

Health Behavior Change Support Systems

Case of Preventing Metabolic Syndrome

Health Information and eServices

Pasi Karppinen

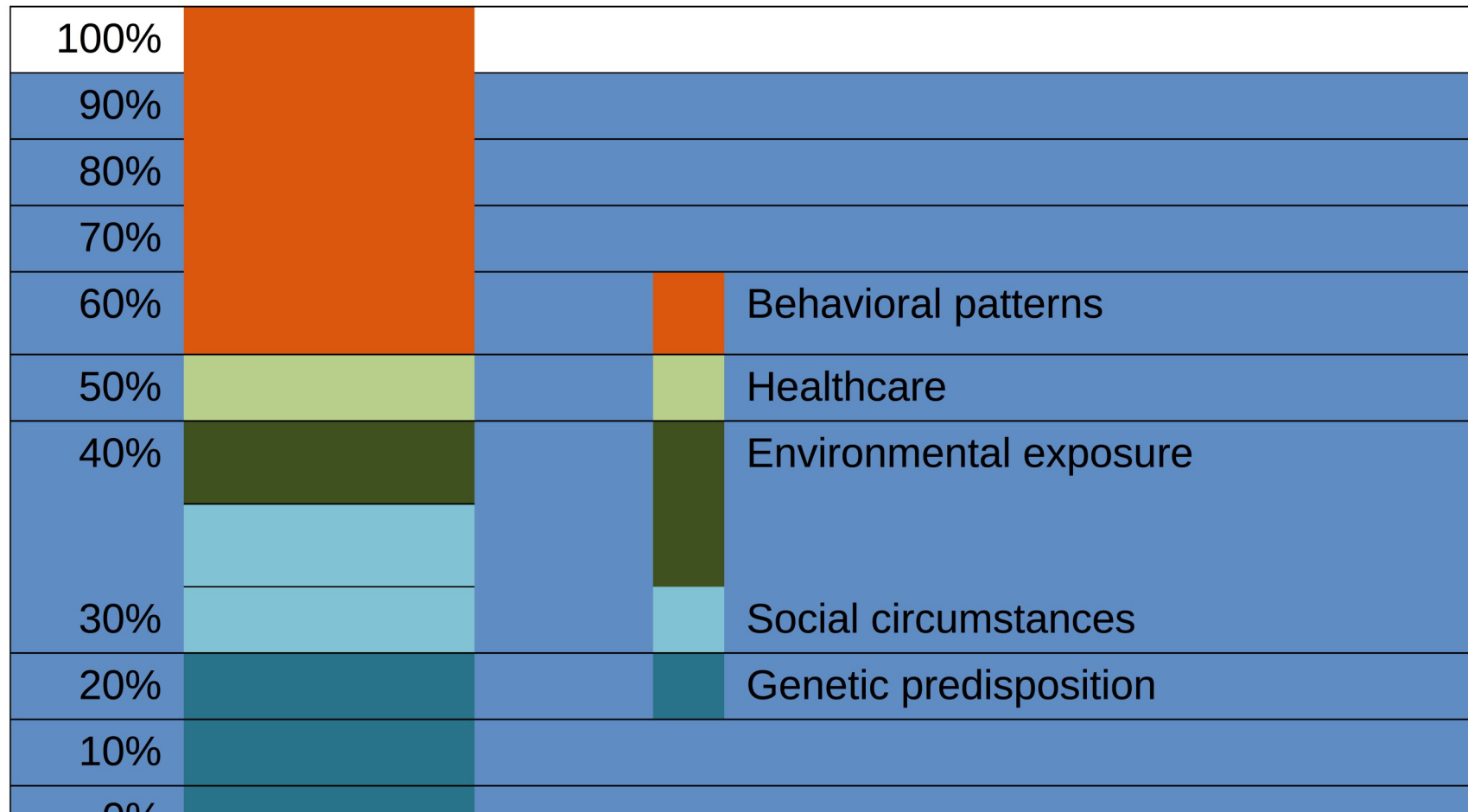
11.5.2016

OASIS research group

- Lehto Tuomas & Oinas-Kukkonen Harri (2011)
Persuasive Features in Web-Based Alcohol and Smoking Interventions: A Systematic Review of the Literature.
Journal of Medical Internet Research, 13(3), e46.
- Karppinen Pasi , et al. (2016)
Persuasive user experiences of a health Behavior Change Support System: A 12-month study for prevention of metabolic syndrome.
International Journal of Medical Informatics, Advance online publication.

