



Mouse Alternatives

A computer mouse can be difficult for a person with a disability to use. The user needs to be able to grasp the mouse, move it around in a controlled fashion on a table, and often hold down a button while making these movements. The user also needs to be able to see a mouse cursor on the screen and translate those arm movements into cursor placement.

Mouse alternatives are devices that may let a person move the computer cursor more easily with his or her hand, or by not using hands at all. They include trackballs, joysticks, touchscreens, headpointers, and touchpads. Microsoft and Apple both have utilities that set the number pad up so that it can control cursor movements. Some voice input systems can also be used to control the cursor. The products described in this article are only a few of the many mouse alternatives available on the market today. The companies listed may also make or distribute other products, and the included resources also list additional products.

Frequently Asked Questions

What general types of mouse alternatives exist and who might use them?

- *Trackballs* – A trackball works like an upside-down mouse. Instead of rolling the ball on the table by sliding the mouse around, the ball is moved directly by the user. The trackball does not need to be grabbed; only the ball must be nudged. Most people move the ball with their hands, but it can also be operated with a chin, elbow, foot, or stick held in the mouth. Trackballs come in many sizes, including ones that can be operated by a single finger. For people with limited fine motor ability, a trackball with a larger ball may be useful. Since the trackball remains in a stationary position on the desk or mounted on a stand, it can be a good option for a person with a limited range of motion. They are available at standard computer stores for \$50-\$100.
- *Joystick* – A computer joystick operates a bit differently than a wheelchair joystick. Wheelchair joysticks usually operate as a set of switches, so how far or how fast you go does not depend on how far you push the joystick.



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For computers, how far a joystick is pushed does matter. For this reason, a person with spasticity who is able to use the all-or-none approach with a wheelchair joystick may have trouble with the more precise control required to use a computer joystick. Still, a joystick may be easier to grab than a mouse, it requires a smaller range of motion than a mouse, and it can also be operated by chin or mouth movements. Joysticks range in price, depending on features.

- *Touch Windows/Touch Screens* – Touch screens let a person point to parts of a monitor and make selections based on where he/she touches. Since the person points directly to what he wants, rather than moving a ball to move a cursor to point to what he wants, it is cognitively easier to use. However, the user also needs to be able to reach up to the monitor. *Edmark's TouchWindow* is a device that fits over a monitor to add this capability.
- *Digitizing tablet / touch pads* – To operate a touch pad, a person moves his/her finger, or a stylus, around on a flat tablet. The cursor moves in a corresponding pattern on the screen. This can be a good solution for a person who is not able to grasp a device. Most touch pads require only a small range of motion, and some are as small as a 2 x 2 inch square.
- *Head pointers* – There are several types of head pointers. One of the original types consists of a helmet to which is attached a long rod. Keys are hit on a keyboard with this rod, but this may not be a comfortable method of data entry and can transfer stress to the neck. Newer head pointers are electronic and move the cursor in response to head movements. They require the person to wear an infrared (*Headmaster*) or micro-gyroscope (*Tracer*) sensor on his head or perhaps a reflective dot (*Tracker, HeadMouse*). The system measures signals from the sensors, or looks at the way light reflects off the dot, to determine whether the user is moving his head up or down, right or left. The cursor is moved in the same direction as the user's head movements. The result is a cursor control method that is completely hands-free. Mouse clicks can be performed by activating a separate switch or by holding the mouse position for a certain length of time (dwell mode). However, the user needs to have good head control, some setup assistance may be needed to put on the reflective dot or sensor, and these systems can be expensive.
- *MouseKeys* – MouseKeys is a feature that is built into both Windows and the Macintosh operating system (therefore, most computer owners already have



it) to allow a person to move the cursor with the number pad keys. For example, “8” moves the cursor up, “1” moves the cursor to the lower left, etc. MouseKeys provides a nice cursor control option for people who type with a mouthstick or typing splint. It is slow, but it offers good accuracy for times when a person needs to aim the cursor at a small target.

- *Eye Gaze and Eye Tracking* – A mounted camera-like device translates eye movements and eye stares (“dwelling”) into directing the on-screen mouse. “Mouse clicks” are done with a slow eye blink, an eye dwell, or a hardware switch. These systems are not suitable for people with uncontrollable eye movement (nystagmus), and potential users must be evaluated and approved in order to purchase the device.

I can use a mouse, but it just isn’t comfortable. Do you have any suggestions?

