

# Hand-held computers prod older adults to exercise more, study shows

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Today's younger generation may reckon that "ne'er the twain shall meet" where technology and their elders are concerned. However, ongoing research by Abby King, PhD, professor of health research and policy and of medicine at the Stanford Prevention Research Center, appears to be gradually dispelling that notion.

In a study that appears in the February issue of the *American Journal of Preventive Medicine*, King showed that specially programmed PDAs, or personal digital assistants, can prod middle-aged and older Americans - the most sedentary segment of the U.S. population - into increasing their physical activity levels. This first-generation study follows on the heels of King's research report in the December issue of *Health Psychology*, in which she showed that automated computer calls were almost as effective as live health educators in coaxing people previously less active to get more of a spring in their step.

King and colleagues feel that developing approaches to help people increase their exercise frequency, while taking into account an individual's schedule and environment, is particularly important.

"Portable computer devices are useful because they can be carried around throughout a person's day," King said. "Such devices represent one kind of strategy for being able to provide individuals with the help and support they need, in a convenient, real-time context."

The researchers invited the public to participate in this new study

through local mass-media outlets, like the Palo Alto Daily News and the San Jose Mercury News. Out of 69 callers who were screened for eligibility, 37 were invited to be study participants and randomly assigned to an eight-week program in which they either received a Dell Axim X5 PDA, or traditional handouts related to physical activity.

"Then we let 'em roll," King said.

The Dell Axim X5, chosen for its large-sized, easy-to-read screen and good contrast, was fitted with a program that asked participants approximately three minutes' worth of questions. Among the questions: "Where are you now" "Who are you with" "What barriers did you face in doing your physical activity routine" The device automatically beeped once in the afternoon and once in the evening; if participants ignored it the first time, it beeped three additional times at 30-minute intervals. During the second (evening) session, the device also asked participants about their goals for the next day.

With this program, participants could set goals, track their physical activity progress twice a day and get feedback on how well they were meeting their goals. After eight weeks, the researchers found that while participants assigned to the PDA group devoted approximately five hours each week to exercise, those in the control group spent only about two hours on physical activities-in other words, the PDA users were more than twice as active.

One surprise was the participants' positive response to the program's persistence. The PDA users liked the three additional "reminder" beeps that went off if they failed to respond to the first one. In fact, almost half of them wound up responding to the PDA only after being beeped for the fourth time.

"The PDAs can really keep on you," King observed with wry humor.

"We were surprised by that; we thought by the time they heard the fourth beep, they might find it annoying and not respond at all."

The study targeted people interested in health changes, but with little if any knowledge of portable computer devices. During the eligibility screening, 93 percent said they had never used a PDA before. So there could have been difficulties in grasping the technology, or participants refusing to deal with it and giving up entirely. This, however, did not turn out to be a problem.

"They were very curious about PDAs, and that's why some of them signed up," King said. Several participants, she added, were aware of PDAs because their children were using the device, and so they wanted to learn more about the technology.

King and colleagues are also working with researchers from MIT, Northeastern University, Brown University and Boston Medical Center to evaluate the ability of other types of computer-based, automated and interactive devices to help people change their health behavior.

So what's next, after PDAs?

"Cell phones, for sure," King said. "Especially now that we have the iPhone; its big screen would be very useful for providing visual feedback." She and her colleagues are also continuing to focus on developing portable devices capable of interacting with accelerometers (activity monitors), so that the necessary information - for example, the amount of walking in a day - automatically transmits to the device.

"With the PDA study, evaluations made were based almost entirely on the participants' self-report," King explained. "We'd like our devices to be able to provide real-time feedback using objective activity as well."

In a companion study to be published later this year, King and colleagues have also evaluated the usefulness of PDAs in modifying dietary behavior. Results indicate that similar "probing" and feedback by a computer program - about a person's eating habits rather than activity level - can nudge participants towards increasing their vegetable and whole-grain intake.

"Physical activity is only one piece of the puzzle; another is dietary intake," King noted. She would like to eventually harness the tracking power of GPS, so that willing participants, "if they're walking past a Fresh Choice restaurant, can be prompted to go there instead of the fast-food outlet next door."

Maybe that's technical intervention, not divine - but it could be helpful, especially when you can't get that vision of french fries out of your head.

Source: Stanford University Medical Center

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