

Roles of Web, mobile and monitoring technologies in personalized management of psychophysiological wellbeing

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Business from technology

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Work stress and stress management

- One third of European workers suffer from work-related stress
 - 50-60% of lost working days [Cox et al., 2000]
- Prolonged stress associated with health and mental health problems
- Stress management
 - Improving work environment and organization
 - Personal stress management and recovery skills
- Early intervention improves outcome [Raitasalo et al. 2004]
- Scarce resources for early interventions in healthcare

Computerized interventions

- Support for self-management:
 - Available 24/7, self-paced
 - Personalized
 - Private, anonymous, less stigma
 - Access to professional & peer support
- Different technologies to support varying needs, usage situations, and phases of change process
 - Web, mobile, wearable



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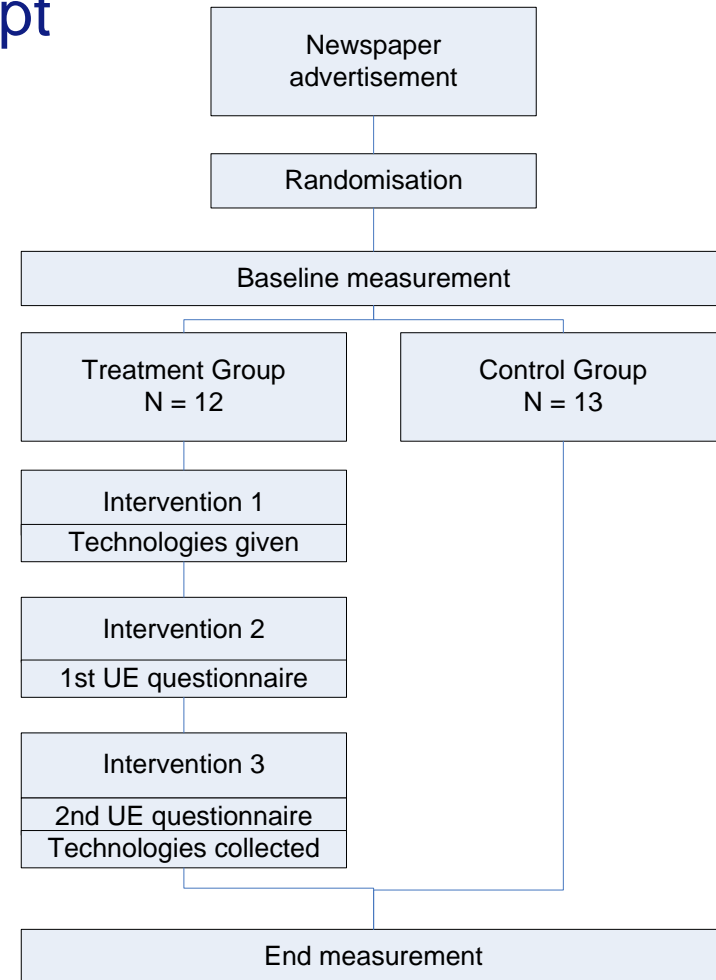
P4Well: Pervasive and personal psychophysiological wellbeing management concept

- Service concept for stress and recovery management
- Psychological interventions supported by technologies
- Psychological interventions:
 - Analyses & choosing behavioural changes
 - Planning & goal setting
 - Freedom to choose the approach: sleep, exercise, mood, etc.
→ Alternative routes to good outcomes
- Technology toolkit of Web, mobile, and wearable technologies
 - Personalized selection of technologies

Evaluation 1: Stress and depression intervention

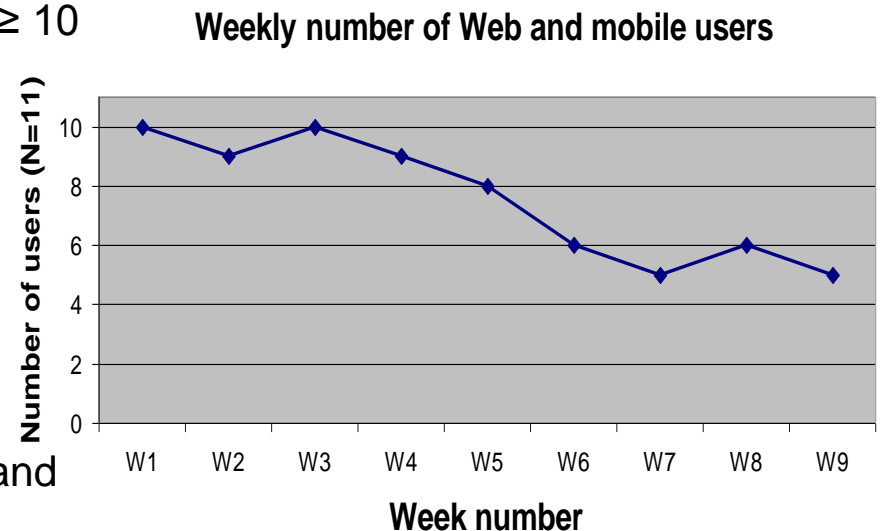
Validation of the concept

- 25 male subjects, age 45 (28-73) years
 - Randomized into treatment and control condition
 - 2 drop-outs, 1 from each group
- Depression according to Beck Depression Inventory (BDI):
 - Treatment group 14.6 (6-30), 8 subjects with at least minor depression ($BDI \geq 10$)
 - Control group 13.3 (2-30), 6 subjects with $BDI \geq 10$
- Technology toolkit during intervention period, 9-10 weeks
 - Log data on usage
 - Two user experience questionnaires