Determinants of Health

- Determinants of health and their contribution to premature death (Schroeder, 2007)

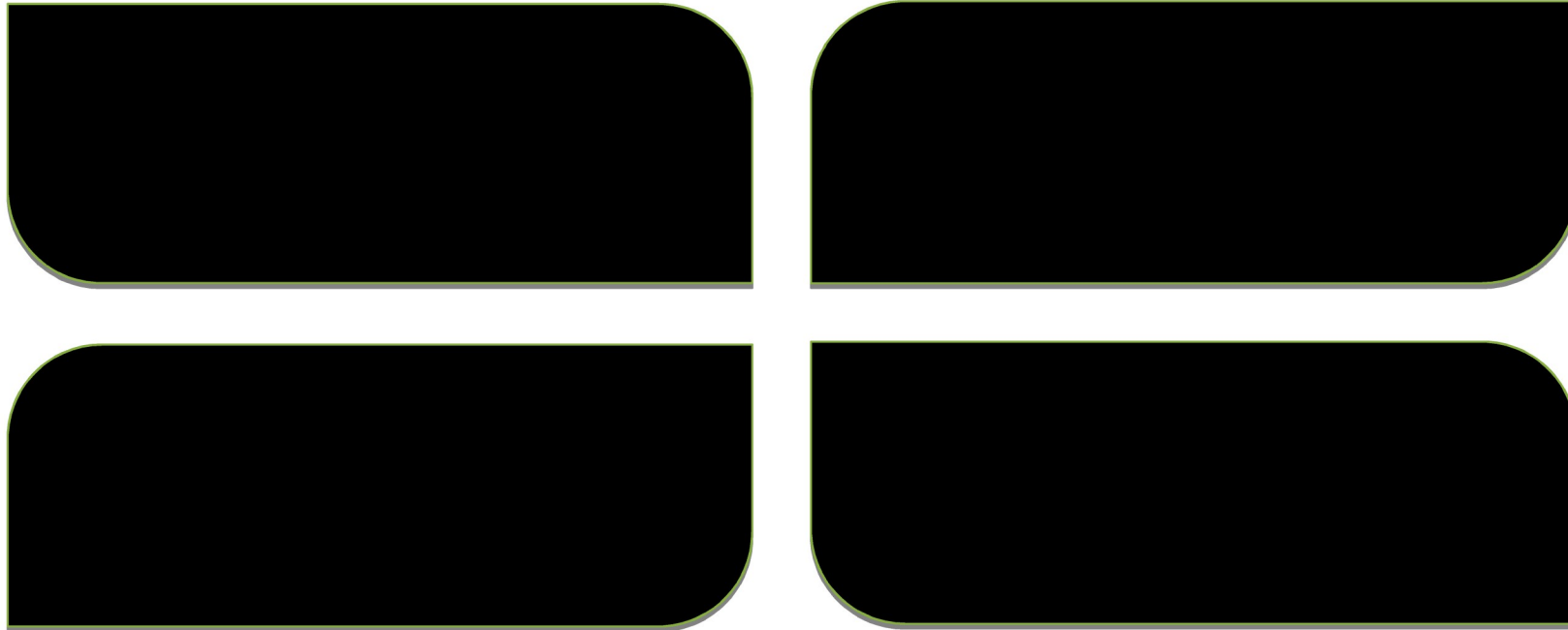


Behavior Change Support Systems

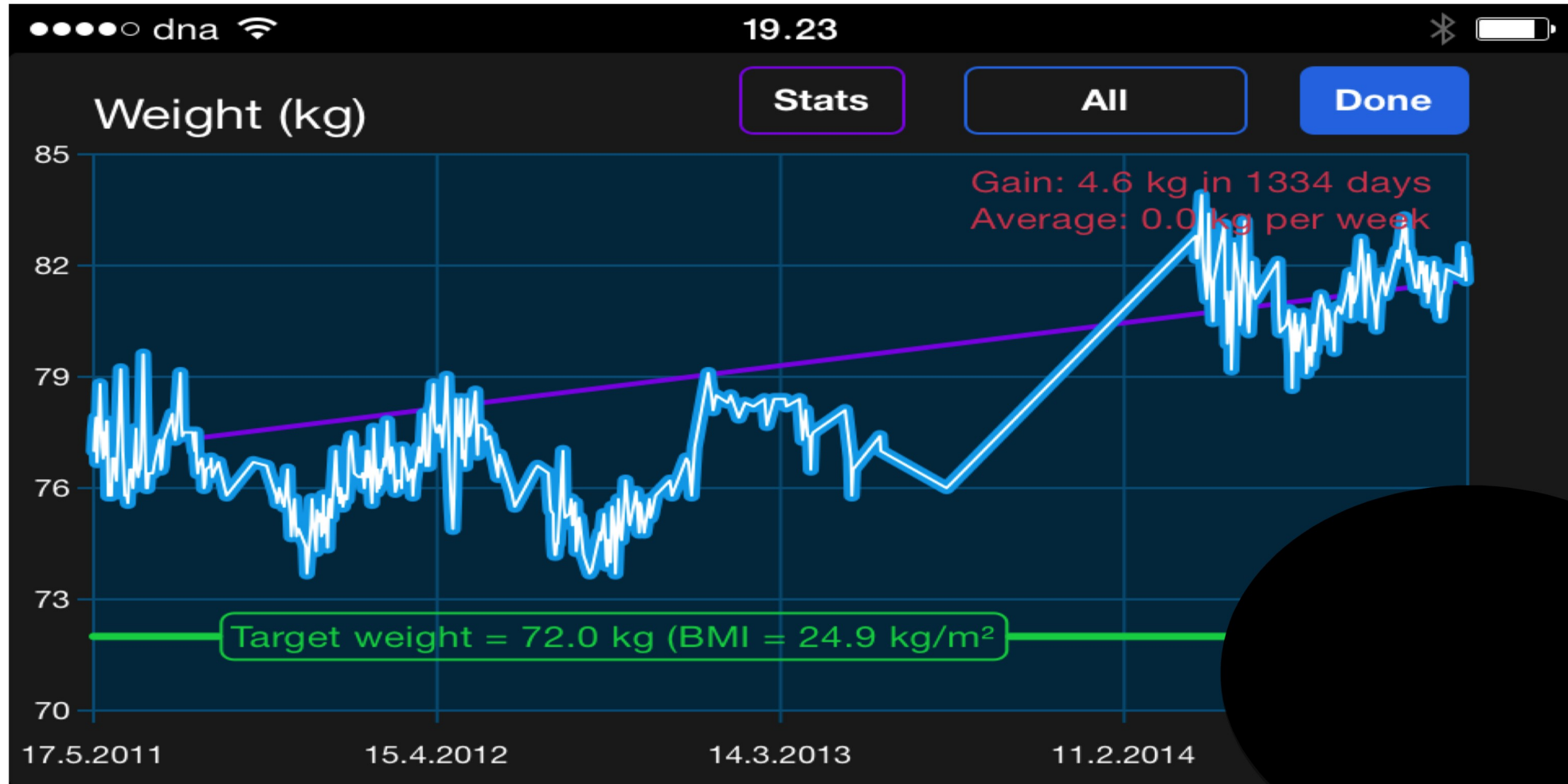


The Persuasive Systems Design model

- Oinas-Kukkonen & Harjuma, 2009



Primary Task Support





Dialogue Support


Notification 2 of 4

Congratulate

Remind later

Close notification

	Adriana Diaz	35	today
	David Meyer	31	today
	Leon C.	26	2 days
	G. Zhang	12	5 days

 Adriana Diaz (35)
today
Jun 15, 1978
+ 1 other



Credibility Support

LIVESTRONG™

FOUNDATION

