

SMILING offers life satisfaction

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Researchers in Europe continue the good fight against age-related impairments and in favour of social inclusion. Experts from the SMILING ('Self mobility improvement in the elderly by counteracting falls') project, which clinched EUR 2.25 million under the EU's Seventh Framework Programme (FP7), focused on tackling injuries caused by falls by training the

elderly to walk on uneven ground while carrying out another activity. The result? A pair of computer-controlled shoes that simulate changes in the height and slope of the ground beneath a user's feet during active walking.

Current data show that 33% of people aged over 65 years has a higher risk of falling or have experienced falling. Not only do falls cause physical injury, but they can result in emotional trauma and compel the person to significantly reduce their mobility. The best way to hinder potential falls is to boost movement capabilities, the SMILING partners say.

Mobility not only enhances a person's sense of well-being, but it allows them to take part in a wide range of daily activities, such as maintaining ties with family and friends and going shopping.

The SMILING consortium, consisting of 11 experts in 4 EU Member States (Italy, the Netherlands, Slovakia and the UK) plus Israel and Switzerland, believes its innovative approach will compel users 'to solve new motor problems in real time by inducing variable environments that need active response and problem solving from the target population'.

The partners say a training programme tailored to the needs of the individual teaches users to walk with the SMILING shoes while they carry out other tasks like speaking or playing with a ball. 'The brain is stimulated to learn, or re-learn, new motor strategies to make safer and effective these daily actions,' the project coordinator, Dr Fiorella Marcellini, tells CORDIS News. 'The continuous change of positions of the motors of the shoes step by step stimulates an uneven ground and makes the exercise more challenging and unique.'

What sets SMILING apart from other projects is its multidisciplinary approach; SMILING encourages a restructuring of the rehabilitation process in ageing with the help of advanced technologies and new training procedures.

'The scientific innovation of the SMILING project is based on the "chaos theory and dynamic systems theory",' Dr Marcellini explains. 'From a technological point of view, the system is an important example in the mechatronic field. The SMILING system could be used in fitness clubs and health centres, with the aims of improving the walking and balance of older people and to prevent and counteract falling, and also at home, in the future.'

The coordinator points out that integrating highly innovative system components, as well as validating the proposed solution with real users and key professionals, represented a major technological challenge for the SMILING partners.

Commenting on how the partners plan to commercialise the project's product, Dr Marcellini says: 'The SMILING system, as it is today, is ready for the next phase of value-engineering. Early results from clinical validations have provided the designers and developers with concrete feedback about technical reliability and have supplied some early ideas about the soundness of the concept, i.e. the use of the system as a training system for fall prevention.'

'The main product developed and included in the project exploitation plan is the SMILING-PRO system, dedicated to therapists, clinicians, physiotherapists and fitness instructors for the elderly. Therefore, the target customers are mainly the geriatric hospitals and clinics, which, in Europe, this means approximately 30 000 potential customers, or the elderly fitness centres, which give roughly another 68 000 potential customers.'

The consortium says that apart from the elderly, others who stand to benefit from their work include major clients of rehabilitation centres, hospitals and nursing homes in Europe and abroad. 'With the demographic ageing of these societies one may say that significant public resources have to be allocated to these populations,' Dr Marcellini comments.

'SMILING provides a simple solution, very innovative, easy to use and, therefore,

interesting to buy from healthcare providers for saving public money,' he adds. 'Other beneficiaries of SMILING outcomes will be healthcare professionals and operators, in the sector of rehabilitation, due to the innovative and customisable ICT [information and communication technologies] solution and training programme. An implementation of the fall prevention programme will be provided by the research side of the SMILING project.'

The coordinator points out how SMILING 'is a good example for the development of future ICT systems on mobility and rehabilitation for the Eighth Framework Programme (FP8) and the Ambient Assisted Living (AAL) Joint Programme, as well as in the virtual reality sector, both for research and entertainment environments'.

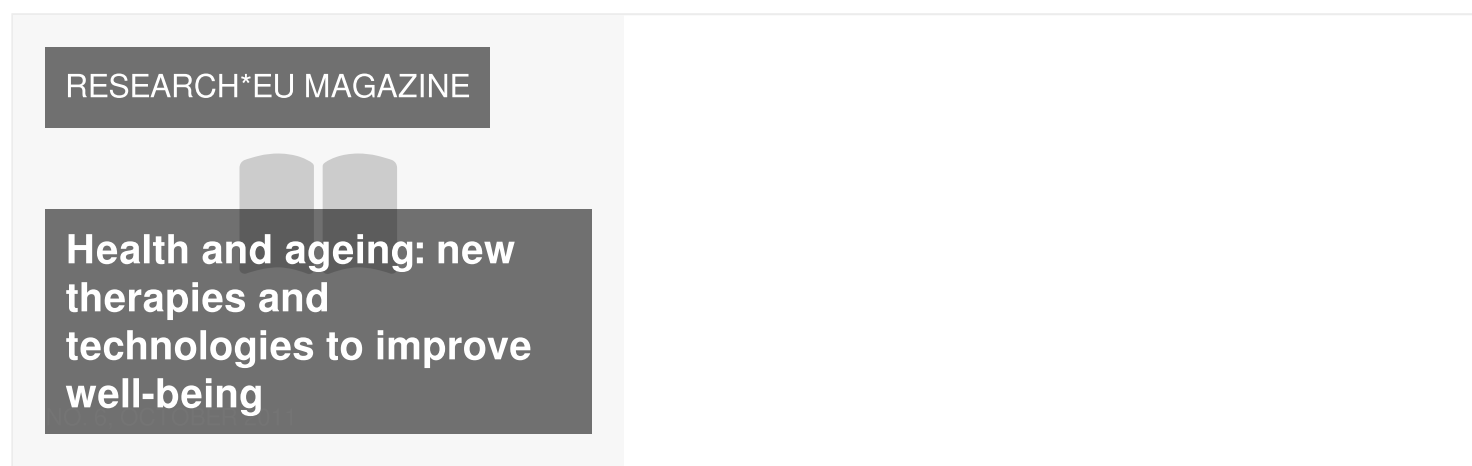
One of several EU-funded research projects investigating mobility and fall prevention in the elderly, SMILING will effectively offer significant feedback to the research world. As for what the future holds, 'a value-engineering would focus on weight and size reduction, application of the principles of modularity for component replacement and repair and further emphasis on improving reliability', the coordinator says. The SMILING partners plan to further collaborate in research projects at the European level. For more information, please visit:

SMILING: <http://www.smilingproject.eu> Seventh Framework Programme (FP7): http://cordis.europa.eu/fp7/home_en.html

Countries

Switzerland, Israel, Italy, Netherlands, Slovakia, United Kingdom

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