Technology and Dementia

D. Mahoney, B. Tarlow, R. Jones. Using multi-media technology to increase older adults knowledge of Alzheimer's disease. Gerontechnology 2002; 2(1): 90. Objective: The aim of the project was to determine the response of older adults to a CD-ROM based multi-media program developed integrating geriatric learning and technology principles, with the desired outcome to increase elders' knowledge about the differences between 'normal' forgetfulness and more serious memory loss associated with Alzheimer's Disease (AD). Design and Measurements: A randomized controlled study with post-test measures was conducted with elders (mean age of 72) recruited from the community. The intervention group (n=56) used the program, the control group (n= 57) did not. Both groups completed a 25 item general Knowledge about Memory Loss Test (primary outcome), socio-demographic and technology usage questionnaire. In addition, viewers completed a user evaluation. Results: The mean (standard deviation) number of correct responses to the knowledge test was 14.2 (4.5) for controls and 19.7 (3.1) for intervention participants. This highly significant difference (p=<.001) corresponds to a very large effect size. Subgroup analyses revealed that the program was most effective for participants with a lower level of self-reported prior knowledge about memory loss and AD (p=0.02). Viewers were very satisfied with the program, felt it was easy to use and understand. Conclusion: Older adults benefited from this gerontechnology program because it allowed them to adapt the delivery of information to their preferred learning style. This CD-ROM technology offers both and efficient and effective means to teach older adults about memory loss. It offers a means to outreach to caregivers who have concerns about memory loss in a family member to promote AD detection.
Key words: Alzheimer's disease, computer learning, health education, aged.

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H. Kautz, G. Borriello, O. Etzioni, D. Fox. Assisted Cognition: Computer Aids for People with Alzheimer's. Gerontechnology 2002; 2(1): 90. The rise of Alzheimer's disease is one of the greatest health crises facing the industrialized world. Today, approximately four million Americans suffer from Alzheimer's disease; by 2050, the number is expected to rise to 15 million people. As a result of the increasing longevity of the elderly, many sufferers are now aware that their capacities to remember, to learn, and to carry out the tasks of everyday life is slowly being lost. The Assisted Cognition Project is a new joint effort between the University of Washington's Department of Computer Science, Medical Center, and Alzheimer's Disease Research Center that is exploring the use of AI systems to support and enhance the independence and quality of life of Alzheimer's patients. The goal of the Assisted Cognition project is to develop novel computer systems that will enhance the quality of life of people suffering from Alzheimer's Disease and similar cognitive disorders. AC systems use ubiquitous computing and artificial intelligence technology to replace some of the memory and problem-solving abilities that have been lost by an Alzheimer's patient. Two concrete examples of the AC systems we are developing are an 'activity compass' that helps reduce spatial disorientation both inside and outside the home, and an 'active prompter' that helps patients carry out multi-step everyday tasks.
Key words: artificial intelligence, Alzheimer's disease, computer.

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S. Yonemitsu, Y. Higashi, T. Fujimoto, T. Tamura. Research for practical use of rehabilitation support equipment for severe dementia. Gerontechnology 2002; 2(1): 91. Is an entertainment robot useful in occupational therapy for severely demented elderly persons? Pet therapy is one candidate for treating patients with severe dementia; the animal is introduced into the group and the care of the animal by the patient results in improved well being and lessened wandering and agitation. However, using a real animal with severely demented elderly patients poses several problems. We must prevent danger to the patient and maintain cleanliness at the site. The aim of this study is to evaluate the effectiveness of an entertainment robot animal, AIBO. The entertainment robot (AIBO- ERS-312) made of metal responds to speech commands. We demonstrated AIBO's function and observed the reaction in elderly people with dementia. Subjects were severe dementia elderly patients (four cases) in an old-age nursing home. The frequent reaction to the introduction of AIBO was to look at, communicate with, and care for the AIBO. The patient recognized the AIBO as a robot. However, once we dressed the AIBO, patients perceived AIBO as either a dog or a baby. Nevertheless, the presentation of AIBO resulted in positive outcomes for the severe dementia patient including increased communication between the patients and with AIBO. In conclusion, it was clear that the AIBO was an effective rehabilitation tool in the care of severe dementia patients.
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D.A. Ross, J.A. Sanford. Remotely Monitoring Physical Activity of Older Adults with Moderate Dementia. Gerontechnology 2002; 2(1): 91. Objectives: A remote device to monitor exercise compliance was developed for older adults with mild to moderate dementia, and was calibrated specifically for use by adults transitioning into frailty who tend to expend lower amounts of energy than is typically measured by existing activity monitors. Inconspicuous operation was required, as people with dementia tend to tamper with devices they find on their person. Desired characteristics included: (i) small enough to be worn for extended periods of time without notice, (ii) recording of calories burned versus time, (iii) automatic transmission of collected data to a remote computer, (iv) ability to record for 7 days before needing to transmit data to the remote site, (v) minimal caregiver involvement, (vi) can be worn at a number of alternative body sites, and (vii) water and shock resistant. Results: By recording the length of time nursing home residents with dementia wore a variety of different sized devices, the maximum tolerable weight and size were determined as 60 grams and 4 cubic centimeters. Least obtrusive body sites were medial and lateral ankle positions, back of shoe and tongue of shoe. A full table of correlations between the prototype and standard metabolic values versus body site, and patient weight, height, and degree of frailty will be presented. Monitor accuracy, as compared with an O2 consumption system, was found most reliable for walking exercises and least reliable for stretching exercises. Results of home trials will be available in July 2002.
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