[WE CAN HELP](#) [TAKE ACTION](#) [WHAT WE DO](#) [WHO WE ARE](#) [DONATE](#) [SHOP](#) [BLOG](#) [SEARCH](#)



Wendy Zocks
MELANOMA SURVIVOR

WHO WE ARE

We provide support to guide people through the cancer experience, bring them together to fight cancer—and work for a world in which our fight is no longer necessary.

Our Strength

We believe that unity is strength, knowledge is power and attitude is everything. Our leaders and donors provide vision and support for our mission.

[LEARN MORE](#) 

Our History

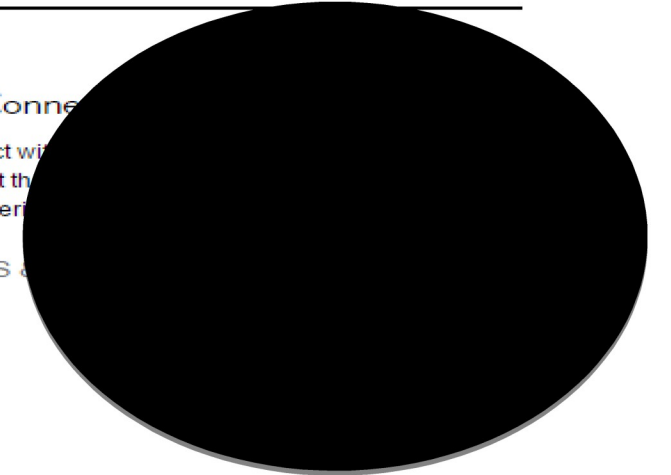
Since 1997, we've been fighting to improve the cancer experience and make cancer a priority.

