



BARE-BONE BASICS U of A researchers show off technology which will help monitor post-op hip replacement patients.

Hip new sensors help healing

RYAN HEISE
News Writer

Engineers at the University of Alberta have developed a microsensor capable of measuring the healing process in joint replacement patients, making the procedure easier and less intrusive. The tiny sensor, which was created using nanotechnology, is designed to measure osseointegration—the process in which bone tissue attaches to the rough surface of an implant. By being able to accurately detect the amount of connection that has taken place between the bone and the implant, doctors are better equipped to prescribe different stages of rehabilitation, greatly speeding up the healing process.

Currently, the most common way to measure osseointegration is via X-ray, a relatively inaccurate measure, according to Dr Walied Moussa, a U of A professor in the Department of Mechanical Engineering.

“The problem with X-ray is it’s very selective and qualitative,” Dr Moussa said. “It means that things might look good, but there may not be any real integration. And if that happens, then they would have to re-operate, see what the problems are and replace the implant and that is very painful.” But, by using a microsensor that’s

permanently attached to a patient’s implant, doctors will be able to quantitatively measure the amount of osseointegration that has taken place for the first time.

“I talk to a lot of elderly people, and they really would like to see some of these things happen because it does relieve a lot of people suffering and enhances our health-care services.”

**DR WALIED MOUSSA,
OF MECHANICAL
ENGINEERINGPROFESSOR**

Moussa explained that the device—developed over the last two years as a joint project between the departments of mechanical engineering and electrical engineering, the Faculty of Medicine, as well as Glenrose Rehabilitation Hospital—is completely self-contained. It consists of the sensor itself, a power unit that transfers the motion of the human body into energy, and a wireless transmitter, yet is small enough to fit on the tip of a

pen. The system stays dormant until doctors trigger it to start sending data.

He also pointed out that the microsensor was designed to last for long periods of time, giving doctors a better idea of when to replace a patient’s implants.

“After a certain number of years, this osseointegration starts to weaken up and people will have to change the implant,” Moussa said. “If you can have a device that is actually measuring the reduction of healing, then you can schedule people for an operation. You might not be in pain, but may be in pain in six months.”

Aside from aiding joint-replacement patients, similar devices are being developed for other bio-med applications. Small microsensors may be used in patients during specific types of surgery to accurately monitor operations and lower the risk of complications.

Moussa hopes he and his team will have a prototype within the year and can begin human testing. Even without that data, he has high expectations for the impact the device will have.

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Students face all work and low pay

CaPS survey finds more students flipping burgers instead of hitting the books

THOMAS WAGNER
News Writer

Six hundred and ninety-one hours. That is the time it takes, working at Alberta’s \$7 per hour minimum wage, to earn \$4838, the average undergraduate tuition for students in Alberta, according to Statistics Canada.

With that in mind, it’s no surprise that, according to a recent survey by Career and Placement Services (CaPS), more and more students are now flipping burgers after class instead of hitting the books.

“What we found was that close to 65 per cent of [graduates] who responded to the survey were employed at some time when they were also a student, said Joan Schiebelbein, CaPS’s manager of advising services. “We’re looking at about two-thirds [of all students], and I would suspect that that has probably gone up.”

Schiebelbein attributes this high level of student employment to a number of things. In the current hot Albertan economy, it’s easier to get a job than in years past. As well, students are

becoming more interested in direct work experience on their resumé before they leave university. Most important, however, are the ever-rising costs students have to deal with.

This is hardly a shock to Siahra Skelton, an undergraduate student at the U of A, who in addition to a full course load, works three jobs for a total of 20 hours a week.

“If I didn’t have [scholarships] I would have to work [more],” Skelton said. “I wouldn’t take a full course load, and I’d be working full time and going to school.”

According to Stats Can, the average tuition for an undergraduate in Alberta has increased 275.3 per cent since 1991. In the same period of time, according to Human Resources and Social Development Canada, the minimum wage has increased \$2.50 per hour, or 55.6 per cent.

Schiebelbein feels university students need to examine closely just how much they’re working. She thinks that an extended stay in university due to a heavy workload could cost you, not save you money, in the long run.

“If it takes a student five or six years to get a degree instead of four ... are they really better off?” Schiebelbein asked. “They’ve gone to school that much longer plus they’ve delayed for [themselves] one or two years [of] full time earning potential.”

Of course, Schiebelbein notes, this possible money loss isn’t the only worry of the working student. There’s also the chance of worse marks—a problem for those with graduate or professional schools in their future—and less time for extracurricular activities.

She suggests considering a job at the University, citing flexible schedules and fewer hours as reasons to seek a job on campus. But, if students have to work outside of the University, she urges them to think very closely about the benefits of each of your job choices.

“Would you work retail over working as a server in a restaurant where you ... may be earning the same salary or the same hourly wage, [but] as a server you’re also earning tips?” Schiebelbein asked.

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5- UAMC

4- OILER GAME REGULARS

3- AG/FOR

2- UACS "GEEKS"

1- PS WARREN