OUR BODY AS AN EXPRESSIVE TOOL

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Humans were made to move. Many hours in front of a screen leads to stiff bodies and a diminished bodily awareness. The aim of this project was to explore how technology can serve to increase our body awareness and adapt to our physical conditions in everyday life with focus on office spaces. The study is explorative with a user-centered approach and a focus on embodied prototyping, where the user is a subject of design. Data was collected with recordings, interviews, and workshops. Reflexion-on-action, prototyping and iterations lead to the final outcome.

The final concept is a wearable that encourage people to move and stretch out more often and spontaneously throughout the day. It does so by vibration patterns along your spine and shoulders.

The idea of this concepts is to make people move often and regularly during the day; to react spontaneously to a reminder from the body, mediated by the vibrations. The system is thought to be self-awarding; if it feels good to stretch out, to extend the arms, to move – then you will want to do it again.
Without the sensory experience a motoric exercise is just mechanical and the lust and reward for doing the exercise is missing.

/ Elisabet Rosén, Dance therapist
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Magriel (1947), in writing about Duncan, a pioneer of American modern dance, argued that the psychological and instinctual nature of humankind involves the spontaneous movement of bodies in reaction to sensory and emotional stimuli: Though civilization tends to dull and to inhibit this tendency, it is still the fundamental reaction of men to the universe about them. A revival of the conscious use of this faculty would mean deepening and broadening the whole range of life (p. 3).

(Frith, 1997)
We experience our life through our bodies. No matter how much “brain activity” we centre our daily routine around, it is still through our whole body that we experience the world. Even so, today we live in a society where bodily experience has become subordinated to cognitive and mental activities. Our long working hours in front of a screen lead to a passive lifestyle where our connection to our body becomes numb and our spontaneity and lust to move becomes repressed.

Personal interest
Creativity is an incredible tool and a privilege to have. It allows us to immediately express a “moment”, allowing it to be captured and to reflect back on itself and as a result allowing us to better understand ourselves. It’s my impression that most people in their lives don’t have these moments of self reflection; their lives pass them by without the possibilities for them to step back and see what they are doing. As a creative person, I have always used my body as a tool to express myself, whether it’s been using my hands sculpturing and painting, or my whole body language with dancing and theater. While using these different media, my bodily experience has reflected back to me, enriching my process and result!

By being aware of the communication between you and your body we can use this to amplify ourselves and our experience, for a richer life. Throughout my years of practicing meditation techniques I have become much more aware of my bodily experience. I have better understood what my body is telling me and better realised how little society as a whole appreciates this. Most often it is only when we have aches or our body breaks that we start paying it any attention. I would love to be able to give everyone the opportunity to be in the moment and become more aware of what is happening in everyday experience, helping us better understand and accept ourselves and the things our own bodies are trying to tell us.

Technology development
Technology has brought a lot of development and possibilities to us. However, one negative side is the amount of time we spend in front of a screen, passive and with our cognitive load resulting in the physical experience being taken away from us. With technology moving forward, it would be a lost opportunity not to try to further shape it towards our basic standpoint; the body and the fact that we as humans are meant to move.
This project is in collaboration with RISE Interactive, Umeå.

RISE Interactive Institute AB is an experimental IT & design research institute dedicated to the creation of groundbreaking user experiences. RISE offers expertise in interaction design, visualization, user behaviour, sound design, games and entertainment. RISE develops new research areas, concepts, products and services, and provide strategic advice to corporations and public organizations. Their results are developed in close collaboration with industry and society, exhibited worldwide, and brought out to society through commissioned work, license agreements and spin-off companies.

My contact and tutor at RISE is Jeroen Peeters, PhD. Senior Design Researcher.
This project takes its stand in the fact that humans are born to move. My assumption is that dancers are experts in moving, and as they dance their body and mind are conjoined. I want to be in contact with people who inhabit their bodies with awareness and passion, and explore how they do this, so that knowledge can be gained and transferred to others.

I want to look at the way we interact with our bodies throughout the day, using the joy of being in a body as a springboard to getting a deeper understanding of our experience within our body.

My aim is to “capture the subconscious” - our everyday physical experience, which is normally secondary to mental awareness and can often go completely unrecognised - and make it a primary experience. That can benefit anyone, not only physically, but mentally too.

The goal of this project is to explore how technology can serve to increase our body awareness and adapt to our physical conditions in everyday life with focus on office spaces.

I must explore how data can be created by our physical movements and translated into something that can be beneficial to us in our everyday life.

My vision is to create a concept that elaborates on the theory that I will explore in my research, showing how it might work in our daily life to embrace the experience our bodies are offering.
This project is explorative and has a user-centered approach with the user as a subject of design. Methods used are interviews, video recordings, motion tracking, workshops with experts and possible users in combination with my own experience and user prototyping involving movements. Reflection upon my and other’s actions, test and retest of tools, synthesizing and decision making lead the process towards a final outcome.
During this research phase I have looked beyond the object (product) I am designing and explored the user as a subject with their needs and wishes and most of all their experiences in daily life. As Redström (2006) states “there cannot be users for objects that do not exist” it is important to understand who we are designing for to be able to adapt the design to the people and not the people to the design.

