

A nighttime photograph of a cityscape featuring a bridge over a river. The bridge has blue lighting on its structure. The river reflects the city lights. In the foreground, there are light trails from cars on a road, and a bus is visible. The background shows city buildings and lights.

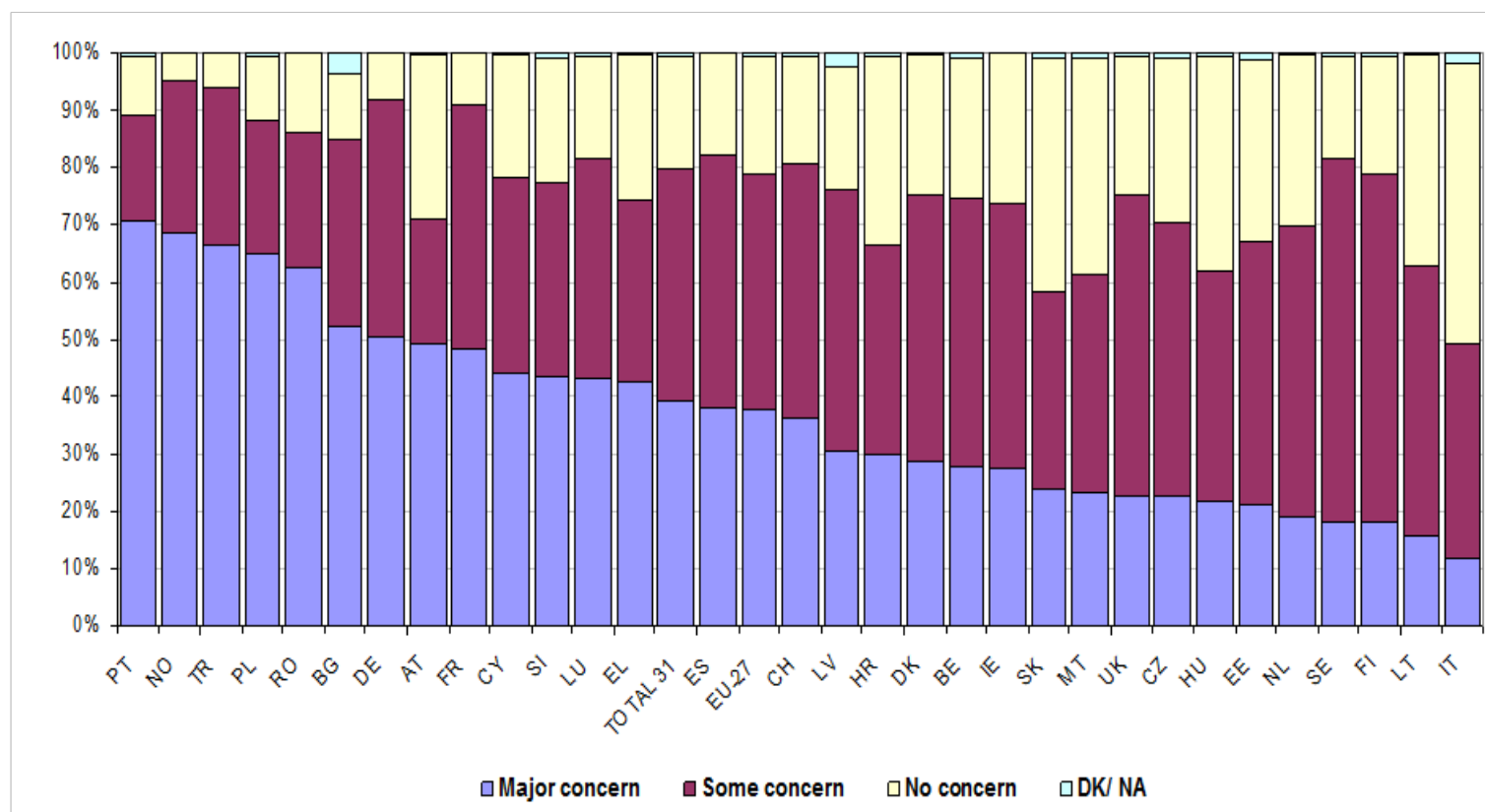
› BEHAVIOR CHANGE TECHNIQUES IN M-HEALTH APPLICATIONS FOR MENTAL AND PHYSICAL HEALTH OF KNOWLEDGE WORKERS

