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Why Would You Run around Chasing a Ball? Embodied and Temporal Emotions during Leisure Time Physical Activity

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ABSTRACT

The emotional outcomes of leisure time physical activity have previously been explored in laboratory experiments. To increase understanding of lived experiences, this paper explores the phenomenon through a qualitative lens, exploring real-life stories of *how individuals experience emotions when engaging in leisure time physical activity*. To illustrate our findings, we present six vignettes reflecting different activity patterns at work and at leisure. Whereas previous research largely focuses on positive emotional outcomes, our findings indicate that both sedentary and physically active adults experience both positive and negative physical activity-induced emotions during leisure. In addition, while previous research has highlighted the calming effect of the socio-spatial activity environment, particularly green spaces, our findings indicate that socio-emotional outcomes may be a key motivator for leisure time physical activity. These findings have significant implications for our understanding of the complexity of physical activity-induced emotions, influencing also physical activity promotion and servicescapes.

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Introduction

Most literature on the relationship between physical activity (PA) and emotions utilizes different affective scales (e.g. Liao et al., 2017) centering on laboratory experiments that capture data during enforced PA. However, generating strong emotions in laboratory settings may not reveal natural responses (cf. Scherer & Fontaine, 2013) due to the unfamiliar laboratory setting and the absence of the socio-spatial activity environment. Thus, laboratory experiments may not be illustrative of natural emotional responses in everyday lives. To advance understanding in the field, exploring lived experiences is essential (Liao et al., 2017). Moreover, a focus on labeled emotions would deepen our understanding of how PA induces emotions (Hogan et al., 2015). Understanding natural, labeled emotional responses from lived PA experience is important in exploring

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the relationship between different everyday activity patterns and PA-induced emotions. These emotions represent motivational constructs and, thus, help us to understand subjective experiences related to leisure time PA (Simonton, 2021). Consequently, this helps individuals to detect suitable PA options and enables different organizations to offer a variety of activity opportunities to meet different emotional and physical needs.

In this paper, we analyze *how individuals experience emotions when engaging in leisure time physical activity*. We define PA as “any bodily movement produced by skeletal muscles that results in energy expenditure” (Caspersen et al., 1985, p. 126). This definition includes, for example, mobility, such as walking or e-scootering (which engages the core muscles), sports, such as swimming or football, recreation, such as rollerblading, or active chores, such as vacuum cleaning or gardening (cf. Freire et al., 2019). Moreover, we focus on *leisure time physical activity* (LTPA)—PA that is undertaken voluntarily and is not work-related. We adopt the notion that lived experience is an intersubjective phenomenon, located between the mind and body in a specific context (Simonsen, 2007). Thus, we explore LTPA-induced emotions through an embodied, temporal lens, accepting that finding meaning in our bodies enables us to explore “the heart” (Prinz, 2004). Finally, we define affect as a general, often positive or negative subjective sentiment, whereas an emotion refers to a complex affective response to stimuli perceived as personally relevant (cf. Lazarus, 1991).

A key way of increasing understanding of LTPA-induced emotions is to explore how emotions emerge and endure in the stories that individuals tell (Tamminen & Bennett, 2017). Thus, we adopt a narrative analytical lens. Our data include 73 interviews with working-age adults describing their daily PA habits. While our findings reflect LTPA, we acknowledge that work activity is likely to influence LTPA. Thus, we recognize six activity patterns among the participants based on PA at work (low, moderate, or strenuous) and during their leisure time (active or inactive hobbies). Based on these categories, we compose and discuss six LTPA vignettes. While we claim no causal links, we seek to illustrate LTPA-induced emotions and the embodied experience in natural surroundings, highlighting the sentient nature of LTPA. In doing so, we draw forth multiple relationships between LTPA and emotions, exploring how activity is linked with embodied emotions.

Literature review

Affective states linked to PA

Previous research identifies several connections between affective states and PA. However, previous findings on PA-induced affect seem somewhat scattered (Table 1), indicating a need for further discovery.

Affective states are most often divided into positive (i.e. pleasing) and negative (i.e. displeasing) based on hedonic judgment (Gordon, 1987). In general, PA is believed to improve affective states (Gauvin et al., 1996) – particularly in subjects who are habitually active (Hyde et al., 2011). PA is also associated with improved emotional valence, energetic arousal, and calmness, particularly when the subject’s pre-activity mood is low (Kanning & Schlicht, 2010). Similarly, higher general positive affect is linked to habitual PA (Pasco et al., 2011); PA may in fact predict positive emotions and increased

Table 1. Previous findings on PA and affect.