I have in this project put focus on how people around me perceive their bodies, their experience of inhabiting their body and their expression of it. Most of all I have placed an emphasis on what mindset people have, when interacting with the world with energy and spontaneity involving physical expressions and emotions.

**How can we make people more bodily aware?**

**How might we design for physical expression of bodily awareness?**
What is a good movement?

If the movement correlates with the feeling inside or the feeling in the music then it’s a good movement. /Emmelie, dancer

The dancer I am collaborating with is a girl of 18 doing her last year at UIG Umeå Internationella Gymnasium with focus on dance. For her, dancing is about feeling acceptance towards herself and to allow herself to be spontaneous and not set boundaries for herself. At her school they learn to work with movements and dancing starting from the inside and then explore different movements and choreography. The process is often in groups and there is no such thing as a bad idea or a bad movement. They often start with a feeling based on a song and explore the dance from that, if the movements in the dance correlates with the feeling in the song the outcome is good and by this she hopes to touch other people with her/their dance.

After a lesson lasting 70 minutes she has an invigorated feeling in her body and mind and she feels energized and motivated.

She also describes the atmosphere with the other girls in her class as very positive with high energy levels. The acceptance for what you can and can’t do is also higher than with her other friends: “you can laugh out loud when we are out in town and can basically do anything!” “It is very open what you can do and I feel I don’t restrict myself”. This is something she can relate to by being more insecure before she started dancing. With the confidence she has gained from dancing it has taught her to become more open, to dare to meet new people, to not restrict herself, but to act daringly and to follow her gut feelings. Feeling safe for her is when you are with people you can feel comfortable with and be spontaneous and when it is not about acting in a certain way or being judged by your look.

In the winter it can be a bit hard to find the energy for the dance lessons. They often start their warm up sessions in the winter to reflect these conditions, starting with low slow floor based exercises before building up.
In school she has created a monologue based on an experience in her life, the monologue will be based upon choreography she has written herself.

Dance sequence 1
Based on feelings from the monologue we set up a short dance sequence (see Fig. 1). The feelings she wanted to express during her dance were frustration, resistance, regret and sadness. We decided to use black cubes in the dance to emphasize the feelings and also to bring in a representation of the interaction with design.

Dance sequence 2
We also created a short sequence based on feelings more opposite to the first emotions; joy, lightness, fluent, flow and adherence. Here we used light fabric in pastel colours.

Prototype
I used an Xbox Kinect connected to Processing and a film camera to capture the dancing.
THEATER GROUPS

How can we become more bodily aware?

Extending the body outward paradoxically extends attention inward, resulting in an intense and in-habitual focus on internal physical and emotional states.

/ Move to Design / Design to Move:
A Conversation About Designing for the Body

THEATER CLASS

I met with a theater therapist and two adults with mild disabilities who are meeting every week to work on a play. They are at the moment setting up a Romeo and Julia play.

Warm up exercise
They started the class with a mirroring exercise where they had to mirror each others movements. One would lead followed by the others, suddenly the leading role would change and someone else would take the lead, this transition happened very smoothly and without any visible signals of what triggered this change of leading role. It seemed like someone would suddenly decide to lead and the others would follow along. It was almost like a quiet and slow dance where the participants would fall into each other’s movement and create patterns together. It was fascinating to watch.

Reading text on stage
They would then work with the text from the play and turn it into their own words and expressions. Repeating the text it would gradually change together with body language and expressions on stage. I noticed that the actors were very in the moment pronouncing every word with expression and involvement. They were very aware of how they arranged their bodies and tone of voice. This ability to be in the moment was very capturing for me as an audience.
MEETING WITH SENIORS IN AMATEUR THEATER

I meet with three ladies from an amateur theatre group called Old-Lady-Theater.

Improvisation theatre
We talked about how Improvisation theatre gives you tools to navigate and improvise in situations whatever happens, also in daily life, and that you learn to embrace whatever comes along. “You create a creative flow in this exercises, you learn to open up and not censor yourselves - it’s less about prestige and more about just having fun” one of the participant says.

Getting older
We also talked about aging, and how they look at aging as something very positive.