Noortje Wiezer

TNO innovation
for life



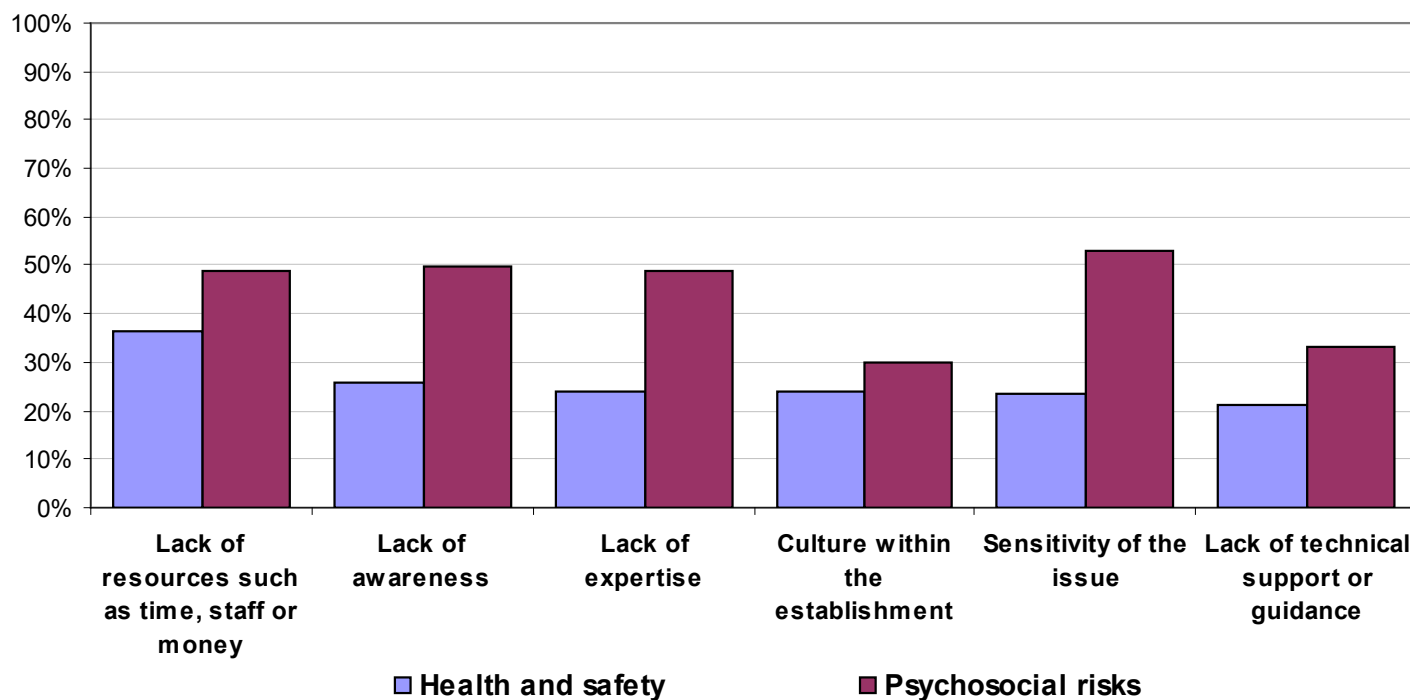
Risks in companies in Europe still existing



