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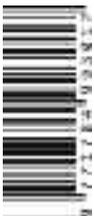
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## EDITORIAL

“When you undervalue who you are, the world will undervalue what you do and vice versa,” said financial guru Suze Orman. Is this true for small and medium sized enterprises (SMEs) that contribute to the attainment of information and communication technologies (ICT) goals in Europe? Read on, and judge for yourself.

According to UEAPME, the European association representing crafts and SMEs, 99.8% of Europe’s 23 million enterprises are SMEs. The most recent survey of SMEs, ending February 2011, showed that 21% more SMEs showed declining vs. increasing profits. That same survey pointed to causes such as the increased cost of oil and commodities, resulting in a 69% increase in production inputs, and an improving European economy resulting in a 46% increase in labor costs. Among the most common economic challenges reported by SMEs are finding customers, obtaining financing, and competition. The European Commission (EC), recognizing that SMEs provide 67% of all jobs in Europe, is committed to collecting these data to ensure that SMEs have access to adequate financing.

Between 2002 and 2008, the SME job engine was churning, increasing by 1.9% annually vs. 0.8% for large companies. In 2008, the Small Business Act for Europe (COM[2008] 394 final) was launched, just before the economic slowdown brought this powerful job creation engine to a temporary halt.

So-called “micro” firms, employing an average of two people, are the mainstay of the European economy. The 2009 EC report found that “For micro enterprises, gross investment in tangible goods amounts to 24% of value added, compared to 19% for all firms ... higher than could be expected on the basis of their profitability, underlining their importance for the EU-economy.”

The value of SMEs to the EU is further underscored by the relative dearth of companies with revenue greater than €100 million. A 2008 article on ICT SMEs reported the number of large companies at 2,006 in the EU (for a population then numbering 310 million) vs. 3,176 large companies in the U.S. (for 291 million people). The EU ICT

community has its own association of SMEs formed in 2007, PIN-SME (see <http://pin-sme.eu/>): It currently represents 50,000 ICT SMEs that provide approximately 200,000 jobs.

Another organization for SMEs, founded in 1996, is SME UNION (see <http://sme-union.org/>). It is the business organization of the European People’s Party, representing a network of pro-business politicians and political organizations. “Its top priority is to reform the legal framework for SMEs all over Europe and to promote and support the interests of small and medium-sized enterprises which – due to their willingness to take risks and responsibility – are the engine of the European economy, thereby contributing to eradicating unemployment and promoting economic growth in Europe.”

Efforts to promote economic parity made by the EC and organizations such as those mentioned above are essential to the economic security of SMEs. This is evidenced by the fact that although SMEs win 60% of public procurement contracts, the value of such contracts represents only 33% of market share. This EC study reported that the job-creating micro enterprises garnered just a 6% market share. Thus, SMEs are underrepresented by between 14-21% (based on 2006-2008 data) relative to their importance to the EU economy. This is not insubstantial when you consider that public procurement represents 19% of EU GDP.

As UEAPME Secretary General Andrea Benassi said in a recent statement, “The EU is not suffering from a shortage of entrepreneurship in ICT; but it is suffering from a shortage of ICT SMEs that are empowered to grow and innovate at international competitive levels.” As an owner of an EU SME, my future may depend on my willingness to take an activist role to ensure that my company is not undervalued, and I urge my colleagues to do the same.