Young girls today have it more difficult than ever, they feel so much pressure, when I was young getting a grey hair was a proof of the experience you had gained in life, it was a good thing getting older and wiser, I don’t know if it is like that today? For me getting older makes you richer in almost every aspect of your life, you understand so much more, and therefore more fun to have a conversation or watch a movie. She also says that when you turn 60 you become invisible at work, and a lot of her friends tell the same experience, she felt lucky that she was told this by a friend before it happened, then she didn’t have to feel it was her fault and she didn’t take it personally.
I met with dance therapist Elisabet Rosén. People come to Elisabet’s treatment because they feel troubled and have lost their joy in life. “To awaken their self confidence and their joy she aims to activate their body and their sensors; these are the building stones to our emotions” she says. “It’s our sensory experience that brings lust and vitality and the way back to ourselves and our happiness in life”. Without the sensory experience a motoric exercise is just mechanical and the lust and reward for doing the exercise is missing. It is the sensory experience that is interpreted and translated into emotions for us and it is in the sensory experience our vulnerability and sensibility lies and it is also here we have the ability to grow.

Elisabeth says that to make people move who aren’t used to it, first you should start with movements they are already familiar with on a daily basis. It can be what they do for a living or hobbies like knitting and walking the dog. You can even begin by sitting down and just moving your arms to get people started. It’s important to start slowly and make the person feel safe with the exercise, it can be almost like a play where the patients use their imagination and build a scenario based on a daily context or an experience that happened in the past. Having a clear structure helps to make the patient relax - some of them are really scared in the beginning. If the patients concentrate too hard they forget to breathe. Moving at a speed the patient feels satisfied with, the exercise becomes fluent and comfortable, the patient feels safe and remembers to breathe properly.

“When you match your movement with what you experience in that moment vitality is created” Elisabet says. Our emotions are there to make us heard and seen by ourselves and our surroundings. When this takes place the “message” has been received and the emotion is being transformed into something else. What many experience when this transformation happens is a whole ‘new world’; a feeling of expansion and lightness in body and mind.

Exercise
Elisabet showed me an exercise that was built on a movement I expressed with my hands when I was explaining my project (see Fig. 3). Together we stood on the floor mirroring each other, building from the movement involving our whole body. I was able to take the lead if I wanted to but I was happy with mostly just following along in her pace and learn from how she tweaked the expressions in different ways by looking at her hands and emphasizing the movements in different ways.
INSIGHTS FROM INTERVIEWS

Dancing is about acceptance towards myself and to allow myself to be spontaneous and not set boundaries for myself.

/ Emmelie, dancer

Themes
When analysing the interviews three themes emerged:

*Openness* in emotions and opinions and reflected in an open and extended body language inviting the surrounding into personal space.

*Spontaneity* in translating emotions and experience into action and expression.

*Awareness* about what they feel and experience and how they express that.

One thing that these ‘bodily experts’ all have in common is their instant physical expression and translation of their experience (senses, emotion) and their spontaneity with lack of fear and judgement towards themselves and others. They are simply in the moment, and they act and feel accordingly to that situation, without being anxious about the surrounding’s reactions and judgement.
Figure 4. Map of values to enable movement.
INGREDIENTS FOR PHYSICAL SELF EXPRESSION

Based on the insight from my research I created a base (see Fig. 4) for what I learned is important ingredients for enabling people to move and express themselves with their bodies. The different ingredients are:

**Knowledge**
People who have a basic knowledge about body language and how we perceive certain gestures and aesthetics can benefit from that knowledge, make themselves understood and express themselves. In this way you are more likely to reach success in communication with others. It can also help you understand how different postures and movements can benefit you and affect the way you feel. For example, if you feel insecure expanding your body makes you feel more calm and self confident (Cuddy, 2015). By being confident we are more likely to stay present and read our surrounding accurately.

**Input**
To get the impulse to move, you need an experience of a sort. It can be an emotion, a reaction triggered by others, a song or some other inspiration that makes you take action.

**Confidence**
By empowering people and encourage individuality we can create surroundings based on acceptance for each others differences and open us up for spontaneity, creativity and physical expressions. (Maslow's hierarchy of needs). Working from inside and out starting with peoples inner feeling of safety will be my approach in this project.

**Habits**
The more you are used to moving your body the more likely you are to repeat that behaviour throughout the day. Hopefully also in new ways and new situations. I also discovered that small triggers would cause a chain reaction for moving. Once people got started using their bodies actively in a game or exercise, - even if the activity was only a few minutes long, they kept on being active even after the activity had stopped.

**Awareness**
You are more likely to have a pleasant and rich experience if you are aware of your body; what is going on inside yourself and the surroundings. Being self-aware makes you more in the moment and you are more able to react spontaneously and with sincerity. Based on my own experience; when you are doing something with honesty and openness people tend to respond back to you with interest and an open mind.
**Motion tracking**

*What will a motion visualisation trigger in a work environment?*

The first test I did was to set up a bigger screen in a studio where people spend a lot of time in front of a screen (see fig. 5). It was in the afternoon and I wanted to see if the screen with a digital representation of people walking by would trigger some sort of reaction and engagement physically? I did manage to trigger engagement, people got involved and started to move in front of the screen and the energy level raised quickly. One of the participants said: awesome, before I was tired!".