% establishments concerned with work related stress. Source: Esener 2009



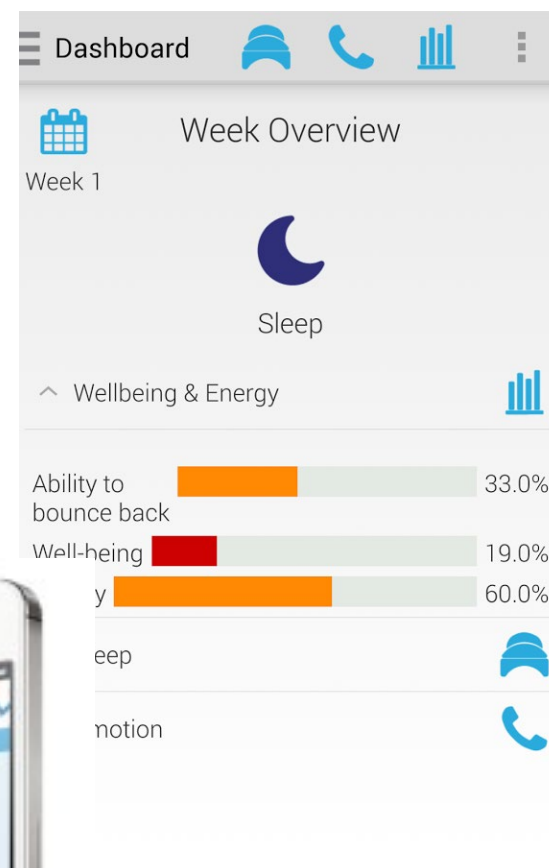
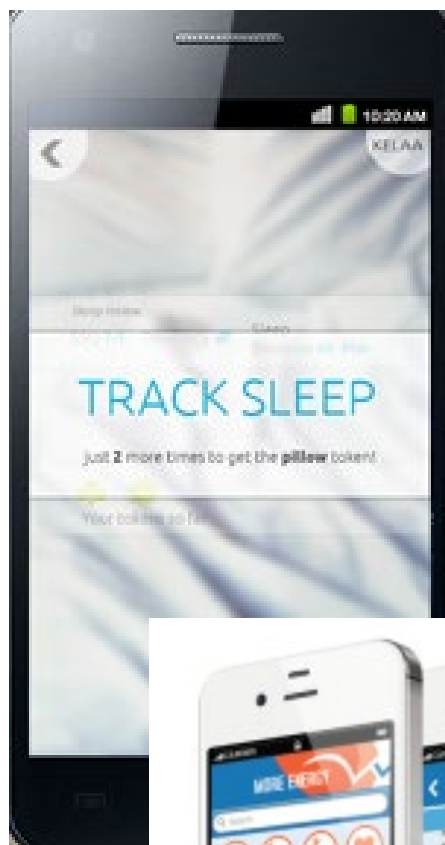
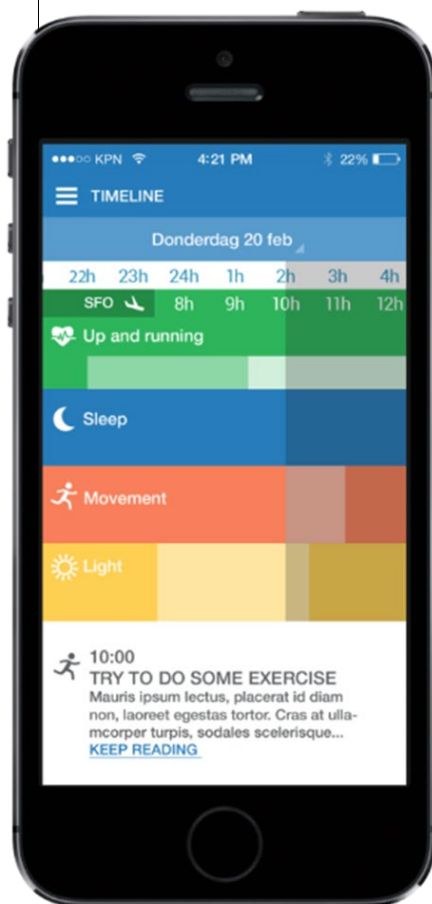
Obstacles for interventions

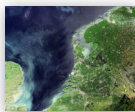


% establishments that indicated obstacles for interventions. Source: Esener 2009



Does information technology provides the solution?