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## TRAUMA TIPS: AN INTERNET-BASED INTERVENTION TO PREVENT POSTTRAUMATIC STRESS DISORDER IN INJURED TRAUMA PATIENTS

Joanne Mouthaan<sup>1</sup>, Marit Sijbrandij<sup>1,2</sup>, Johannes B. Reitsma<sup>3</sup>, Jan S.K. Luitse<sup>4</sup>,  
J. Carel Goslings<sup>4</sup> and Miranda Olf<sup>1</sup>

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**In the prevention of Posttraumatic Stress Disorder (PTSD) after severe traumatic injury, easily applicable, accessible, cost-efficient early interventions are needed that use well-established techniques for decreasing acute psychological stress reactions. Whereas most studies delivered cognitive behavioral techniques face-to-face or as a curative treatment, we incorporated them into a brief Internet-based early intervention program to reduce acute psychological distress and prevent long-term symptoms of PTSD in trauma victims. By means of interactive elements, visual and auditory materials, the intervention contains psychoeducation, modeling, in vivo exposure, stress management and social support. In this article, we describe the design of the program and the outcomes of an initial feasibility study among trauma patients (n = 5) and healthy controls (n = 5). The participants reviewed the program as useful and clear. Neither patients nor controls experienced adverse psychological reactions after completing the intervention. The results show that the intervention is well-received and feasible for implementation in severely injured trauma survivors.**

**Keywords:** Early Intervention, Internet Self-care, Posttraumatic Stress Disorder (PTSD), Prevention, Trauma

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### INTRODUCTION

Following traumatic injury, many patients find themselves facing more than their physical recovery. Previous studies have shown that sizeable percentages of trauma patients develop psychiatric symptoms as a result of their traumatic experiences, such as Posttraumatic Stress Disorder (PTSD). One to six months post-injury, reported rates of PTSD vary from 17.5% to 42% (Ehlers, Mayou, & Bryant, 1998; Harvey & Bryant, 1998; Michaels et al., 1999; O'Donnell, Creamer, Pattison, & Atkin, 2004; Shalev et al., 1998; Yehuda, McFarlane, & Shalev, 1998). PTSD is a severe and disabling disorder associated with considerable personal suffering and psychobiological abnormalities due to a deregulated stress system, functional impairment, and a high economic impact (Walker et al., 2003).

To prevent the development of PTSD in trauma victims, several types of brief early interventions have been developed. The most frequently applied early psychological intervention after trauma, the single-session psychological debriefing, does not prevent the onset of PTSD and may even increase the risk for PTSD in some survivors (Rose, Bisson, & Wessely, 2003; Sijbrandij, Olf, Reitsma, Carlier, & Gersons, 2006; van Emmerik, Kamphuis, Hulsbosch, & Emmelkamp, 2002). It has been suggested that the emphasis on expressing emotions related to the trauma, which is a usual part of most acute interventions following psychological trauma, may exacerbate and sustain arousal, which may cause PTSD symptoms to escalate rather than to decrease (Sijbrandij et al., 2006). Therefore, recent guidelines advocate against the use of such trauma-

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## POSTING INCOGNITO ... MALES WITH EATING PROBLEMS: ONLINE EMOTIONAL EXPRESSION AND SUPPORT

Jackie Doran<sup>1</sup> and Christopher Alan Lewis<sup>2</sup>

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**Qualitative research in the area of eating disorders (EDs) has predominantly focused on females, whilst the experiences of males' remains poorly understood. Due to the secretive nature of eating problems/EDs it can be difficult to explore the experiences of males with these problems; however, online support groups/message boards, which are common and popular, provide a non-invasive forum for researchers to conduct research. This study analyzed naturally occurring discussions on an Internet message board dedicated to males and eating problems using content analysis. Two major overarching themes of emotional expression (sharing feelings of disturbed eating attitudes and emotions; being secretive) and support (informational and emotional) were identified. The message board provided a vital support system for this group, suggesting that online message boards may be an important avenue for health professionals to provide information, support, and advice.**

**Keywords:** Males, Eating Disorder, Online Support, Online Expression, Thematic Analysis

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### INTRODUCTION

#### MALES AND EATING PROBLEMS

Eating Disorders (EDs) are mainly associated with females, however, it is recognized that males also suffer from eating problems (Dominé, Berchtold, Akre, Michaud, & Suris, 2009; Hudson, Hiripi, Pope, & Kessler, 2007; Muise, Stein, & Arbess, 2003; Neumark-Sztainer & Hannan, 2000), yet research is limited in this minority population and calls have been made for further research (Button, Aldridge, & Palmer, 2008; Lock, 2009). Furthermore, Greenberg and Schoen (2008) suggest that males with EDs have been "overlooked, understudied, and underreported" (p. 464). Research is evidently required in this poorly represented population and the Internet provides a viable way to conduct research with this minority population.

