

Aymée: a design exploration in the relation between Physical Activity and Self-image

ABSTRACT

Current research shows health benefits from physical activity during and post breast cancer treatments. However, the diagnosis of breast cancer has a big impact on body image, which often has a negative effect on daily activity and sports levels. Current physical activity products don't relate to this group of women and their specific needs. Through design, we see opportunities for breast cancer patients to enhance body satisfaction and encourage them during and after treatment to being more physically active.

For this purpose Aymée was designed: a smart bra that transforms its patterns, to stimulate the women to feel feminine and beautiful based on physical activities. Through these interactions, Aymée aims to reinforce these women to feel good and be(come) active. In this paper, we describe the design approach and our first findings with Aymée through co-creation with breast-cancer patients. We also discuss the potential we see in designing for enhancing self-image and its relation with physical activity.

Author Keywords

Physical activity; breast cancer; self-image; design.

INTRODUCTION

Suddenly it hits you, the words 'You are diagnosed with breast cancer' have made you from feeling somewhat healthy to officially being sick. You have heard about and seen this happen to other people before, but now it's you. The fact that this is now also happening to you is unbelievable and unacceptable.

The body that you know and have learned to understand and appreciate for decades now suddenly fails you, turns its back on you. Something in your body is causing damage, even life threatening damage, of which you don't know if it can be stopped or cured.

Even though physically you are still connected to this body, you have never felt so disconnected and alienated from it. It will never feel and look the same as it used to be, especially when a mastectomy is on the table. The amputation of the embodiment of femininity, mother ship and sexuality of your female body will affect the appearance in such a way

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that your entire body will become unrecognisable: the body you are carrying does not feel like it is yours anymore.

Acceptance of the alienation is a first, but learning how to trust and understand it again is different and takes maybe even more effort. While this is necessary as the body that betrayed you will also be the one that you have to be physically active with to maximise the chance of recovery and survival.



Figure 1: Aymée

AYMÉE

Aymée is a bra that encourages (former) breast cancer patients to become more physically active by stimulating the wearer to feel more feminine and beautiful based upon their physical activities (see figure 1).

Aymée changes based on the amount of physical activity. When putting Aymée on, it seems to be a 'normal' dark bra. However, when at the end of the day the bra is exposed to the wearer again, Aymée transforms while revealing different patterns based on the amount of physical activities, where more physical activities equal a richer and more detailed pattern.

The transformations within Aymée stimulate reflection moments on the daily activity level. However, by placing

and transforming the presentation of the level on such an intimate and confronting product, a psychological effect is pursued: Aymée aims to complement the overall appearance of the wearer and encourage her to feel proud, beautiful and feminine.

BREAST CANCER AND PHYSICAL ACTIVITY

There is strong evidence that being physically active decreases the risk of breast cancer [1]. Moreover, current research suggests many health benefits from physical activity during and post cancer treatments [2]. The evidence suggests that exercise is an effective intervention to improve the quality of life, reduce the risk of death from this disease [3] improve physical functioning and decrease symptoms of fatigue in (former) breast cancer patients [4]. Moreover, a relation between weight gain and lack of physical activity during breast cancer survival has been found [5]. While weight gain is a common disadvantageous effect of the treatment [5,6,7] and in many studies are related to poorer survival [3].

PHYSICAL ACTIVITY; MEASURING AND FEEDBACK

Currently there are several products on the market aimed at increasing your daily activity, such as the Jawbone Up [8], Fitbit [9], Misfit [10], Garmin [11], etc. These kind of activity trackers measure daily activity and sleep and provide feedback through accompanying smartphone apps. They track daily activity 24/7. Nutrition as well as sleep quality are sometimes even included, sketching a more complete picture of one's state of wellbeing. By creating cognitive awareness about their current lifestyle they try to persuade people to adopt a more active and healthy lifestyle.

Regarding tracking daily activity data, most companies seem to apply the adage that 'the numbers will tell the tale'. Furthermore, they have the notion that 'one size fits all' and that generic standardised solutions will successfully address the needs of individual users. Most people are not good at thinking statistically (i.e., quantitatively), but are good at thinking in stories (i.e., qualitatively) [12]. We therefore question the notion that offering such tracking and coaching devices that lean heavily on data will increase people's motivation to exercise. IJsselstein et al. [13] and Westerink et al. [14] both describe a study in which participants trained with and without a virtual coach, in which intrinsic motivation was not higher with the virtual coach.

Being physically active has everything to do with the body and what to do with it. This seems like a contradiction: encourage being active with the body and also aim to achieve behaviour change by providing a highly cognitive interface and interaction. Part of this way of interacting makes it also very direct and sometimes even confronting as the feedback is always in hard data. For breast cancer patients this might not be the best approach, as their life is already disrupted in many ways. A more subtle approach might be desired, focussing on emphasising a positive self image.

EFFECTS OF BREAST CANCER ON SELF-IMAGE

Many patients diagnosed with breast cancer have to deal with mastectomy (removal of a breast) or lumpectomy (parts from their breast removed). Research evidence suggests that a significant portion of women in the early months after being diagnosed with breast cancer, experienced body image and sexual problems [15] and appear to react to the mastectomy operation with a decline in self-image, although this does not appear until some time after the operation [16].

PHYSICAL ACTIVITY AND SELF IMAGE

From current research we see a strong relation between being physically active, body-image and self-image.

One of the correlations in reasons for exercising for health and fitness is related to increased self-esteem [17]. Being physically active directly stimulates feeling good on hormonal level. So self-image is positively influenced by being physically active (see figure 2).



Figure 2: relation between physical activity and self image

While some articles suggest a lower body satisfaction is not the motivation for engaging exercising but predicts a preference in behaviour that risks weight gain (Neumark-Sztainer et al. 2006). Moreover, when exercising from negative self-image/body-image reasons (weight control, tone) an increased lower body-satisfaction and self-esteem was observed [17] (see figure 3).