For problems with carpal tunnel syndrome, a wrist rest designed to be used with a mouse may be tried. Sometimes, switching hands can help. Mouse sizes vary between brands and models, and a too small or too large mouse can be stressful to use over time. Some mice are curved for a better ergonomic fit. This may be more comfortable, or could make the situation worse. For example, people who are left-handed should not use right-handed mice!

Can I use my mouse alternative to help with keyboarding?

Some people find that they have trouble using a standard keyboard, but are easily able to use a mouse alternative. In these cases, an onscreen keyboard might be tried in place of the standard keyboard. A picture of a keyboard is shown on the computer screen, and by pointing to a letter and clicking, the letter is typed. The keyboard that is shown may have a standard QWERTY layout, or it might have a different letter arrangement, show words rather than letters, or be customized for an application.

Is there a mouse that I can operate with my foot?

The NoHands Mouse from Hunter Digital has two foot pedals: one pedal controls cursor movement, the other is for mouse clicks. The standard desktop mouse remains connected and can be used at the same time. Another option is an extra large trackball (i.e., Microsoft Easyball or Kensington Expert Mouse) combined with foot pedals (i.e., Step-On-It!) for the mouse buttons. The Step-On-It!



keyboard control pedals can be custom-programmed by the user to assign or reassign any three keys or mouse clicks to floor operation.

Is there a headpointer I can use without wearing anything on my head?

CameraMouse uses a camera to capture images of the user's head or face and tracks head movements by measuring changes in that image. It can also track finger or toe movement.

Can I use more than one device?

PI Engineering's Y-Mouse allows a person to connect two pointing devices to a PC at one time, with both remaining active. This allows users to operate a pointing device until they tire, then swap to the alternate device. It also allows one workstation to be shared by two people who need different mouse control devices.

Is there a way to make the cursor easier to see?

A normal cursor averages 16x16 pixels. RJ Cooper's Biggy software changes the cursor size to 32x32 pixels and even 32x64 pixels. Different colors and shapes are used to further enhance visibility.

I use a Unix computer system. Are there any devices that I could use?

ITAC Systems and Microspeed both make trackballs for Sun workstations. Sun Microsystems also makes a keyboard interface box so that PC equipment can be connected.

What is a "haptic" mouse?

Haptic mice are a new invention that provides feedback to the user. The mouse or stylus is mounted on an arm that provides resistance or vibrates as the cursor is moved over various lines on the screen. Although there is not yet much software that works with these devices, they may someday be useful for people with visual impairments because of their potential to let the user "feel" what is on the computer screen.



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Product Links

Bilbo Innovations – Step On It! foot pedals.

408/736-6086

www.bilbo.com

Boost Technology – Tracer head pointer.

415/334-8246

www.boosttechnology.com

CameraMouse, Inc. – CameraMouse motion tracker.

972/231-1180

www.cameramouse.com

Cirque – Touchpads.

800/454-3375

www.glidepoint.com

Don Johnston – Penny & Giles joysticks, trackballs.

800/999-4660

www.donjohnston.com

Edmark – Touch Window.

800/691-2986

www.edmark.com

EyeTech Digital Systems – Quick Glance Eyetracking.

480/610-1899

www.eyetechds.com

HACH – Trackballs for children.

800/624-7968

www.hatchstuff.com

Hunter Digital – No-Hands Mouse.

800/57-MOUSE

www.footmouse.com

Infogrip, Inc. – Resellers.

800/397-0921

www.infogrip.com

Keyboard Alternatives & Vision Solutions – Resellers.

800/953-9262

www.keyalt.com



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Kensington Microware – Trackballs.

800/268-3447

www.kensington.com/products

Madenta – Tracker head pointer.

877/623-3682

www.madentec.com/products

Origin Instruments – HeadMouse head pointer.

972/606-8740

www.orin.com

P.I. Engineering, Inc. – Y-mouse.

800/628-3185

www.ymouse.com

Prentke Romich Co. – HeadMaster, Jouse joystick.

800/262-1984

www.prentrom.com

R.J. Cooper & Associates – Switch adapted devices, Biggy.

800/752-6673

www.rjcooper.com

Additional Resources

Assistive Technology Partners

601 E. 18th Ave., Suite 130

Denver, CO 80203

303/315-1280 Main

800/255-3477

303/837-8964 TTY

303/837-1208 FAX

www.uchsc.edu/atp

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Western Slope Technical Assistance Center (WesTAC)

2897 North Ave., Module 3A

Grand Junction, CO 81501

970/248-0876 Main

970/248-0877 FAX/TTY

www.uchsc.edu/atp

The Mouse List

www.setbc.org/mouselist/mousetop.html

Typing Injury FAQ: Pointing Devices

www.tifaq.com/mice.html



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