[LEARN MORE](#) 

Get Connected

Connect with us today, get the support you need, and become a volunteer.

[PRESS & MEDIA](#)



Social Support

The screenshot displays the POLAR FLOW beta app interface. At the top, the navigation bar includes 'POLAR LISTENS TO YOUR BODY', 'FLOW beta', and menu items: 'Feed', 'Explore' (highlighted in red), 'Diary', and 'Progress'. The user profile 'Pasi Karppinen' is visible on the right. The main area is a map of Europe with numerous activity markers (white boxes with three red dots) placed across various countries. On the right side, a panel titled 'ITEMS ON MAP' lists activity entries:

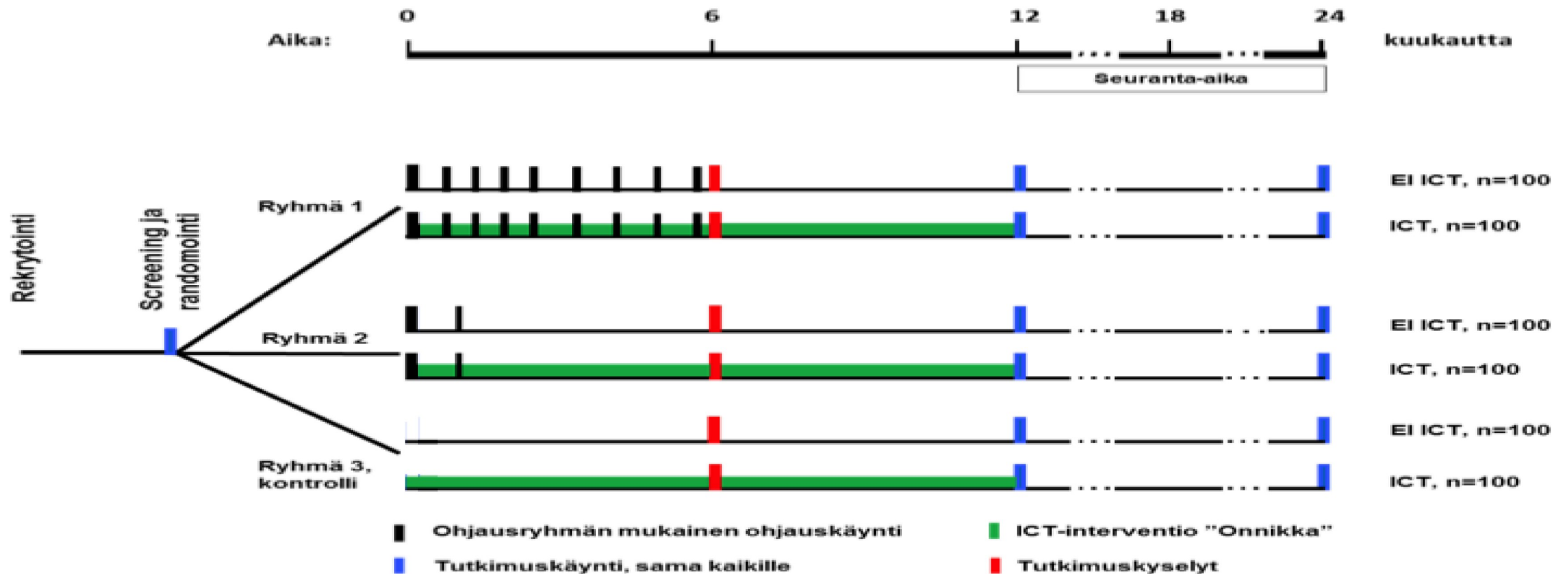
Activity Item	Distance [KM]	Duration	Calories [KCAL]
Stian Nygård RUNNING 23 Jan, 2015	0.0	00:00:19	1
Mika Pelkonen SKIING 23 Jan, 2015	10.0	00:47:03	708
Pep Lama JOGGING 23 Jan, 2015	4.5	00:34:54	
Mika Ahonen OTHER OUTDO 23 Jan, 2015	0.2		
Pekka K... RUNNING 23 Jan, 2015			

A large black circle is overlaid on the bottom right of the activity list.