**Reflection**

I evaluated the three different levels of abstract representation on the screen: "too abstract is boring and too realistic is to intimidating" one of the participants said. I did however see that it was more about achieving different movements on screen and the visual feedback of the movement rather than the experience of the movement itself. The test did however result in engagement and interaction with others.

**Motion Diary**

*What will happen during the motion tracking event? What happens when seeing a digital representation of your movement afterwards?*

The second test was using the Kinect to track a person working by his desk in the morning. I wanted to capture a ‘normal day at work’. I tracked the person working by his desk and then filling up his water bottle which is part of the daily routine. I wanted the test to go on long enough for the person to almost forget the tracking was happening. I used the screen capture in Quick time player to record what the Kinect was capturing. I then cut together the parts in which the user was being more active in his movements into a short movie. He then watched the movie the day after. In the interview when showing the movie the person said he had been more active with his body since he knew the “capturing” was happening, more aware of the posture and stretched the back more often. When seeing the movie clip he recalled the movement.

**Reflection**

I think this test was interesting in order to find out how the fact that the user was aware of being “captured” might affect his behaviour. Also what the reaction would be when seeing the record of himself a while after. It seems like the “capturing” during the event had a positive impact without influencing the persons work flow in a negative way. The fact that the person could remember the movement that happened 1,5 days earlier when seeing the screen record is pretty remarkable.
Figure 5. Xbox Kinect motion tracking prototyping.
My motion tracking using the Xbox Kinect was interesting and I felt it has given me valuable insight. I felt however that I, as a designer, became only the observer. I needed a way to start involving myself and my own body in the process. I started exploring using elastic fabric to involve myself and body movement in the process (see Fig. 6).

**Change of direction**

When I reflected upon my meeting with dance therapist Elisabet Rosén I realised that the sensory experience must be involved in the prototype experience already from the beginning. As Rosén says: “without the sensory experience a motoric exercise is just mechanical and the lust and reward for doing the exerciser is missing”. So the experience with our senses (sight, smell, taste, touch, hearing) should rather be a starting point and the movement subordinated to the sensory experience (see Fig. 7). I also decided to focus on tactile sensations. I have a few reasons for this; our senses of sight and hearing are overloaded in today’s society, the prototyping I did with the Xbox Kinect were all based on visual feedback, and the insights I got from that is that even if it seems to bring some awareness on ourselves and our movements it does not seem to take us back into a bodily approach, but rather create an external

**CONCLUSION FROM RESEARCH**
view on ourselves. I therefore want to explore more what we experience in our body, based upon a feeling like our tactile experience; whether we feel tense, cold, warm et cetera, hoping that this will bridge the mind-body gap more. This also seems more suited for a context when we spend a lot of physically passive time at our desk.

**Insight**
One of the biggest challenges in this project is for me to bridge the mind-body gap. My aim is to explore without thinking so much what I am doing and then rather reflect afterwards upon my actions. Involving my body like this is something I am not very used to doing, but something that I feel is very important considering the nature of this project. I realise however that I need to find a middle ground where I can both observe (intellect) and at the same time involve my bodily experience in the process.
IDEATION PHASE
To get started with my Ideation phase I created a workshop with seniors from the Old-Ladies-Theatre amateur group. I asked them to prototype a joyful experience that they had have in life.

**Process**
As a first step I asked them to pick an experience they had or something they do on a daily basis that they enjoy doing. Then I wanted them to point down how they felt in their body (body sensations) during this experience. They were then asked to make a prototype for that experience to be transferred to someone else to experience the sensations. As a last step I also asked them to add one body movement to perform when using the prototype.

**Result**
The workshop turned out to be rich and the participants were very involved with movements (acting), sound effects and prototypes. One thing that struck me was that two of three stories involved lifting your arms over your head. This is a movement we do when we feel powerful in the moment called *Pride*, studied by Jessica Tracy (2008).

**Insight**
Capturing the body sensations, especially from an experience based on a memory turned out to be pretty tricky. For me this shows that we don’t put much emphasise on what is going on in our bodies during an experience.
I conducted interviews with possible users, the questions were based on the three themes found in my research: openness, awareness and spontaneity. I wanted to understand how aware people were of their body throughout the day and how spontaneous they felt expressing themselves with body language in conversation with others inviting people into their personal space. I also wanted to find out if the interviewed ever experimented with their movements and use of their body to adjust or manipulate their mood and feeling for the day and weather they could see any correlation between how they felt and how they moved.

Outcome
I realised that the awareness of the interviewee’s bodies throughout the day was pretty low, so was also their knowledge to deliberately navigate in social context using body language to reach contact with others. One of them said that their shyness would be mistaken for arrogance as an example of this.

Even though the interviewee’s understood the benefit of body awareness they all acknowledged the difficulties of reaching/maintaining this state throughout the day. Especially when stressed, focused or surrounded by other people. I realised that many don’t see the powerful resources that lies within body language and how this could help us to communicate with others, even more so in situations with people we have less personal relationship to, like colleagues or when we meet new people. But I also realise that people don’t see the possibilities that lie within communicating with ourself using body language. By using our body language we can actually change the way we feel about things, expressing how we feel in a physical way transforms the emotion into something new as Elisabet Rosén says. Independent of whether anyone else is looking (Cuddy, 2015).

