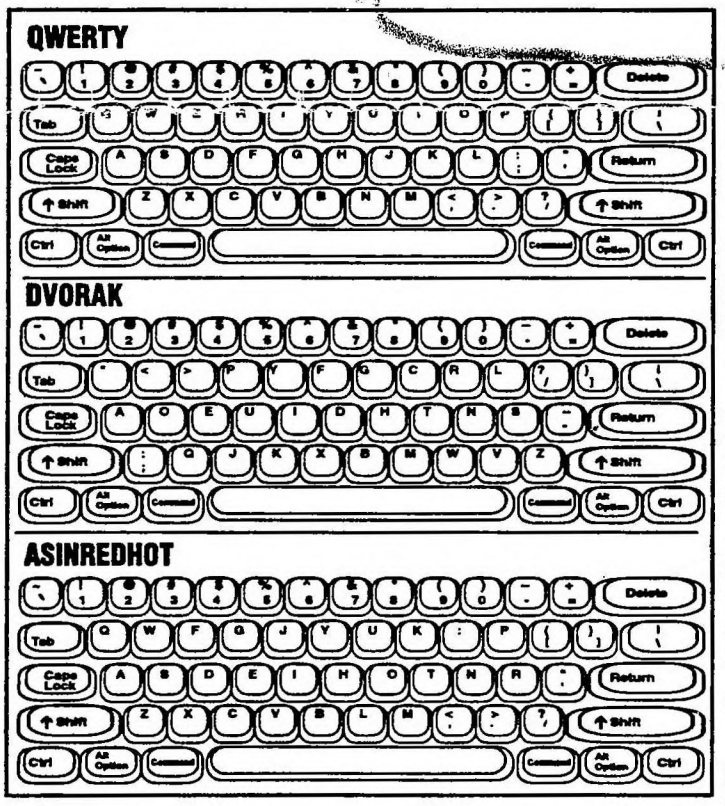
CTDCLINIC

Alternative key layouts safer than QWERTY

In one of the few studies to examine keyboard layout and repetitive finger motion, researchers have concluded that the most commonly used QWERTY key mapping may pose a greater potential for CTDs than the DVORAK or ASINREDHOT alternatives.

(Both DVORAK and ASINREDHOT layouts allow typists to spend a majority of their time on the home row.)

In a paper to be delivered to the annual meeting of the American Society of Biomechanics, the authors found the angular movements of the fingers placed greater stress on the carpal tunnel than just simply depressing a key. (The paper's title: "Quantification of Tendon Excursion Through Kinematic Analysis of Typing Movements on Alternative Keyboard Layouts.")



"While the amount of movement on a particular key is exactly the same in the keyboards we used, the problem is the large number of times you have to go to the top and bottom rows using QWERTY," said Dr. Rick Robertson of the University of Pittsburgh Medical Center. "As soon as you move from the home row, you increase the angular motion of the fingers and sliding motion of the tendons, which increases the potential for CTDs."

To get finger motion measurements, the researchers videotaped three individuals with three cameras using the standard QWERTY keyboard and two others that were designed to allow the individuals to do the majority of keying on the home row.

DVORAK was developed by University of Washington researchers August Dvorak and William Dealey in early 1930s in response to the fatigue associated with typing on typewriters.

ASINREDHOT by Finger Relief of Seminole, OK, was developed in 1992. Unlike the DVORAK layout in which practically every key was relocated, ASINREDHOT (the marketing name) moves only 12 keys to make learning easier. The letters on the home row actually spell out ASDEIHOTNR.

"Our hypothesis was that excessive tendon motion in the carpal canal induces trauma to the nearby tissues," said Robertson. "It appears that alternative key location is a good way to reduce finger and tendon motion."

While the researchers admit a study involving only three people makes it difficult to provide definitive statements, Robertson suggested that tendon motion could be reduced by careful consideration of where the most commonly used keys are located.

He also suggested that general acceptance of an alternative key layout combined with ergonomic improvements to workstations would have a positive impact on the incidence of carpal tunnel syndrome and cumulative trauma disorders.

Robertson, along with fellow researchers Margaret Flannery of California State University, Sacramento and Dr. Rory Cooper of the University of Pittsburgh, plan to expand the project to increase the number of subjects. They would also like to perform a pain and injury comparison of individuals retrained on alternative keyboard layout and a group using the QWERTY layout.

- For more on the study, contact Dr. Rick Robertson at 412-648-6976.
- For more information about ASINREDHOT, contact Finger Relief at 203-967-8339 ◊
Box 65 Seminole Oklahoma 74818-0065

412 648-6654

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