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Office of Public Affairs
Media Relations

Washington, DC 20420
(202) 461-7600
www.va.gov

News Release

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VA Studies Advanced Prosthetic Arm *New Mobility for Veterans, Service Members, Other Americans*

WASHINGTON – The Department of Veterans Affairs (VA) has announced a three-year study of an advanced artificial arm that easily allows those with severe limb loss to pick up a key or hold a pencil.

“This arm is a high-tech example of how VA researchers are continually modernizing the materials, design, and clinical use of artificial limbs to meet Veterans’ lifestyle and medical needs,” says Dr. Joel Kupersmith, VA’s Chief Research and Development Officer.

In collaboration with the Defense Advanced Research Projects Agency (DARPA), the study marks the first large-scale testing of the arm, which allows those who have lost a limb up to their shoulder joint to perform movements while reaching over their head, a previously impossible maneuver for people with a prosthetic arm.

The study is under the direction of Dr. Linda Resnik at the Providence, R.I., VA Medical Center. Veterans fitted with the arm will provide feedback to guide engineers in refining the prototype, before it is commercialized and also made available through the VA health care system.

A unique feature of the advanced arm is its control system, which works almost like a foot-operated joystick. An array of sensors embedded in a shoe allows users to maneuver the arm by putting pressure on different parts of the foot. The current version uses wires to relay the signals to the arm, but future versions will be wireless.

The arm can also be adapted to work with other control systems, including myoelectric switches, which are wired to residual nerves and muscles in the upper body and respond to movement impulses from the brain, shoulder joysticks or other conventional inputs.

Prosthetic Arm 2/2/2/2

Frederick Downs Jr., director of VA's Prosthetic and Sensory Aids Service who lost his left arm during combat in Vietnam, said he was "brought to tears" recently when the prosthetic arm allowed him to smoothly bring a water bottle to his mouth and drink. "Learning to use the controls is not difficult," he said, due in part to a sensor in the artificial hand that sends a vibration signal that tells how strong the grip is. A stronger grip causes more vibration.

VA prosthetics research also includes vision and hearing aids, wheelchairs and propulsion aids, devices to help people with brain injuries to become mobile, and adaptive equipment for automobiles and homes -- "everything that's necessary to help Veterans regain their mobility and independence," said Downs.

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