#### ONLINE SUPPORT GROUPS

Increasingly, individuals with differing health issues turn to the Internet in the form of online support groups

for advice and information (McGill & McVittie, 2007). Coulson (2008) reported a total of 136,000 "health and wellness" online support groups operating in July 2007, and the "health and wellness" section of Yahoo\_Groups, had an estimated 25,000 online functioning support groups in April 2004 (Eysenbach, Powell, Englesakis, Rizo, & Stern, 2004).

#### ADVANTAGES OF ONLINE SUPPORT GROUPS FOR INDIVIDUALS WITH EDs

Due to the secretive nature of EDs (Grunwald & Wesemann, 2006), many use online support groups for advice and help. These groups provide important information and support to those with eating problems (Walstrom, 2000); users can post questions and receive advice anonymously, therefore removing possible effects of stigmatization whilst gaining crucial social support from people who suffer from the same or similar symptoms (Campbell Eichorn, 2008). Online support is available 24 hours a day, seven days a week, and anyone can join

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## PREFERENCE FOR MODE OF DELIVERY OF COGNITIVE BEHAVIOR THERAPY IN SOCIAL ANXIETY

Lisa Foster<sup>1</sup>, Lynne M. Harris<sup>1</sup> and Deborah Black<sup>1</sup>

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**Stated preference discrete choice modeling was used to examine the contribution of treatment effectiveness, cost, access, flexibility in scheduling and therapist contact to (a) forced-choice preference decisions; and (b) forced-choice decision to undertake preferred treatment if available. Socially fearful people were recruited from clinics (n=43) or the Internet (n=76). Participants preferred treatment that was lower cost and easier to access, characteristics associated with computer-assisted cognitive behavior therapy. More effective treatments and those that combined therapist engagement and self-directed delivery were also preferred. Decision to undertake therapy if available was significantly associated with ease of access and effectiveness, but not cost. Flexibility in scheduling therapeutic sessions was significantly associated with decision to seek treatment if available, and participants were more likely to say they would seek treatment that included therapist engagement, however minimal, compared to completely self-directed therapy. The findings have implications for improving access to therapy for people with social anxiety.**

**Keywords: Cognitive-behavior Therapy, Social Anxiety, Treatment Preference, Stated Preference Discrete Choice Modeling, Treatment Access**

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Social phobia is a common condition marked by early onset, significant impact on quality of life, and high levels of comorbidity (Grant et al., 2004; Kessler et al., 2005; Magee et al., 1996; Olfson et al., 2000; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Zamorski & Ward, 2000). There is also evidence to suggest that in many cases of comorbidity, social phobia is temporally primary and may increase an individual's vulnerability for developing secondary psychological disorders (e.g., Kessler, Stang, Wittchen, Stein, & Walters 1999; Lampe, Slade, Issakidis, & Andrews, 2003; Merikangas et al., 1996; Nelson et al., 2000; Schneier et al., 1992). Epidemiological studies estimate that only 19%-33% of people with social phobia seek treatment (Canino et al., 2004; Grant et al., 2004; Kessler et al., 2005; Magee et al., 1996). Without treatment social phobia is likely to be enduring, and recovery rates are lower for those with comorbid conditions (Davidson, Hughes, George, & Blazer, 1993; DeWit, Osborne, Offord, & Macdonald, 1999), further highlighting the need for effective, accessible treatments. While Cognitive Behavior Therapy (CBT) has been

shown to be effective for the treatment of social phobia (Davidson et al., 2004; Manassis et al., 2002), fear of social and/or performance situations with unfamiliar people means that undertaking therapist-delivered therapy is challenging. The cost of treatment may present a further barrier, as social phobia is associated with low socioeconomic status (Kessler, Chiu, Demler, & Walters, 2005; Lampe et al., 2003; Magee et al., 1996; Olfson et al., 2000).

