

CeBIT 2011: Electronic Fitness Trainer

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The electronic Fitness Assistant consists of a sensor suit that collects information about its wearer's movements and transmits results to a television, computer or smartphone. (© Fraunhofer IIS)

Only people who get a lot of exercise and eat a healthy diet stay fit even in old age. This is easier said than done. Researchers have developed a Fitness Assistant that not only motivates but also demonstrates exercises. At CeBIT 2011 in March visitors will be able to try out the system for themselves.

Eating a healthier diet, getting more [exercise](#) and doing more sports – lots of people recommit themselves to these goals over and over. But one's baser instincts are often stronger and invincible. On the couch in the evening, you take stock of the day only to admit that you have failed to rally once again. And yet, physical fitness is now considered a remedy for many illnesses. Particularly for older people, daily exercise is

important – not only during rehabilitation following major surgery but also for one's general sense of physical well-being.

“Did I do that right? Or should I raise my arm higher?” Questions like these are usually answered by the trainer in the fitness studio. Whether you have done an exercise right or wrong is important if training is to succeed. Unfortunately, this response is available only from trained sport therapists, not when exercising alone at home. Researchers at the Fraunhofer Institute for Integrated Circuits IIS in Erlangen have developed an intelligent assistance system designed to motivate you towards more exercise while providing advice in the form of exercise pointers.

When the screen becomes an exercise trainer

The electronic Fitness Assistant consists of a sensor suit that collects information about its wearer's movements and transmits current measurement results to a television, computer or smartphone. During exercises, a T-shirt monitors the wearer's breathing. The smartphone provides a user interface, analyzes the collected data, gives the user feedback on the success of his or her training and can instruct the user on gymnastics or rehabilitation exercises. Plus it is all individually tailored to the needs and demands of the individual wearer.

First, a trainer or physical therapist creates a personal training plan on the electronic Fitness Assistant. Under his or her supervision, all of the exercises are recorded once to ensure that they perfectly match the user's own performance levels. Then, the exercises can be repeated in the home environment. An “avatar,” a digital trainer, performs the exercises in real time – on TV, for instance. The program then compares the exercise being performed with the results of the recording and makes any needed adjustments to the wearer's posture. The goal is to playfully motivate the wearer to exercise more. The areas of application include exercise

programs for senior citizens or patients undergoing rehabilitation. Combined with digital games – gaming consoles have shown how it is done – the electronic trainer can also be tailored for use by younger people.

The Fitness Assistant is a subproject of “FitForAge,” an initiative sponsored by the Bavarian Research Foundation. Researchers are working to further improve and refine sensor technology to permit the system to analyze movements with greater and greater precision. The program is also designed to provide additional important tips on increasing or maintaining motor fitness. Experts will be on hand at the joint Fraunhofer stand in Hall 9, B36 to demonstrate how the [Fitness Assistant](#) works in practice.

Provided by Fraunhofer-Gesellschaft

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