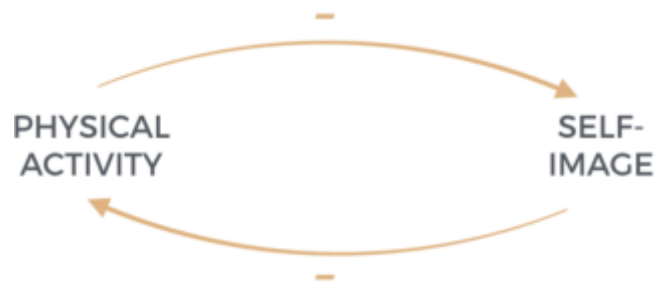


Figure 3: the negative circle relation between self-image and physical activity

So for breast cancer patients, with a decline in self-image, it is important striving to enhance body satisfaction and prevent a further decrease of self-image to eventually engaging being physically active. However, visual effects that contribute to feeling good, such as losing weight, only occur after a long period of perseverance of a new lifestyle.

UP- OR DOWNWARDS SPIRAL

So current research evidence suggests a relation between physical activity level and self-image. Where self-image is

positively influenced by a higher physical activity level. On the other hand, a negative self-image negatively influences the physical activity level and negatively influences self-image again: a downwards spiral can be realised.

Assuming there is also an upwards spiral, a positive self-image should engage a higher physical activity level. Use this upwards spiral as a design opportunity to positively influence self-image based upon physical activities in the short term, to stimulate being physically active (see figure 4).

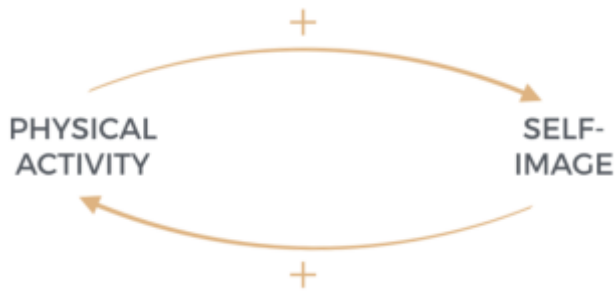


Figure 4: the positive circle relation between self-image and physical activity

With Aymée it became possible to investigate this assumption: it was designed to translate daily physical activity level into lace patterns on a bra that contribute to the overall appearance of the wearer and make the wearer feel better about her physical activity level.

DESIGN APPROACH & RESULTS

In the search for different design opportunities, co-creation sessions with four former breast cancer patients were conducted to indicate different values about physical activity, self-image, feeling feminine and ways to feel feminine. These conversations were not about cancer itself, but how it affected several topics related to being physically active and self-esteem. Through talking with the patients, the value of lingerie and what it could mean for their self-esteem became apparent. These interviews were continued in co-creation sessions where two tailor-made bras were designed: Aymée.



Figure 5: co-creation session with former breast cancer patient

To evaluate what activity presented in patterns on a bra could mean to the wearer's self-image (and physical activity level), Aymée was worn for five days in a row by two women who recovered from breast cancer (50 and 57 years old, reconstruction and prosthesis). To enable the possibility for evaluation upon current used methods (activity level presented as graphs), the patients also wore a Jawbone Up2, a physical activity tracker that communicates the physical activity level within graphs through an application on smartphone. The patients were told this was to calibrate the electronics of Aymée.

After Aymée and Jawbone had been worn for five days, semi-structured interviews were held to reflect upon the different ways of communicating the physical activity level of Aymée compared to Jawbone. Due to the positioning and the way of visualisation it had an effect on the intimacy level, effect on their mood and feeling proud:

About the placement of the visualization on bra: "This reinforces my proud feeling because there is a direct connection with being ill, this increases the feeling of being proud"

"The effect made me feel more feminine and chic, it affects your mood. Feeling proud and fulfilled come first."

"When you have achieved your goal you will automatically glow and you will automatically feel proud because you have achieved your goal and this is different with a graph, because of the visible change of color."

"This you can see. You can also see a graph, but this is closer to me"

"I have an application on my phone that keeps track of my weight and presents it in a graph, however this is different than weighing myself on a scale. I am able to manipulate the graph. The scale has an effect on my mood and this is similar to the bra."

"This is on your body, so it's really something I achieved."

"Whether the bra will change color or not has a bigger impact than the numbers of Jawbone. It is more of a feeling."

"Currently it is a prototype...when it would be beautiful and fit perfectly I think I would feel more beautiful because of the effect on the bra. It affects me more than expected."

DISCUSSION AND RECOMMENDATIONS

By placing the visualization of their physical activity level on their body, instead of on their smart phone, Aymée increased the intimacy level in it's interaction. The feedback of Aymée is therefore highly personal and intimate, and only available to the wearer. This resulted in a more direct effect on their mood and increased the feeling of how they felt about their physical activity level and being physically active. For example they felt a big sense of achievement when their daily goal was made. This could also result in a bigger disappointment when the goal is not

achieved during that day, as the first test also showed. Both are a result of the interactions in such a personal and intimate way.

This, in our belief, shows a promise for designing these types of interactions and feedback of daily activity in different ways than the cognitive interactions most current products offer. Designing a design proposal aimed at enhancing the self-image shows promising results to get more in depth interactions with its users, hopefully resulting in a structural and sustainable behaviour change for breast cancer patients. The assumption that is in question here is whether an enhanced positive self-image based on physical activity also leads to structural physically active behaviour in the future. This needs more research, but the first tests show promising results. Furthermore, we recommend more research through design cases to explore other ways of enhancing self-image and it's result in physical interactions.

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