Computer-assisted CBT (CCBT) is an evidence-based self-help treatment modality that uses technology such as the Internet and computer programs to teach users psychological strategies that aim to improve mental health. CCBT provides advantages for people with social anxiety in terms of accessibility, cost and anonymity (Garcia-Palacios, Botella, Hoffman, & Fabregat, 2007; McCrone et al., 2004). Providing more accessible treatment options like CCBT may allow for early intervention, thus preventing deterioration in quality of life, and reduce the development of comorbid conditions. CCBT is shown to be effective for people with social phobia (Andersson, Bergstrom,

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## TECHNICAL ASPECTS AND TESTING OF A PROGRAM TO ASSESS DEFICITS IN FACIAL EXPRESSION RECOGNITION IN CHILDHOOD CANCER SURVIVORS

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Victoria W. Willard<sup>4</sup> and Taryn M. Allen<sup>4</sup>

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The research presented here focuses on the ease of use of an instrument's interface for a target pediatric population, where participants were asked to interpret virtual character facial expressions. Forty-one children, both pediatric cancer survivors and healthy recruits, took part in six tasks that had them describe or express their confidence in descriptions of different facial expressions, portrayed either overtly or subtly and dynamically or statically by eight virtual characters. In this test of usability and feasibility, childhood cancer survivors performed comparably to healthy participants, suggesting that this instrument is feasible for use with cancer patients.

**Keywords:** Facial Expression Recognition, Pediatric Cancer Survivors, Usability, Virtual Characters

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### BACKGROUND AND SIGNIFICANCE

Dramatically increased cure rates for childhood cancer survivors have led to favorable prognosis for long-term survival (American Cancer Society, 2009). While these patients are at high risk for physiologic effects of cancer therapy (Oeffinger & Hudson, 2004; Oeffinger et al., 2004), children who receive therapies that impact the central nervous system are at even higher risk for cognitive, social, and psychological disorders (Mulhern & Palmer, 2003). The repercussions of these deficits can be lasting and costly, with many childhood cancer survivors never achieving the normal milestones of adulthood, such as living independently, marrying, and procuring stable employment (Gurney et al., 2009). As a result, there is some need for better assessment of critical psychosocial variables.

Unfortunately, assessment of psychosocial functioning of childhood cancer survivors is difficult. For instance, the gold standard with healthy children includes sociometric procedures involving peer nominations and ratings often done by researchers in a classroom, and a few

studies have followed this approach (Noll et al., 1992; Vannatta et al., 1998). However, the incidence of childhood cancer in a school district, much less a school or classroom, is low, making these kinds of procedures impractical and inefficient, and possibly unethical due to singling out the cancer survivor. An alternative assessment involves standardized proxy reports by teachers or parents (Patenaude & Kupst, 2005). However, these measures were developed to be sensitive to specific components of social functioning, such as aggression or social anxiety, hence, tending to focus on maladaptive behavioral outcomes (e.g., getting teased, threatening or bullying others) rather than the social pragmatics (Duke & Nowicki, 2005) underlying successful peer relations (e.g., keeping appropriate physical boundaries, maintaining reciprocal conversations).