Number of health apps is growing

File Edit View Favorites Tools Help

Page Safety Tools



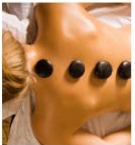



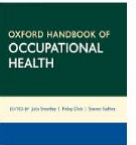




















Google Play Work related stress

Apps Zoeken Android-apps Alle prijzen Alle beoordelingen

Mijn apps
Winkelen

Games
Familie
Gids voor ouders
Keuze van de redactie

Apps

 <p>Relaxing Anti-Stress Dandelion Soft</p> <p>★★★★☆</p>	 <p>Office Yoga to De-Stress Daily Yoga Software Te</p> <p>★★★★☆</p>	 <p>Back Pain Relief Sleep Learning</p> <p>★★★★☆ € 2,67</p>	 <p>Relax Lite: Stress & Anxiety Relief Saagara</p> <p>★★★★☆</p>	 <p>Relax: Stress & Anxiety Relief Saagara</p> <p>★★★★☆ € 2,69</p>	 <p>Flight Attendant We FADAP</p> <p>★★★★☆</p>	 <p>Oxford Handbook of Occupational Health MedHand Mobile Librar</p> <p>★★★★☆ € 39,07</p>	 <p>Runtastic Heart Rate Runtastic</p> <p>★★★★☆</p>	 <p>Solitaire MobilityWare</p> <p>★★★★☆</p>
 <p>Numero Logos AltaVia srl</p> <p>★★★★☆ € 1,99</p>	 <p>Email My Texts zee Software Apps</p> <p>★★★★☆ € 1,00</p>	 <p>Insane Bodybuilding Bodybuilding-Apps.com</p> <p>★★★★☆</p>	 <p>Tuner - DaTuner (Lite) Applaud Apps</p> <p>★★★★☆</p>	 <p>Cyclur Kalender-Personal ABISHKING</p> <p>★★★★☆</p>	 <p>Swimmer (Breathing) Breathing Labs</p> <p>★★★★☆</p>	 <p>Remote for iTunes Hyperfine</p> <p>★★★★☆ € 3,99</p>	 <p>Peace Starter Meditation PersonePersona</p> <p>★★★★☆</p>	 <p>Get Relaxed free! Hypnosis Kim Fleckenstein</p> <p>★★★★☆</p>
 <p>Insane Bodybuilding Bodybuilding-Apps.com</p> <p>★★★★☆</p>	 <p>Instant Heart Rate Azumio Inc.</p> <p>★★★★☆</p>	 <p>Business Model Strategy Novay</p> <p>★★★★☆</p>	 <p>Offline dictionaries NGHS.fr</p> <p>★★★★☆</p>	 <p>Get Relaxed! Hypnosis Kim Fleckenstein</p> <p>★★★★☆</p>	 <p>Cardiograaf - Cardiac MacroPinch</p> <p>★★★★☆</p>	 <p>Bristol Healthy Office IES Cities project</p> <p>★★★★☆</p>	 <p>ProHealth Tracker ProHealth</p> <p>★★★★☆</p>	 <p>Spider Patience Magma Mobile</p> <p>★★★★☆</p>



M-health applications for work health promotion

- › Little is known on the quality and effectiveness of apps
- › Research shows that health interventions are more effective if rooted in Behavioral Change Techniques (BCT's)
- › Effective applications should be based on Behavioral Change Techniques as well



Aim of the study and research questions

- › Aim of the study: do M-health applications for work health promotion incorporate behavioral change techniques?
- › Research questions
 1. Which BCT's are used in apps aiming at work health promotion?
 2. Which BCT's are not used in apps? And why?
 3. Based on a and b: new requirements?



Behavioral Change Techniques Abraham and Michie (2008)

Behavior change techniques (Abraham & Michie, 2008)

- | | |
|---------------------------------------------------|-------------------------------------------------|
| 1. Provide information about behavior health link | 14. Provide contingent rewards |
| 2. Provide information on consequences | 15. Teach to use prompts/ cues |
| 3. Provide information about others' approval | 16. Agree behavioral contract |
| 4. Prompt intention | 17. Prompt practice |
| 5. Prompt barrier identification | 18. Use follow up prompts |
| 6. Provide general encouragement | 19. Provide opportunities for social comparison |
| 7. Set graded tasks | 20. Plan social support/ social change |
| 8. Provide instruction | 21. Prompt identification as role model |
| 9. Model/ demonstrate the behavior | 22. Prompt self-talk |
| 10. Prompt specific goal setting | 23. Relapse prevention |
| 11. Prompt review of behavioral goals | 24. Stress management |
| 12. Prompt self-monitoring of behavior | 25. Motivational interviewing |
| 13. Provide feedback on performance | 26. Time management |



