

# This wall will tell on you

**NTU will build a climbing wall that is fitted with sensors to assess climbers and help prevent unnecessary injuries**

By NATALIE SOH

EVERY other rock climber injures his fingers, and some are strained so badly that they need surgery.

But help may be at hand.

A team of scientists at the Nanyang Technological University (NTU), led by Associate Professor Konstantin Fuss, is doing research to help climbers stop making the mistakes that lead to such injuries.

So the NTU is building the world's first fully instrumented climbing wall. Tiny electronic sensors implanted behind the handholds will help the scientists check how climbers scale the artificial wall, which will cost about \$200,000.

They are trying to measure the forces that work on a climber's body as well as the physics behind the climbing.

Readings from the sensors should tell the scientists if the climber is calm and experienced. If there are spikes or aberrations in the readings, it means the climber is trembling, nervous or unsure.

Though Singapore has no mountain, the NTU programme is considered one of the most advanced in this field, say the researchers.

Their work, they say, will have major implications for the sport and can even help the army pick the best men for combat missions.

The team is talking to the Singapore Armed Forces (SAF) about using the sys-

tem to assess soldiers. The men the SAF chooses for special elite forces missions need to have the mental and physical attributes to perform well under stress.

All these can be measured when they climb, said Prof Fuss. "If they are analytical and sure, it will show up in the readings. This is a good way to assess physical and mental strength."

But the research will go mainly towards improving the sport of rock climbing and preventing unnecessary injuries.

For instance, the team has found that a sort of liquid chalk — used by climbers to soak up perspiration on their hands and give them more grip on the handholds — can actually reduce friction if used repeatedly.

The team is also working with climbers affiliated with the Singapore Mountaineering Federation to see how they can improve their climbing technique.

Said Prof Fuss, who is deputy director of the NTU's Biomedical Engineering Research Centre: "Top athletes can come to Singapore and use the best of the science to help themselves and to measure their experience."

But for all his scientific interest in the biomechanics and forces applied in scaling walls, Prof Fuss says he will never be a climber.

"It is better this way. Otherwise I will start seeing things from the other perspective, and I will just be climbing rocks all day."