Generating ideas
My aim was to translate the interviews into Personas, however it turned out to be difficult to shape the interviews into general conclusions because of the diversity of the people interviewed. I did instead decide to treat the interviews like individual stories and ideas generated upon these personal stories and my initial research.
Ideas pinned to the wall.
I made four experience prototypes to test and evaluate. I evaluated and selected my ideas based on aims in my brief, research findings and the needs and wishes expresses in the interviews. The different prototypes had a personal story connected to them from my interviews.

The prototypes were based on my three themes; openness, awareness and spontaneity, all focusing on body sensations:

- trigger physical expression and open up your body language to the surrounding
- trigger awareness of your body.
- get active and spontaneous with your movements
This prototype was based on one of my interviews about body language. The person describes himself as shy yet confident, his shyness and closed body language would then be mistaken for arrogance. I thought of making a prototype that would trigger someone to open up their body language; inviting people into their personal space, still giving room for integrity and individuality.

The prototype is built with elastic fabric, when you stretch out your arms it triggers a vibration motor connected to an Adafruit Flora board. The vibration is meant as a positive feedback of your action, it gives your back a stretch and a rest and opens up your body to the surrounding. At the same time it is making you relaxed and calm as extending our body language into power poses decreases your cortisol level (stress hormone), making you more present and in the moment (Cuddy, 2015).

User testing
The feedback from this prototype was positive; people understood its purpose of opening up your body language to the world. Some technical obstacles opened up for ambiguity and personal interpretation of which movement would trigger the vibration feedback.
AWARENESS

A tingling and thrills in your body is part of the reward when you are doing something exiting and a bit scary. /senior, amateur theatre

It gives me the goosebumps, and it makes me straighten my back and be more aware of my body. It works very well! /user tester

This prototype was based on a story of a skyscraper in New York told in my body sensations workshop. The buzzing city and the fact that the experience was 60 floors up contributed to the exiting and a bit scary experience. When we challenge ourselves to do scary things we grow and feel alive. This can sometimes be experienced as a tingling sensation along your spine and it awakes your body and all our nerves are connected to it. The spine is the core in our body and an important base for our physique. It also has a significant value in meditation techniques to reach balance and awareness in body and mind.

The prototype has a tingling sensation along your spine to bring awareness of your posture and also the experience you have when doing something scary, it is built with plastic balls going along your spine in channels sewed into a shirt. You move the balls by pulling a thread.

User testing
When testing the prototype people said that it helped them straighten their back and become more aware of their posture. It was also surprisingly convincing as the act of stroking someone’s back which reminds you of treating your body with compassion and empathy.
This is a dance prototype based on one of my interviewee’s wish to turn the act of dancing into a more impulsive activity more based on spontaneity rather than intellect.

The prototype consists of four vibration motors connected to an Adafruit Flora board attached to your hands and ankles. The vibration then vibrates randomly accorded to the tempo in a song. The person dancing is then supposed to move the body part given the vibration feedback.

**User testing**
When testing the prototype the person experienced big progress in expressions with movement (dancing). I could also see the movement becoming more free and experimental as the experiment went on.

The person experienced a positive feeling in giving away the responsibility to the device not having to plan ahead in the movements. Also when the device was turned off and only music remained the person expressed: “now my brain is trying to reconstruct the experience, I am now aware of having four or five different body parts I can move individually, whilst normally I would look at my body as one single part”. 

**SPONTANEITY**

*I want to connect more to my body, be a bit more spontaneous and impulsive in my movements when expressing myself, especially when dancing.*

/interviewee
This prototype reflects your movements giving a direct feedback. The idea comes from the physical sensation of water drops on your skin, this sensation awakens your body tactile senses and reflects your movements.

The construction is made of metal plates sliding along your arm along fabric stripes. The metal plates are supposed to give a tingling and pleasant sensation during body contact and also reflect your movement of the arm. The idea is to bring out a pleasant experience for the user based on the interviewees’ connection with nature and feeling calm and awake.

**User testing**

It was difficult to make this prototype to work and to make the metal plates always stay in contact with your skin. Having them slide smoothly without getting stuck required a lot of adjustment and individual fitting for different sizes of people. I also saw how it would be difficult to develop the concept further without adding weight and sound, something I found to be too intrusive and wanted to avoid. I therefore decided to exclude this concept from the process.

How is the sensation of water drops sliding against your skin in the summer rain?
CONCLUSION OF IDEATION PHASE

I decided to combine the awareness prototype with the openness prototype for further development towards a final concept. The spontaneity prototype has a lot of qualities to it but still feels like an activity separated from my office and everyday context.

