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## Bionic legs give soldiers a boost

**US researchers have developed strap-on robotic legs to allow people to carry heavy loads over long distances.**

The Berkeley Lower Extremity Exoskeleton, or Bleex, is part of a US defence project designed to be used mainly by infantry soldiers.

The device consists of a pair of mechanical metal leg braces including a power unit and a backpack-like frame.

More than 40 sensors and hydraulic mechanisms calculate how to distribute weight just like the nervous system.

These help minimise the load for the wearer.

A large rucksack carried on the back contains an engine, control system and space for a payload.

"There is no joystick, no keyboard, no push button to drive the device," said Homayoon Kazerooni, director of the Robotics and Human Engineering Laboratory at the University of California.

### Brace yourself

The Bleex exoskeleton has a small, purpose-built combustion engine built into it. On a full tank the system should be able to run for up to two hours.

The device's leg braces are attached to a modified pair of army boots and connected to the user's legs.

In the lab, subjects have walked around in the 45kg (100lbs) exoskeleton plus a 31.5kg (70lbs) backpack and reported that it felt like they were carrying little over 2kg (5lbs).

"The design of this exoskeleton really benefits from human intellect and the strength of the machine," said Dr Kazerooni.

The project has been funded by the US Defense Advanced Research Projects Agency (Darpa).



The exoskeleton allows people to carry heavy loads

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But Dr Kazerooni thinks the exoskeleton could be used with equal success by firefighters.

"They're really good, it turns out, at enabling firefighters, soldiers, post-disaster rescue crews to carry heavy loads over great distances for hours," he said.

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