Prevention of Metabolic Syndrome (PrevMetSyn)

- PrevMetSyn is a randomized lifestyle intervention study with two different counseling interventions: **group A**, with eight group counseling visits, and **group B**, with two group counseling visits. **Group C** is a control group and uses Onnikka without any face-to-face counseling.
- The study subjects are working-age females and males who are **overweight or obese (BMI 27–35)**, with or without metabolic syndrome. Participants are Finnish citizens from the Northern Ostrobothnia hospital district area.

Prevention of Metabolic Syndrome (PrevMetSyn)



Case Onnikka

Onnikka Anna palautetta Tutkija T. Kirjaudu ulos

- Etusivu
- Viikkopysäkki
- Omaseuranta
- Infopiste
- Työkalupakki
- Käyttöohjeet
- Kysymykset

Tervetuloa Onnikkaan!



Matkaeväät mukana
Onnikassa tarjotaan terveyttä edistäviä vaihtoehtoja elämäsi matkaeväiksi. Syömisen taito on hyvinvoinnin, laihtumisen ja painonhallinnan avain.

Pysäkki 50: Sokeripitoiset herkut energialähteenä

Muistathan lukea viikon infon ja tehdä viikon tehtävän viikkopysäkillä. Voit myös lisätä omaseurantaan painosi ja muita edistymistäsi kuvaavia tietoja.

Matkamittari

A Vielä 2 viikkoa päätepysäkkiin
★ 8 kuukauden pysäkki saavutettu
👤 Tällä viikolla kirjautunut 1 matkustaja

Oikoreitit

- Lue viikkopysäkki
- Painomerkinnät
- Mieli ja motivaatio
- Liikuntapäiväkirja
- Ruokapäiväkirja

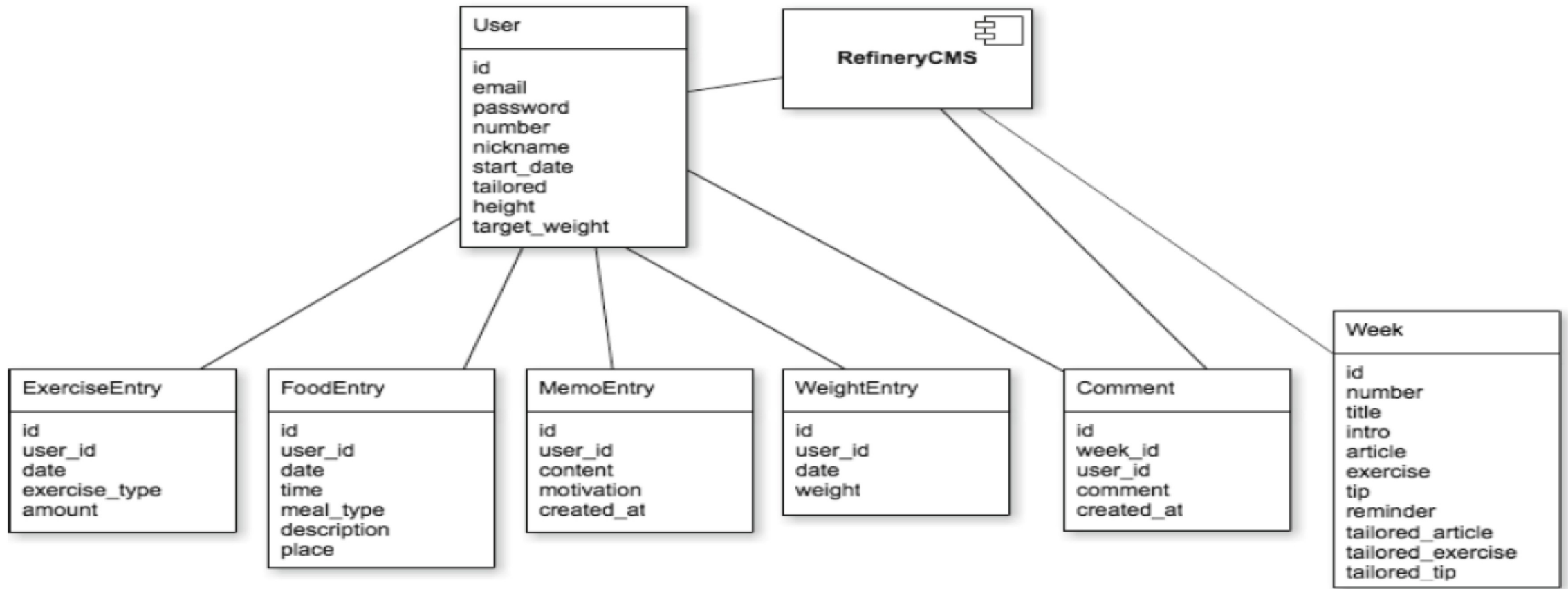
Viikon vinkki

Pussillinen irtokarkkeja (200 g) on noin puolet laihduttajan päivän energiantarpeesta.