Approach

- Searched for applications in Itunes and Google Play
- Used a long list of search terms (for example: sitting and work, physical work, work health, work demands, wellbeing, workstress)
- Inclusion criteria:
 - Aimed at an individual
 - Aimed at healthy adults
 - Work related
 - Personalized feedback
 - English or Dutch
 - Stress prevention and/or psychosocial risk reduction and/or physical risk reduction and/or healthy lifestyle at work promotion

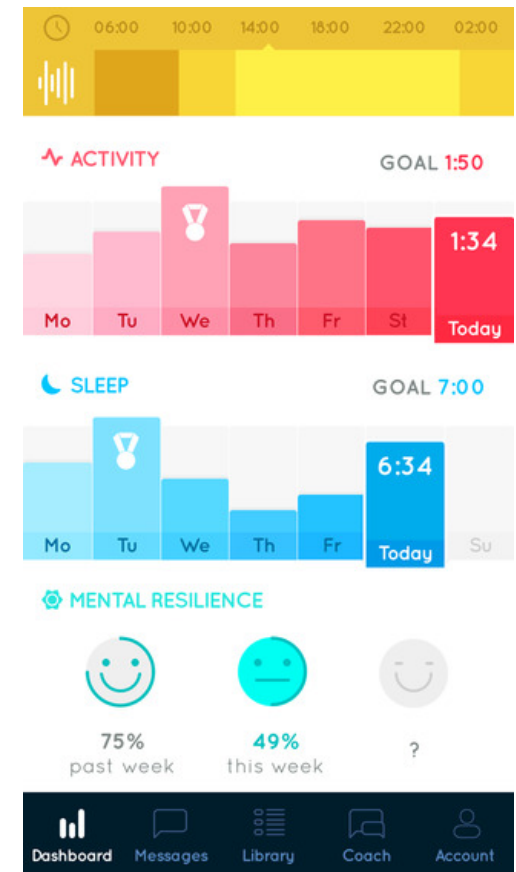
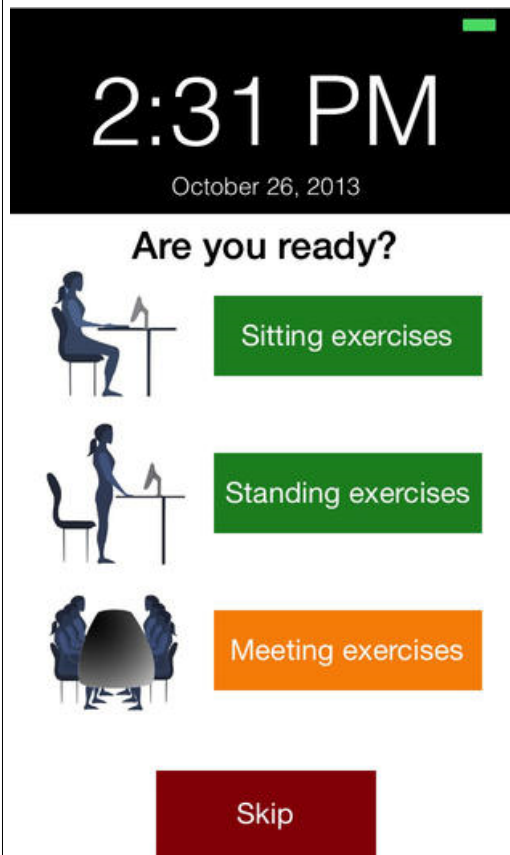


Results 1: Applications included

	Number
Total number of apps downloaded or looked into	304
Total number of apps included	44
Physical risk prevention	14
Psychosocial risk prevention	21
Lifestyle promotion	33
Itunes	22
Google Play	13
Itunes and Google Play	9
Free	28
Access code	3
Payed (€2,40 average)	13

