. The institute, for instance, has worked with the Omaha Professional Fire Fighter’s union for at least a decade. That relationship got the WBILS invited to the International Association of Fire Fighters Affiliate (IAFF) Leadership Training Seminar in Arizona in 2011. That, in turned, led to work with affiliates in Washington, Idaho, Montana, Alaska and newly developed relationships in Nevada and British Columbia.

Make no mistake, though — the institute’s primary work is in Omaha, where two-thirds of Nebraska’s labor unions are located. The institute, an outreach vessel of UNO’s College of Public Affairs and Community Service (CPACS), serves more than 2,500 participants annually — ironworkers, plumbers, steamfitters, electricians, etc. Also labor leaders whose experience levels can vary.

“Union leaders face election every three to five years,” Kretzschmar says. “They are often unpaid and without training.”

Education topics have included: grievance handling, collective bargaining, labor history, strategic planning, custom-designed contract courses, health and safety, leadership skills, political effectiveness, common-sense economics and internal organizing.

“If you understand the legacy of those that came before you, then you understand the importance of making it bigger and better for those coming after you” Kretzschmar says.

That said, the institute is not a one-way street. Rather, it’s a bridge between the university and local labor. University researchers can benefit, for instance, quantifying the efficacy of the education provided as it relates to retention and application.

“The Brennan Institute is a vital source of continuing education for labor union members and leadership,” CPACS Dean John Bartle says. “The Brennan Institute brings emerging issues to the unions, facilitates their effective organization, and empowers them to act on behalf of working families. In doing so, they are a vital component of the democratic process in the community.”

— Matthew Barros, University Communications