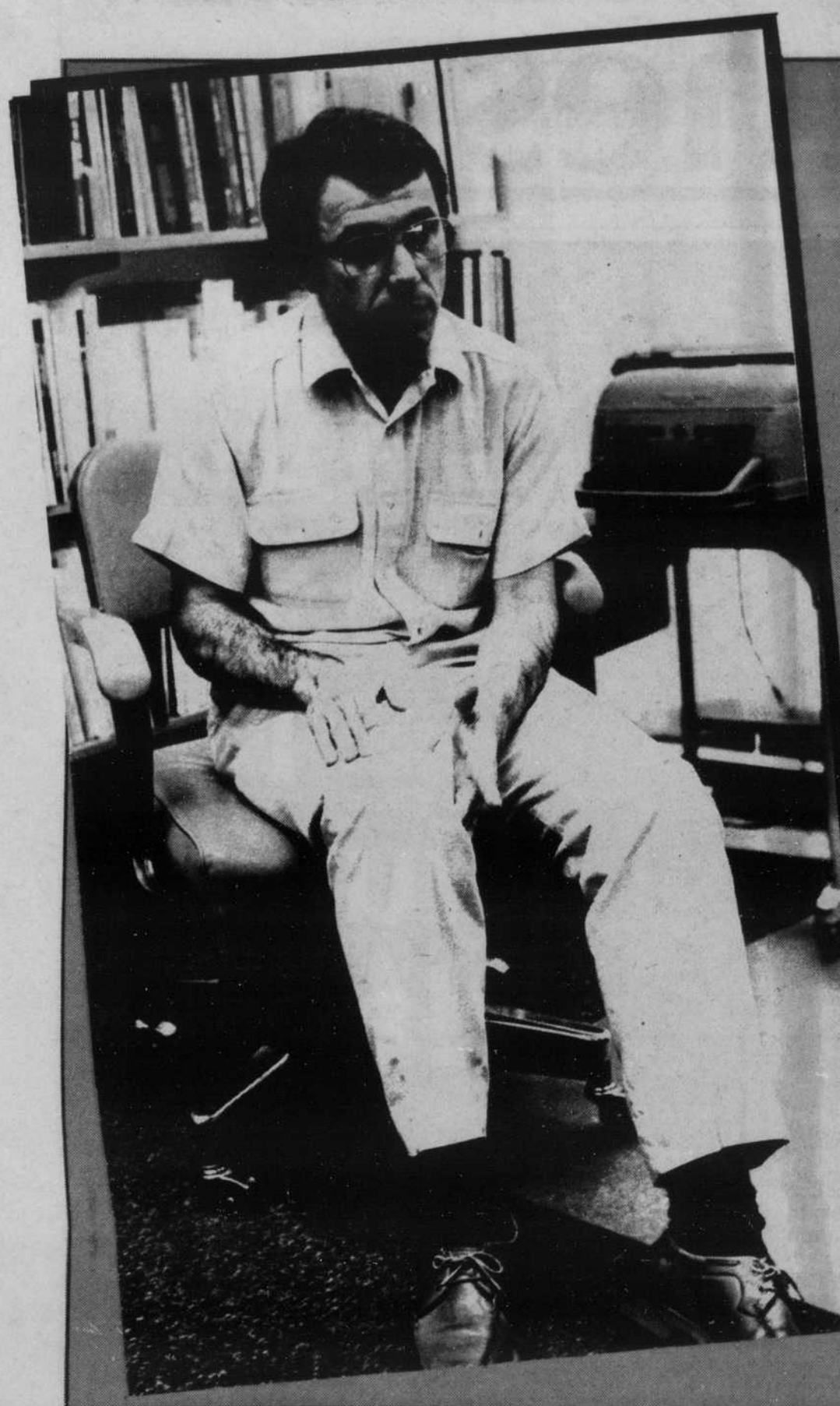

New knee knowledge

PROF. LOU OSTERING attaches the electrodes to the muscles of the athlete and has her flex and extend her leg.

Ostering, a University physical education professor, uses tests like this to determine what a normal knee should look like and how it should perform.

Although knees are extremely vulnerable parts of the body, with over 100,000 knee injuries occurring in the United States each year, little conclusive research is available about injuries, rehabilitative exercise and the normal knee.

Osternig wants to change that.

Since 1976, Osternig's research has focused on knees — looking at the effects of surgery, the way the knees of different types of athletes differ and finding out how normal knees and the muscles around them work together.

Testing athletes in high risk groups to develop a profile of their knees has been one part of Osternig's research. However, few of the athletes tested have actually gotton hurt so the usual procedure is for trainers to compare the injured knee with the uninjured limb. But without data before the accident, "you can never know exactly," he says.

It has been impossible for Osternig to test massive amounts of athletes because of the time it takes for the tests — one hour for each athlete — and the difficulty of scheduling. For example, to test the whole football team would take about two weeks of solid work, assuming that the athletes would all have the time and interest in being tested.

Looking at different types of athletes and the differences between knee structure is another aspect of Osternig's research.

He has tested athletes in explosive activities like gymnastics and those involved in endurance activities like long distance running.

"We wanted to assess them because we feel their muscles are quite different," says Osternig. "They do vary dramatically."

Athletes involved in endurance activities have smaller "force curves" than those in explosive activities. Force curves are a measure of the amount of force a muscle exerts while doing a certain motion.

Some trainers may think that a smaller force curve is a negative thing and that the athlete needs to build up strength, but this could be detrimental, says Osternig. A long distance runner does not need the same level of performance in the muscles as the gymnast — the differences in the curves simply reflect the differences in the sports.

How the muscles around the knee interact also concerns Osternig. Certain muscles work antagonistically — when trying to develop one, the athlete finds the other muscle will inhibit performance.

One important thing Osternig has discovered is that antagonism between muscle groups lessens as the muscle is developed. This is positive for serious athletes, says Osternig, because it gives them the ability to improve.

Osternig and his associate Prof. Barry Bates, also in physical education, have received two, two-year grants between 1976 and 1980 from the Northwest Area Foundation for a total of about $140,000.

Examining muscles around the knee after rehabilitatory surgery is another area of Osternig's research.

Through working with about 20

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'We have a better idea as to what happens to muscle function after a specific kind of surgery'
—Lou Osternig