	Positive affect or implications	Negative affect or implications
<i>General affective state</i>	PA improves affective states in general (Gauvin et al., 1996) Higher general positive affect is linked to higher habitual PA (Pasco et al., 2011)	
<i>Pre-activity mood</i>	PA improves affect particularly when the subject's pre-activity mood is low (Kanning & Schlicht, 2010) PA can be used to stimulate positive affect (Stenseng et al., 2012)	PA can be used to self-suppress negative affect (Stenseng et al., 2012)
<i>Fitness level and activity habits</i>	PA improves affect particularly in active individuals (Hyde et al., 2011) For physically active subjects, longer bouts of PA likely lead to greater and more activated positive affect (Blanchard et al., 2004). PA may predict positive emotions and increased psychosocial resources (Hogan et al., 2015)	Intense PA induces negative emotions in subjects with low pre-activity fitness levels (Blanchard et al., 2001) Sedentary adults may not experience PA-induced improved affect (Gauvin et al., 1997) Sedentary behavior may reduce positive emotions and lead to lower psychosocial resources (Hogan et al., 2015)
<i>Level of exertion</i>	Positive affect is likely to increase moderate and vigorous PA (Liao et al., 2017)	Particularly in individuals with low self-motivation, higher physical exertion discourages activity (Annesi, 2002) Negative affect is likely to increase light PA (Liao et al., 2017)
<i>Health</i>	Positive affect in itself is an important health outcome (Biddle, 2000)	
<i>Socio-spatial environment</i>	PA in nature is associated with increased well-being (Lawton et al., 2017) PA in nature is associated with stress recovery (Aspinall et al., 2015) Engaging in PA alone may increase calmness (Plante et al., 2007) Engaging in group PA may decrease anxiety and increase positive social connections (Patterson et al., 2019) Green spaces are likely to promote meditative experiences (Aspinall et al., 2015) Green spaces may trigger more intense positive emotions than indoor PA (Thompson Coon et al., 2011)	

psychosocial resources (Hogan et al., 2015). PA also allows subjects to stimulate positive affect or self-suppress negative affect, reflecting PA escapism (Stenseng et al., 2012).

In contrast, sedentary subjects may not experience PA-induced improved affect (Gauvin et al., 1997). Subjects with low pre-activity fitness may experience negative PA-induced affect, particularly following intense activity (Blanchard et al., 2001). Sedentary behavior may even reduce subjects' positive emotions and lead to lower psychosocial resources (Hogan et al., 2015). Similarly, subjects with low self-motivation may find higher physical exertion discouraging PA (Annesi, 2002). However, baseline affective states influence outcome affective states, particularly in intense PA (Blanchard et al., 2002). Similarly, whereas positive affect may increase moderate to vigorous PA, negative affect may increase light PA (Liao et al., 2017).

The socio-spatial PA environment also influences PA-induced emotions. In general, PA in nature is associated with increased well-being (Lawton et al., 2017) and stress recovery (Aspinall et al., 2015), particularly immediately after PA (Thompson Coon et al., 2011). Green spaces are also likely to promote meditative experiences (Aspinall

et al., 2015) and may trigger more intense positive emotions than indoor PA does (Thompson Coon et al., 2011). In addition, PA-induced emotions reflect the social sphere (Tamminen & Bennett, 2017), for example, interaction with coaches, teammates, friends, or group members. Engaging in PA alone may increase calmness (Plante et al., 2007), whereas engaging in group PA may decrease anxiety and increase positive social connections (Patterson et al., 2019).

Overall, the literature seems to agree that PA is associated with the subject's enhanced affect (Biddle, 2000). The existing evidence seems overwhelmingly positive, and PA in general seems to predict positive affect and energetic sensations (Liao et al., 2015). Moreover, positive affect in itself can be considered an important health outcome (Biddle, 2000). However, no conclusive evidence exists to indicate that PA reduces negative affect (Liao et al., 2015). Similarly, PA-induced negative affect seems underexplored. This is surprising, as an underlying objective in much of the affect-related PA research is to enable increased PA through positive affective responses. Moreover, while studies report countless relationships between positive or negative affective states and PA, very few have actually used lived experience and the subjects' emotion vocabulary when exploring the link between PA and affect. Yet, pinpointing the relationship between lived experience and the subjects' natural emotional responses would have practical implications in terms of encouraging the emergence of positive emotions and health-promoting PA (Hogan et al., 2015). To explore lived experience, we therefore turn to literature on embodied emotions.

Embodied emotions

Whereas *affect* is an umbrella term reflecting all *affective phenomena*, emotions are a specific subcategory of such phenomena. Essentially, emotions are labels that individuals give to experiences (Gordon, 1987). We define emotions as componential experiences that include a trigger, appraisal, action readiness, physiological signals, subjective sensations (i.e. feelings), and behavioral outcomes (Diener et al., 2020). In effect, emotions are short-lived reactions to events in our surroundings (Fredrickson, 2013). This approach to emotions has also been adopted in leisure research (cf. Mitás et al., 2012; Rodríguez-Campo et al., 2022).

In understanding emotions linked with LTPA, it is necessary to note that emotions are essentially embodied. Both a somatic and a semantic element are fundamental to emotions (Prinz, 2004). In effect, understanding an emotional experience is inherently linked to the body and the situation. Thus, embodied emotions build on the notion of embodied cognition: the influence of the body (including the brain) on cognitive processing (Bu & Wang, 2020). In practice, the psychological experience cannot be separated from the related physical sensations (Tamminen & Bennett, 2017); the emotion is felt in the body, and the mind recognizes the emotion in the body (Rebughini & Scribano, 2018).