Effective social interaction requires attention to and interpretation of complex nonverbal social cues including facial expressions, body language, and tone of voice (Knapp, 1972). In particular, facial expressions are a rich source of social information (Blair, 2003). Theories

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## **E-HEALTH INTERVENTIONS FOR DEPRESSION, ANXIETY DISORDER, DEMENTIA, AND OTHER DISORDERS IN OLDER ADULTS: A REVIEW**

Barbara Preschl<sup>1</sup>, Birgit Wagner<sup>2</sup>, Simon Forstmeier<sup>1</sup> and Andreas Maercker<sup>1</sup>

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**E-health interventions targeting older adults seem to be a promising approach in domains including depression, anxiety disorder, and dementia – three of the most prevalent mental disorders in old age. Further, these technical innovations (e.g., ambient-assisted living and smart homes, game-based applications and training programs) may have the potential to compensate for or prevent health-related changes or to foster active aging. As highlighted by this literature review, however, research in this area is still at an early stage. The methodological quality of the studies and projects differs, and there is a lack of randomized controlled trials and robust research designs (much research to date has been limited to pilot and short-term studies). Advantages and challenges of using information and communication technology (ICT) applications in the above-mentioned domains are discussed, as are user characteristics.**

***Keywords:* E-health, Older Adults, Depression, Anxiety Disorder, Dementia**

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### **INTRODUCTION**

E-health research focusing on the second half of the lifespan is still scarce. However, there is growing interest in the field and initial results are promising. A particular point of interest is whether older adults are familiar with information and communication technology (ICT) facilities such as computers and the Internet, and are thus able to benefit from health services provided through these media. A further question is whether these new media meet the needs of elderly people and have the potential to foster active and healthy aging. Kryspin-Exner and colleagues (Kryspin-Exner, Oppenauer, Preschl, & Maercker, 2009) have discussed e-health applications targeting older users and their caregivers, including assistive technology, tele-medicine, tele-monitoring, psycho-education, and support via the Internet. Further, older people are sometimes included in the adult samples of studies evaluating Internet-based therapeutic interventions, and increasing numbers of projects in this domain focus specifically on older adults. Against this background, this paper reviews research on e-health interventions involving older adults

and their caregivers. We identified relevant articles, abstracts, and conference proceedings published in German or English by searching the appropriate databases (MEDLINE, Premedline, PsycCritiques, PsycINFO, PSYNDExplus, PubMed/Medline, and Web of Science) and the Internet (using Google and Google scholar), and by screening reference lists and the archives of the journal Gerontechnology. We searched for terms such as e-health, e-mental health, Internet, online, technology, intervention, therapy, old age, older people, caregivers, significant others, family members, gerontechnology, depression, anxiety, dementia, mobility, ambient-assisted living, monitoring, and healthy aging (in various combinations). Because the number of completed high-quality studies in the field is limited, we also included reports on ongoing projects. Information on all of the articles included in the review is provided in Table 1.

A necessary condition for any technical device being used in old age is that the technology meets the needs of older adults and is accepted by this target group. Charness and Boot (2009) discussed research on atti-

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## USING ARTIFICIAL INTELLIGENCE TO CONTROL AND ADAPT LEVEL OF DIFFICULTY IN COMPUTER-BASED COGNITIVE THERAPY – AN EXPLORATIVE STUDY

Inge Wilms<sup>1,2</sup>

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Within the field of cognitive rehabilitation after brain injury, rehabilitation training is constantly adjusted to match the skills and progress of the individual patients. As no two patients are alike in functional injury and recovery, it is a challenge to provide the right amount of training at the right level of difficulty at any given time.

This study investigates whether a modified version of the artificial intelligence (AI) reinforcement method called the “actor-critic method” is able to detect response time patterns and subsequently control the level of difficulty in a computer-based, cognitive training program. The efficacy of the AI logic was tested under the actual training conditions of a brain-injured patient.

The results showed that the AI controlled training system was able to learn and adjust fast enough to control and adapt the level of difficulty of the training to match the changes in the patient’s abilities over a three-week period.

