b-SLIM

Creating a digital super coach that helps overweight people achieve sustainable weight loss

According to a recent Eurostat study 1 out of 2 Europeans suffers from overweight; and 1 out of 6 is considered obese. Clearly, overweight and obesity negatively impact people's quality of life and are often at the basis of other illnesses such as diabetes or sleep apnea. Yet, for many overweight people, achieving sustainable weight loss proves to be extremely difficult.

With the advent of smartphones and wearables, a new mobile health (mHealth) industry has emerged – with various apps and devices trying to educate people on how to lose weight and keeping them motivated. But existing approaches are typically restricted to tracking a single parameter (physical activity, for instance), which limits their effectiveness. Hence, the b-SLIM partners explored the creation – and effectiveness – of a digital super coach for overweight people that can work with any device to take into account a variety of inputs (physical activity, nutritional data, etc.), and providing truly personalized advice; a digital super coach to help people lose weight in a sustainable way.

"With b-SLIM, we primarily wanted to investigate whether using an app solely can lead to sustainable weight loss. In order to achieve this, we wanted to create a holistic mHealth platform that works with data from various sources and devices and that leverages complex algorithms to translate those data into personalized advice," explains project lead Steven De Peuter (BrandNewHealth). "Bringing together parameters as diverse as physical activity and nutritional data in a single, user-friendly app is something that had never been done before."

"But the mere fact that we explored uncharted territory also presented us with some unforeseen challenges," adds research lead Karin Slegers (imec - KU Leuven). "We experienced, for instance, that setting up our user study – which held the middle between a clinical trial and a use case – requires new approaches and frameworks. And even though we were using non-medical user data, privacy and regulatory concerns appeared to be more important than originally anticipated. Having tried to overcome those barriers in the course of the project, we think b-SLIM has laid a solid foundation for future mHealth research in Flanders."

THE OUTCOMES

1. Digital super coach and face-to-face approach are equally effective

At the end of their research effort, the b-SLIM partners were able to conclude that their digital super coach is a valid alternative to the classic face-to-face approach when it comes to achieving weight loss: in both scenarios, an average weight loss of 3 to 3.5kg was recorded with their respective test audiences (over a timeframe of three months).

"As far as we know, we are the first ones to compare the impact of a holistic super coach with a classic face-to-face approach," explains Steven De Peuter. "As such, the outcome of this research project – and the evidence that it brings as to the effectiveness of digital tools – is not to be underestimated."

"One key element of our super coach's success is the built-in avatar – an accurate (and often confronting) 3D visualization of the user's body shape. Yet – contrary to what one might think – our test users actually appreciated that straightforward and honest approach a lot; it became a source of inspiration and motivation for them. This concept of continuously providing visual feedback is a very interesting one; we will continue to explore this going forward."

2. Face-to-face coaching reaps the benefit of personal contact, whereas the digital super coach comes with a lower threshold and cost

The b-SLIM project showed that the digital super coach comes with some important advantages, compared to more traditional weight loss approaches – such as its anonymous character, and the fact that you can reach a large target audience at a relatively low cost.

Yet, when looking at how the test audience interacted with the digital solution, the team also discovered a number of constraints. They noticed, for instance, that people receiving both face-to-face and digital coaching used the super coach in a less rigorous way. Not only did they prefer the detailed nutritional guidance they got during their face-to-face appointments, they also looked forward to that 'personal mode of delivery' to ask all kinds of questions. These are important considerations that future mHealth coaches will have to take into account going forward.

3. 'Blended care' is the ideal way forward: a combination of digital & face-to-face

The b-SLIM project demonstrated that the face-to-face and digital approaches both have their merits. However, when comparing the various test groups, the researchers actually found that combining the online and offline approaches (which is often called 'blended care') leads to the most optimal results.

"In other words: health experts and coaches should not worry to get replaced by digital tools; tools such as the super coach will simply allow them to become more efficient and to get an even better view on how their clients are doing. This is really a story of complementarity," concludes Steven De Peuter.

NEXT STEPS

Even though some remarkable achievements have been realized by the b-SLIM partners, they also found that a number of bottlenecks still prevent them from exploiting the super coach's potential to the fullest. One example includes the lack of interaction with the GS1 standard, the database behind the bar codes used on our food's packaging. Using the information contained in these bar codes, the app could provide users with even more personalized feedback – but this will require industry collaboration on a much wider scale.

In the meantime, industry partner BrandNewHealth continues to explore the potential of parameters such as activity tracking and stress management. Some of the learnings from the b-SLIM project have already been included in their commercial coaching platform.

The 3D avatar was used to predict and visualize the effects of weight loss/gain on people's body shape. Future research could focus on getting more insight in the different patterns of body shape changes related to weight loss/gain – which in turn could lead to improved predictions or even more personalized nutritional or physical activity advice.

FACTS

NAME	b-SLIM
OBJECTIVE	Creating a digital super coach that helps overweight people achieve sustainable weight loss
TECHNOLOGIES USED	statistical body modeling
TYPE	imec.icon project
DURATION	01/04/2014 – 31/03/2016
PROJECT LEAD	Steven De Peuter, BrandNewHealth
RESEARCH LEAD	Karin Slegers, imec - Mintlab - KU Leuven
BUDGET	1,420,000 euro
PROJECT PARTNERS	AHOLD DELHAIZE, BrandNewHealth
RESEARCH PARTNERS	Faculty of Kinesiology and Rehabilitation Sciences, KU Leuven; Department of Public Health and Primary Care, KU Leuven
IMEC RESEARCH GROUPS	Mintlab - KU Leuven, PSI - KU Leuven, STADIUS - KU Leuven, Vision Lab - UAntwerp

WHAT IS AN

IMEC.ICON PROJECT?

The imec.icon research program equals demand-driven, cooperative research. The driving force behind imec.icon projects are multidisciplinary teams of imec researchers, industry partners and / or social-profit organizations. Together, they lay the foundation of digital solutions which find their way into the product portfolios of the participating partners.

b-SLIM project partners:

DELHAIZE

brandnewhealth
we change behaviour

AGENTSCHAP INNOVEREN & ONDERNEMEN
Vlaanderen is ondernemen

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