The awareness prototype brings back the attention to your body with focus on a pleasant experience and a gentle touch. The openness prototype deals with social constructions of our body language and how we with help of design can shape human behaviours and norms.

I decided to replace the stroking of the back with vibration motors. These are easy to prototype and test, and after talking to physiotherapist vibration seems well fitted for the purpose of creating a tactile feedback onto your body that can trigger and activate physical movement (Gilman, 2002).

What does it add?
Lower back pain, shoulder and neck pain constitute a major health care problem in the western world. Too many hours in sitting position along with decreased physical activity are strongly related to these problems. The idea of this concepts is to make people move often and regularly during the day; to react spontaneously to a reminder from the body, mediated by the vibrations. The system is thought to be self-awarding; if it feels good to stretch out, to extend the arms, to move – then you will want to do it again!
CONCEPT PHASE
FURTHER DEVELOPMENT

On decided to combine the awareness prototype with the openness prototype I further developed a combination towards my final concept.

User testing
I did tests on people backs by pressing my fingertips in different directions and patterns. The people I tested on were randomly chosen and I had no previous knowledge of their bodily perception and awareness.

The purpose of this test was to see how people responded on stimuli on their back that then could be translated into the behaviour of vibration motors. It turned out that people’s reactions were very similar to each other. People experienced pushing their backs as pleasant. When starting from lower back moving upward it lead to correction of their posture. When starting from shoulders and moving downward along the spine it had a relaxing impact with releasing shoulders. It turned out to be pretty difficult to make people lift their arms and extending their body, to create this activation of movement I had to use the feedback on the back as a reward.

I also asked one of the participant trying out this exercise to perform the test on me so I could experience it for myself.
VIBRATION PATTERN

The result of the back test was combined into a movement pattern for the vibration motors at different speeds, directions and patterns that would be triggered in different situations. Of the seven participants I tested it on, only one deviated from the rest. This was a person who showed increased awareness of the body and also had skills and behaviours including agile movements and dances. I therefore decided to focus on the six remaining participants to build the patterns of the vibrations.

I decided to focus the patterns around the spine because it is the “centre” of our body, it was also here I got the most positive response when testing on people. It was difficult to make people activate themselves and lift their arms out/up. I therefore decided to use the “Relaxation” pattern as a reward to make this happen.

**Vibration pattern - Activation**

When starting at the bottom of the back moving upward on both sides of the spine people corrected their posture. This is also how we activate our muscles when we straighten our posture, by starting from the core muscles and moving upwards. I wanted by this make people aware of their posture and the rest of their body, getting a change to stretch out back and arms, and also take a micro break.

**Vibration pattern - Relaxation**

When stroking from shoulders downward people released their shoulders and relaxed (also involving breathing). I decided to use this patterns as a reward like someone stroking your shoulders and back, when stretching out your arms to encourage people to stretch. The pattern also reflects which arm you are moving.
I made a vibration prototype to be able to test the experience of vibrations on your back. I used an Arduino ADK board to attach and programme 14 vibration motors in different patterns and speed. I added a remote control connected to Ir sensor to simulate vibrations when people moved their arms. When I tested the prototype the response was very positive, the vibration sensation along your shoulders and spine is a pleasant experience that I and other people enjoyed. The speed and frequency also make a big difference in how you experience the vibration. The experience on the shoulders are more local whilst vibration on lower back is more general due to sensitivity and sensors on our back (Gilman).

How does it work?
Attentiveness to the body can be increased by tactile stimuli or vibrations. The sense of vibration results from oscillation of objects placed against the skin. These signals are mediated by receptors in the superficial and deeper layers of the skin, between layers of muscle, and in periosteum (Gilman, 2002). Vibrations placed over the vertebral spine and the shoulders stimulate the underlying muscles to contract and the body to extend from a leaning position. A shift of attention to this movement will occur; a shift to our inner world, and thus reconnect us with the body.
The spine has an important cultural role and in our strive for a good posture we think of it as something stiff, hard and static. I propose a new view of the spine as something more organic, dynamic and adaptable for further development with this prototype.
My final concept is a wearable in shape of a shirt. The shirt is meant to be worn on a daily basis to increase awareness of your body and to actively encourage you to move. The shirt will give you a pleasant reminder and positive feedback in the form of vibration patterns along your spine and shoulders to adjust and encourage beneficial behaviours. The wearable is provided with vibration motors on both side of the spine and on your shoulders. The sleeves have accelerometers to detect movements and different speed when moving your arms.

**Functions:**
- Bring your awareness back into your body regularly throughout the day with pleasant experience
- Trigger physical activity and extended body posture by positive feedback

**The product is meant to encourage:**
- You to bring in micro brakes into your working life.
- The adjustment of your posture.
- The stretching of your shoulders and upper body.
- The increased confidence from doing power poses.
- The decreased stress levels from doing power poses.
- You to get used to extending your body posture and open up your body language to the surroundings.
- Overbuilding gap between passive work hours and active free time.
The wearable gives you regular vibration throughout the day to bring your awareness back into your body. The vibration patterns looks different to trigger different behaviours and activities. Intensity speed and types of vibration patterns also differs based on time of the day and activity (movements of arms).