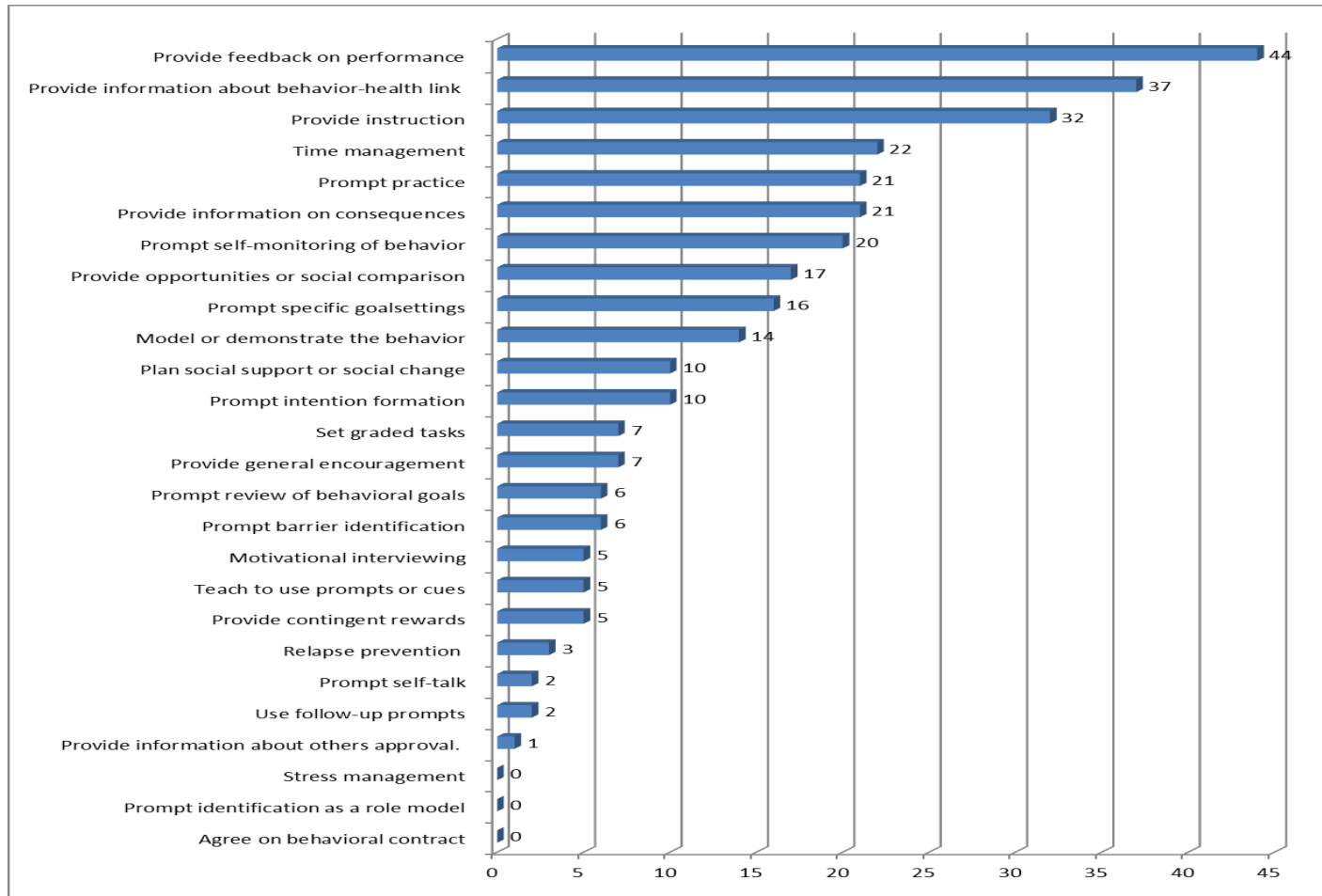


Examples





BCT's in applications



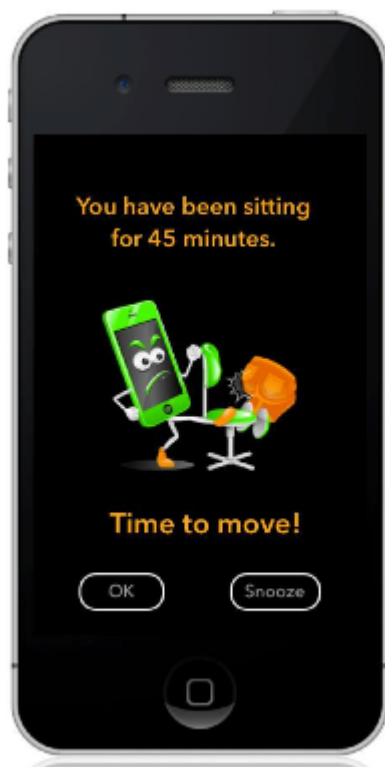


BCT's applied in applications

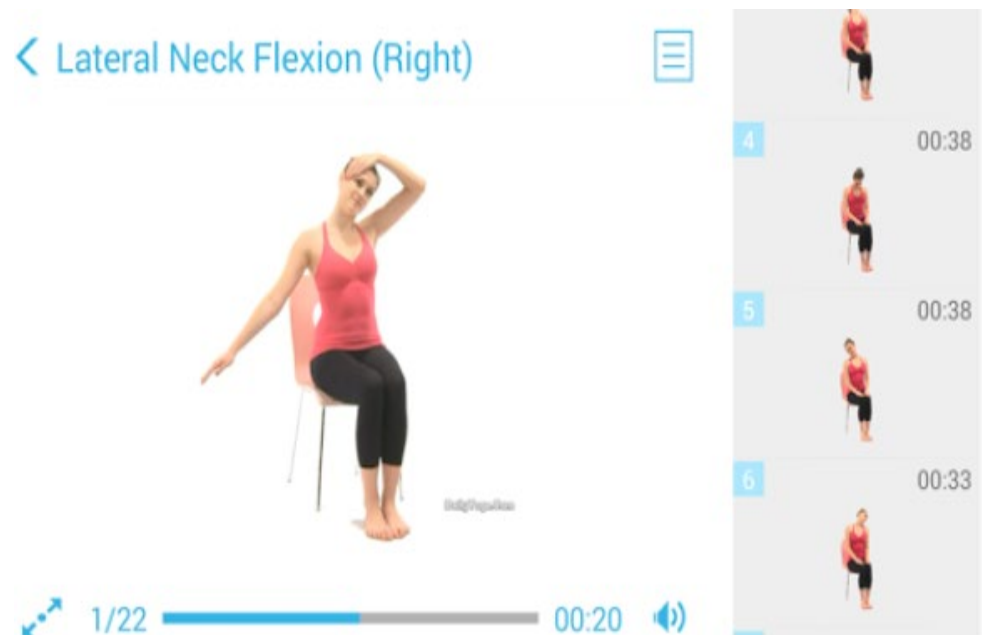
Average number of BCT's in applications		7,1
Highest number of BCT's in an application		16
Lowest number of BCT's in an application		2



Examples



Prompt practice



Model or demonstrate the behavior



Next step

- › Expert meeting (with app developers).
- › Question (for expert meeting, but also for you):
 - › Some BCT's are never or hardly ever scored: why not?
 - › Technical constraints
 - › Not a relevant BCT for apps?
 - › Never thought off..



Conclusion

- › In most applications some behavioral change techniques are used, but the number differs
- › Some techniques are used very often (provide information)
- › Others are not used (prompt identification as a role model)
- › We did not systematically reviewed the content and the quality of the information given, but there are large differences in quality between applications



WELLBEING AT WORK AMSTERDAM 2016

Interested in employee health,
organizational and workplace
factors, interventions or
methodological challenges?

VU University Medical Center
and TNO are proudly hosting
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Work Conference 2016!

SAVE THIS DATE
MAY 29 - JUNE 1

A nighttime photograph of a cityscape featuring a prominent bridge with blue lighting over a body of water. Light trails from vehicles on a nearby highway are visible. The background shows various city buildings and streetlights.

› **THANK YOU FOR YOUR
ATTENTION**

NOORTJE.WIEZER@TNO.NL

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