**Keywords:** Reinforcement Learning, Cognitive Rehabilitation, Adaptive Therapy, Actor-critic, Adaptive Progression

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### INTRODUCTION

Over the past decade an increasing amount of evidence supports the notion that cognitive functions injured from trauma may recover, at least partially, through training and therapy that target different aspects of brain plasticity (Kleim & Jones, 2008; Friedemann Pulvermüller & Berthier, 2008). As with healthy brains, certain elements such as the intensity of the training, the type of feedback provided and the progression of the level of difficulty seem to be important, general aspects of the more recent type of therapy used experimentally in the rehabilitation of cognitive deficits (Frassinetti, Angeli, Meneghello, Avanzi, & Ladavas, 2002; Friedemann Pulvermüller & Berthier, 2008).

In methods like cognitive Constraint Induced Aphasia Therapy, one of the key elements is the personalized in-

tensive training which challenges the patient gradually with progressively harder tasks (Friedemann; Pulvermüller, et al., 2001). However, to advance the training at the right pace and to the right level of difficulty is perhaps one of the hardest challenges for the therapists to do correctly, as performance of patients may fluctuate from day to day. First of all, no two brain-injured patients are alike even when diagnosed with similar afflictions. This means that training-progress may vary substantially from patient to patient. Even slight differences in impairment may impact the way training will affect progress and amelioration making it extremely difficult to determine how fast to advance with the training (e.g., Wilson, Gracey, Evans, & Bateman, 2009). Secondly, even with the same category of affliction, what is considered to be hard or difficult may vary from patient to patient (Wilson, 1998). Thus, the combination

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## **EXERGAMING: INTERACTIVE BALANCE TRAINING IN HEALTHY COMMUNITY-DWELLING OLDER ADULTS**

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**Exergaming is a term used for videogame exercise. The aim of this study was to examine the training effect of an exergame that relies on the movements of a dynamic balance board. Nine healthy elderly subjects participated in a six-week intervention in which they played balance games three times a week. Before, after and during the intervention phase balance was assessed with the figure-of-eight test, the Berg Balance Scale (BBS), and the tandem and one-leg stance, both performed with eyes open and closed. Intervention effects were examined using multilevel modeling statistics. Predominantly, the dynamic balance performance, measured by the figure-of-eight and the BBS, improved ( $p < 0.05$ ). Balance improvement was dependent on level of performance at the start of training; participants with initially low balance scores improved more across time than the highest scoring participants.**

***Keywords:* Postural Control, Aged, Videogames, Sensory Feedback, Exercise Therapy, Recovery of Function**

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### **INTRODUCTION**

Balance disorders are common in older adults. Impairments may be the result of a specific pathology affecting a particular component of the sensory, motor and central processing systems, or the general progressive loss of sensorimotor function due to normal aging (Ganz, et al., 2007; Lamoth, et al., 2011; Sturnieks, St George, & Lord, 2008). Impaired balance is an important predictor of falls within the older adult population. Falls often lead to injury and loss of independence, and are associated with illness and early death (Ganz, et al., 2007; Howe, et al., 2007). Therefore, improving and maintaining functional abilities and balance is essential for older adults.

While there are many health and social benefits from different exercise regimens, balance training, in particular, significantly results in functional improvement in older adults (Rochat, et al., 2008; Sihvonen, et al., 2004b). Balance training not only improves postural sta-

bility, but also the confidence of elderly patients. Accordingly, elderly people with better balance will be more likely to maintain healthy levels of physical activity, which in turn will help to enhance their balance control and prevent fall incidents. Physical therapists commonly use balance and coordination exercises, using, for instance, a wobble board to train balance. However, due to the repetitive nature of the exercises, motivation and attention span might be difficult to sustain, particularly so in the case of prevention programs where there is no direct need for rehabilitation. This can impair the potential effectiveness of the therapeutic exercise (Betker, et al., 2006; Fitzgerald, et al., 2010). New technology-based techniques, such as exergaming (a term used for videogames that are also a form of exercise), can act as an aid by providing a motivational factor to encourage longer engagement in the exercises than would normally be seen. Moreover, by playing a balance game people do not pay attention to the physical exercise and their own movements (i.e., an internal

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