**Direct feedback to your body**

The vibration feedback onto your body is aimed to be a direct feedback to stimulate and energize your sensors and tactility. The vibrations communicates directly to your body for a responding action without having to go through the cognitive filter of thoughts and decision making.

**Rebuild gap between passive and active**

The concept aims to rebuild the gap between our passive screen based working life and our free time meant to be active and maintain our physical health. With gentle reminders throughout the day the awareness and movements of the body is constant and not just something that is meant to be switched on as soon as we leave work. It gives you a reminder with emphasis on joy and lust. By doing this I hope to create habits that makes us more likely to move in our body and inhabit it in a way that is good for us.
Vibration pattern to bring attention back to the body and correct posture.

Vibration pattern as feedback when opening up your body posture.

Strong vibration patterns as feedback for big movements.

Vibration pattern as feedback when opening up your body posture.

Subtle vibration on smaller one sided movement.

One sided vibration on one sided movement.

Vibration pattern to bring your attention back to your body and make you relax.

Vibration patterns to guide movement and bring attention back to the body.

Strong pulsating vibration when still to long to encourage breaks and bring back awareness.
SCENARIOS

Running to the bus
Being late and running after the bus is normally an embarrassing and almost stigmatized situation that we try to avoid. The positive feedback you get when lifting your arm could change your attitude towards the situation and look at it differently. If fact, you are moving and using your body which is a good thing. When stepping on the bus you feel reinforced rather than embarrassed.

Entering a room
Many people are unaware of their body language when interacting with other people. When entering a room with other people you get a vibration up along your spine to activate your posture and be aware of your body language towards others. You also get a positive feedback when stretching out your arms to open up your body language and invite people into your personal space.

At home in the evening
The vibrations adapts to time of the day being more alert during work hours, to then slow down and give rewarding strokes on your shoulders and along your spine when you’re at home in the evening. This to make you relax and calm down but still stay present in your body acknowledging your daily achievements and state of body.
CONCEPT PHILOSOPHY

All humans are born different. In a society where we tend to measure and look for optimal solutions and norms this concept propose a perspective where you as an individual are the norm. The concept is giving you a pleasant feedback in forms of a vibration patterns reflecting your movements and gentle bring your attention back into your body. How you decide to interpret these different patterns are up to you, there are no right times when to drink water or how to stand up. The concept does not push, punish or judge. The vibrations are meant to inspire the wearer to inhabit their body in their unique way. By having your movements reflecting back to you in a vibration feedback I hope for the user to become more aware of their body, it’s movements and also invite the user to start explore and experiment with our movements and physical expression of ourselves. By having your movements reflecting back to you in a vibration feedback I also hope for the wearer to listening more to their body, and learn to understand it and its uniqueness.

Figure 18. Concept video.
We tend to think that moving and vitality is something connected to youth. Ironically young people, especially girls today struggle with lack of confidence, self esteem and feelings that they are good enough. This makes them less likely to express their full potential throughout the day. Our culture’s obsession of youth and its incapacity of acknowledging and optimizing the profession, skills and qualities that comes from aging and experience leads us into a circle of destruction. As one of my interviewee said "When you turn 60 you become invisible at your working place. When I grow up getting a grey hair was something good, it meant that you had learnt something. We don’t look at it that way today."

This mindset of aging leads to a static perspective; a life where time should just not happen, because time ages us. It refers to the body as something to be preserved and kept unchanged. Throughout my research, I have found that many people thinks that becoming older is very positive and enriching. It allows them to truly become themselves and adds a deeper perspective that does not verify themselves by the opinions of other’s.

Good posture and movement of your body does a lot to increase self esteem. Especially for young people, awareness of your body and an open body language could make a big difference in the interaction with other people.

I think that if we look at the body as something organic, something we grow with, that is being shaped by our journey throughout life and is being refined rather than degraded, we are able to look at ourselves with compassion and acceptance and able to bring out our true self.

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**REFLECTION**

**VITALITY**

Dancing is about acceptance towards myself and to allow myself to be spontaneous and not set boundaries for myself.

Emmelie, dancer

*When you turn 60 you become invisible at your working place.*

Woman, Old-Ladies-Theatre
Throughout this project I have used my more than twelve years experience of meditation techniques and eastern philosophy and traditions as a source for inspiration and knowledge. For me these philosophises and techniques have a lot to offer us in habits, perspective and ways of looking and using our body to bring value and enriching our lifes.

All the meditation techniques I have learned teaches the same thing: seek within yourself for guidance and answer. Listen to your body and your body sensations to know yourself and your needs. The techniques teaches you to not base your knowledge of yourself on something external, but from the experience you have in yourself.