[Twiiittaa #muutosmatka](#)

  UNIVERSITY of OULU OULUN YLIOPISTO  SUOMEN AKATEMIA  SOSIAALI- JA TERVEYSMINISTERIÖ 

Onnikka architecture



Basic Functions of Onnikka

- Each week a **weekly article**, **exercise**, and a **task** were provided relating to the topic at hand. Weekly rhythm was unchangeable
- To track their behavior change progress, users could submit entries about their **weight**, **mood**, **exercise**, and **eating habits**
- Onnikka sent **weekly e-mail reminders** to participants on Mondays, and if they had not logged into the system, another message was sent on Thursday during the same week
- Social learning was implemented via a **discussion forum** attached to each weekly health information section. Users are able to share their thoughts anonymously using pseudonym

User interviews

- Total of **43 interviews** were carried out in **three different circles**
- The strategy for choosing the interviewed subjects was to obtain as many different voices as possible, but at the same time to keep a balance between males (n=21) and females (n=22); subgroups A (n=15), B (n=14), and C (n=14)
- Interviewed subjects' age ranged from 22 to 61 (M=47.1), their baseline BMI ranged from 27.2 to 34.8 (M=30.5), and total number of logins ranged from 2 to 500 (MED=61)
- The **weight results** for the twelfth month were collected and also **use data** for the whole intervention time were gathered

Results - self-monitoring

- *Self-monitoring* was perceived as a beneficial persuasive feature among the users who achieved 5% weight loss
 - **Subject 7:** *Well, here [in the Onnikka web system] you can record the exercise and weight, so these are motivating. There isn't anything else that motivates you more than when you see you're losing weight all the time you know. One needs these kinds of facts. It doesn't help if you go on the scale once a month, and if you don't remember how heavy you were previously. But when you come here and you look, when you see that graph... that's the most important thing; it motivates you the most. The food diary doesn't motivate at all. I've told those girls [healthcare professionals in the counseling group] that I last used it on the 4th of April, and it sure has stayed that way. Because for me it's not important to start typing in my breakfast, lunches, dinners, snacks. It doesn't give me anything. It's too difficult, there are too many things. Like if you select a meal type, there are six different options*

Results - reminders and tunneling

- Among all interviewed subjects *reminders* and *tunneling* were also highly valued persuasive system features

→ **Researcher:** *What features are most supportive in your lifestyle change?*

Subject 22: *It's this stable continuity, when there is something to do all the time, and if I'm too busy to do weekly tasks in that particular moment [on Mondays], I'll get another reminder after a couple of days, and that's the time when I'll go and check it.*

Results - credibility

- Onnikka was perceived as highly credible mostly because of the familiarity of the institutions (university and hospital district) responsible of developing the system
 - **Subject 2:** *I consider this a more trustworthy source than, for instance, yellow tabloids. It's like when you have a doctor who is putting his reputation on the line, and you know there is no commercial interest behind it. I feel this is trustworthy. When you know who has designed it, and where it was designed. So for me, those things are meaningful.*

Results - social support

- The need for social support appeared to grow in importance through the duration of the intervention, and it was named as one of the reasons for not using the system particularly by subjects in group C
 - **Subject 29:** *In the beginning, it was great [using Onnikka], but eventually it started to feel so lonely doing it all alone that I got bored. I wish we would've met even once as a group, or there could've been at least a chat possibility. I followed the instructions for lifestyle change, and I don't need Onnikka anymore for that. I got what I could get.*

Key Takeaways

- Self-monitoring is not a clear-cut case, as all the tools offered by Onnikka were not used and perceived homogenously, even among high adherers
- Reporting a social support feature as part of the intervention might not say anything about whether it is actually being used
- People who *do not need* the system and the ones who *cannot use* the system are counterpoints that should be addressed differently
 - Reasons stated for not using the system were lack of time, challenging life situation, or health concerns
 - Several individuals perceived they did not have a need for the system, or it had only a minor supportive role in their lifestyle change process

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