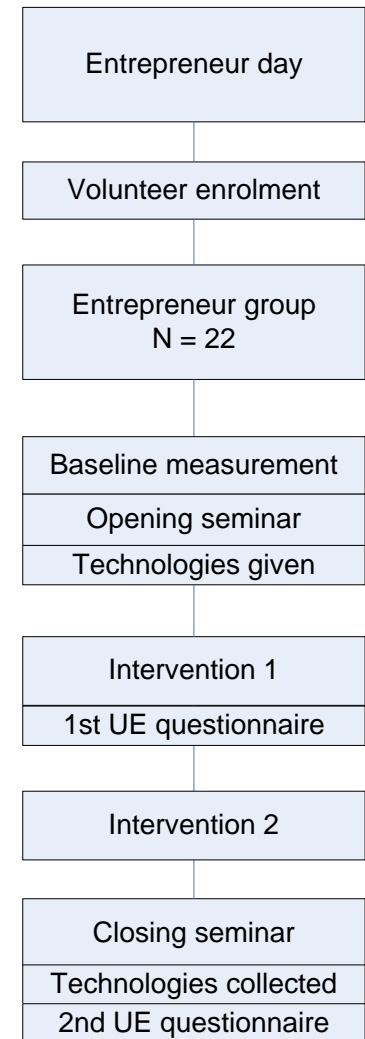
Results: Evaluation 1

- Both groups improved in terms of BDI
 - Treatment group: 6.2 (1-13), 1 subject with BDI ≥ 10
 - Control group: 9.3 (1-23), 6 subjects with BDI ≥ 10
- All subjects tried some technology
 - 3 active Web portal users
 - 7 active mobile application users
 - 7 active personal devices users
- Most important components of intervention:
 - Measurements and analyses of sleep, stress and recovery
 - Personal devices: heart rate monitor and pedometer
 - Face-to-face intervention meetings
 - Mobile training coach application



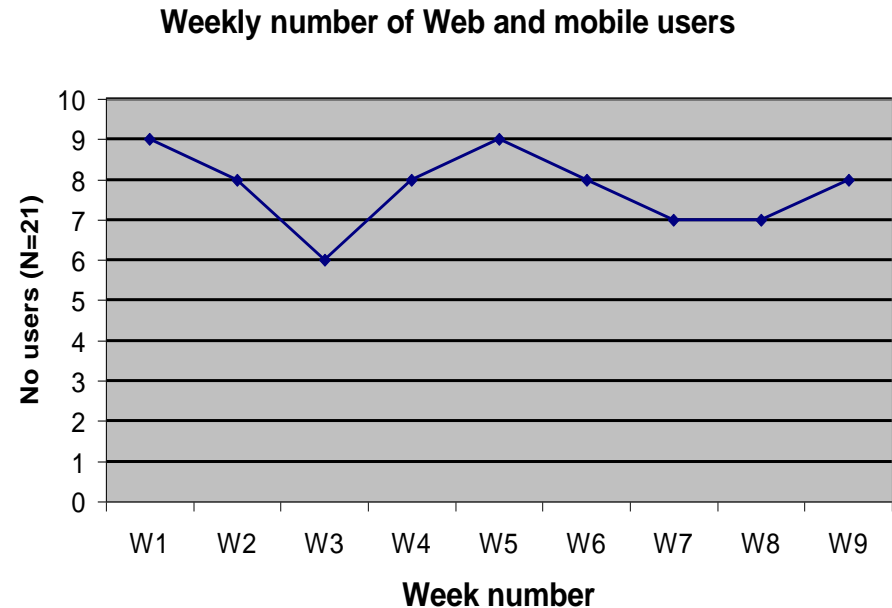
Evaluation 2: Work wellbeing program Practical pilot in the real world

- Organized by an occupational pension insurance company and occupational healthcare provider for their customers
- 22 volunteers, 13/9 female/male, age 54 (37-62) years
 - 1 female drop-out
- BDI : 6.3 (0-14), 4 subjects with minor depression (BDI \geq 10)
- Technologies used during intervention period (9 weeks)
 - Mobile phones borrowed to 11 subjects
 - Log data on usage
 - Two user experience questionnaires



Results: Evaluation 2

- 14/21 subjects tried Web or mobile applications
 - 3 active portal users
 - 6 active users mobile application users
 - 9 active personal device users
- Most important components of intervention:
 - Face-to-face intervention meetings
 - Measurements and analyses of sleep, stress, and recovery
 - Personal devices: pedometer
 - Mobile applications



Summary of findings

- Personal contact and feedback highly valued
 - Intervention meetings and personal feedback on measurements
- Most subjects tried some technology, 1/3 – 1/2 were active users
- Mobile and wearable devices most actively used
 - In Evaluation 1: exercise
 - In Evaluation 2: sleep, relaxation and everyday activity
- Only few active Web portal users
 - Portal was fairly unfinished during these studies
 - Perceived as an information source and analysis tool

Conclusions

- One size does not fit all
 - Delicate balance between providing options and burdening the users
 - Profiling could be used to limit the number of options
- Wearable devices and mobile applications most popular and actively used
 - Integration into daily life & constant reminder always present
- Different roles of Web and mobile technologies must be acknowledged
 - Same criteria for assessing usage activity may not be applicable
- The concept was improved according to evaluation results
- Final evaluation ongoing with 45 subjects (22/23 treatment/control)

P4Well partners





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Thank you!

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