Constantly bringing the attention back into your body releases you from stress, anxiety and thoughts that keeps you from knowing your true self. When we get to know ourself and our body we can start using the experience it offers as a tool for creativity and joy, not only in happy moments, but in times of struggle and resistance as well. When we start moving in coordination with ourself, our emotions and intentions we start seeing the world in another perspective. Expressing ourself and how we feel with our bodies brings acceptance and patience and we start to see the amazing creative tool our body actually is.
OUR USE OF MINDFULNESS AND FITNESS APPS

We all know that it’s good to exercise and we all know that it’s good to take breaks throughout the day. We have apps and smart-watches giving us a signal when it’s time to take a break, be in the moment with breathing exercises or do gymnastic movements, there are extreme examples of your screen going black when it is time to take a break, creating panic and frustration. When I talk to people, it has become clear to me the difficulties of following these instructions on a daily basis. If you look at the event in micro perspective the notification is perceived more like a punish, than anything else. The lack of reward and excitement and letting go of the (hopefully rewarding) tasks we are dealing with makes us feel interrupted and disturbed. When our working day is finished we are supposed to have energy left to go to the gym after many hours passive screen time. And when Runkeeper is telling you were much faster at this time last year you feel disappointment, even if the actual feeling whilst running was good. At the end, only discipline, new years resolutions and a great deal of consequence analysis makes us follow these instructions. As a conclusion, this is hard, puts a lot of pressure on the individual’s responsibility and most of all, it’s uninspiring and boring. I also think that it’s hard to take such big jumps between a passive working day and an active free time.

Emphasis on joy
If we can use the working day almost as a “warm up” for the evening when we get the chance to move, I think the spontaneity of moving would come easier. If we can inspire rather than measure I think the whole journey would be much more enjoyable.

Unburden cognitive load
If we can get past our cognitive filter, add some spontaneity and trigger our senses, I think we can trigger our lust to move just because we want to, not because we have to. If we can outsmart the brain, and communicate directly to the body, I think we can trigger movement and activity. And since humans are all for habits, it is easier to get going once we have started.
PROJECT AS A WHOLE

The process
In this project I have learned to prototype from an early stage and throughout the whole project. I have also learned to involve my body and movements in the prototype process. I have been allowed to explore and experiment and to have trust in the process and the directions it will take me.

All the different participants involved in this project has contributed to diversity and richness. It has helped me a lot to be in contact with my 'bodily experts' to not lose track of my body-over-brain perspective and having their stories to fall back on for inspiration and insights. My meeting with dance therapist Elisabet Rosén was an important step in my process since the discussions I had with her helped me to combine body, sensory experience and our emotions and bring it into a daily context with our movements.

Having a project collaborator has contributed a lot in this project with perspectives and insights. It has gained me knowledge about other design perspectives and helped me navigate between different standpoints. It has been especially helpful when involving body prototyping at an early stage of the project and helped me balance between practical and theoretical research methods.

The outcome
I am happy about the research findings in this project that could lead me towards an exciting final concept. I feel that I with my concept am able to communicate a duality between body and mind and to bring these perspectives into light with a concept that is intriguing and up to date with today's technology and social interest.

Further development
The vibration patterns I have prototyped for my final concept in this project is just on a basic level. Next step for the final concept would be to experiment with the vibration feedback when performing physical activity. I feel a lot of potential lies within this area that can be applied in many different fields like the automotive industry, medical products and also as a tool for us designers to work with to develop meaningful product that would enrich people's daily experience in life.
Lower back pain, shoulder and neck pain constitute a major health care problem in the western world. Too many hours in sitting position along with decreased physical activity are strongly related to these problems. The idea of this concept is to make people move often and regularly during the day; to react spontaneously to a reminder from the body, mediated by the vibrations. During this project I have met with ‘bodily experts’ on physical expression and movement. They are all people that use their bodies to express themselves to embrace life and broaden the richness in everyday experience. What has struck me the most is the level of courage and lack of hesitation these people have when embracing every moment and letting the experience travel through their minds and out in the world.

After my research I went from a quick phase of idea generating to build and turn the ideas into prototypes. It was important to avoid staying in an imaginary state but to be able try out and experience the ideas in interaction with the body, movements and senses.

My final concept is an example of how we can use tactile feedback as a way of communicating with ourself and our body without having to go through the cognitive filtering of information. The concept reflects your movements and brings your awareness back into your body. My final concept borrows aesthetics from sport products to communicate activity and reflect my personal style (see appendix A, B, C, D). With this I also wanted to communicate the slightly unconventional mindset in which this project takes its standpoint, in a way that would appeal to the viewer as recognisable and interesting. Finally, the system is thought to be self- awarding; if it feels good to stretch out, to extend the arms, to move – then you will want to do it again!
Thank you to my wonderful course at Master of Interaction Design for your positivity, love and wisdom. I am so happy to be part of this journey together with you!

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APPENDIX C
FORM EXPLORATION
APPENDIX D
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