While this paper does not adhere to the feminist paradigm, it would be amiss for us not to acknowledge the extensive research on embodiment conducted by feminist scholars. Based on gendered experiences, feminist research considers the body an integral part of leisure: for example, embodied experiences of physical strength versus weakness,

or traditional versus nontraditional use of the body in predominantly male or female leisure spaces (Yarnal et al., 2006). Based on a largely Deleuzian perspective (Coffey, 2019; Fullagar et al., 2021; Fraser, 1997), which considers affects as embodied sensations (Fullagar et al., 2021) and focuses on what a body can *do* (Harrison, 2000; Fraser, 1997), feminists see the body as an element of relational understanding in any physical culture (Fullagar et al., 2019). However, in a gendered world, the body often becomes the object of body work performed to achieve cultural esthetic ideals (Coffey, 2019).

In general, individuals detect emotions through corporeal cues that link the sensory and the psychological experience to the situated, contextual arena where they emerge (Tamminen & Bennett, 2017). This connection between the body and the experience is fundamental in that individuals recognize patterns of bodily reactions as belonging to a certain emotion, which enables them to label the emotion (Hufendiek, 2018). Individuals perceive emotion cues, for example, through changes in the heart rate, muscular tenseness, breathing patterns, perspiration, or experienced temperature (Scherer & Fontaine, 2013). In effect, we recognize that an increased heart rate is linked to fear, or burning cheeks to embarrassment.

PA can be considered actively embodied (Fullagar, 2008); the body is an essential part of the experience. During LTPA, individuals thus actively recognize the connection between the embodied self and the emotional self (cf. Fullagar, 2008). In general, both the psychological, cognitive component (Lazarus, 1991) and the physical, embodied component (Hufendiek, 2018) drive individuals to maximize perceived well-being. However, emotion is a complex phenomenon. While leisure choices seemingly may stem from seeking pleasure, embodied emotions may also inhibit the exercise of freedom. This can be the case, for example, when an individual experiences guilt or fears pleasure (Fullagar, 2008). Thus, emotions often encourage role-related behavior (Maguire, 2011). Similarly, embodied emotions allow individuals to connect the embodied experience with PA in natural environments (Humberstone, 2011). This leads to a processual account of emotions (Ellis, 1991), which considers temporality.

Temporality of emotions

Apart from the actual experience, anticipation and reflection can influence and even trigger emotions (Lazarus, 1991). With regard to PA, emotions can emerge before, during, or after the activity (Maguire, 2011). This highlights the nature of emotions as motivational, adaptive, and social phenomena (Rodríguez-Campo et al., 2022).

Before activity, emotions play a motivating role. Of course, the motives to be physically active include many primarily non-affective reasons, such as maintaining a healthy lifestyle and keeping fit. Nevertheless, anticipation is clearly linked to emotions (Lazarus, 1991). Anticipation prior to PA can stem from, for example, wishing to alter one's current emotional state (e.g. reinvigoration following a hectic workday) or wishing to maintain a current state (e.g. taking advantage of feeling energized by going for a run) – such as the escapism identified above. For physically active individuals, repetitive LTPA is also a motivating habit; the body learns to expect PA, resulting in rewarding emotions following PA and anxiety following unwanted sedentary behavior (cf. Koski, 2005). In contrast, pre-activity emotions induced by considering LTPA may also

discourage activity (e.g. feeling lazy or having a strong negative reaction toward a certain type of activity).

During activity, emotions play an experiential role; the individual either enjoys or does not enjoy being physically active. Individuals can also feel good about feeling physically bad during activity (e.g. taking pride in a particularly exhausting bout of exercise) or feel good about the outcomes of bad emotions (e.g. enjoying the effectiveness of cleaning while angry) (cf. Gordon, 1987). In addition, the emotions triggered during activity can stem from the activity's surroundings, as indicated above in terms of the socio-spatial activity environment.

After activity, emotions are reflective. In essence, reflective emotions stem from self-consciousness (Leary, 2007). They can emerge based on judgments about what happened during the activity (e.g. a particularly effective or ineffective performance), on the experienced physical state immediately following the activity (e.g. feeling relaxed or energized) or on more external factors (e.g. feeling proud of taking care of one's health).

Analytical framework

Figure 1 illustrates our analytical framework, which is based on the dynamic and temporal role emotions can play during LTPA.

Based on previous research, individuals' fitness level and sedentary or active habits along with baseline affect before taking part in LTPA influence their affective responses. The mind–body connection likely turns into motivation toward certain kind of LTPA. For example, individuals can use LTPA to induce positive emotions or suppress negative emotions (Stenseng et al., 2012). Sedentary adults may prefer low exertion activities (cf. Annesi, 2002; Blanchard et al., 2001), whereas active adults may enjoy longer, more vigorous LTPA (Blanchard et al., 2004).

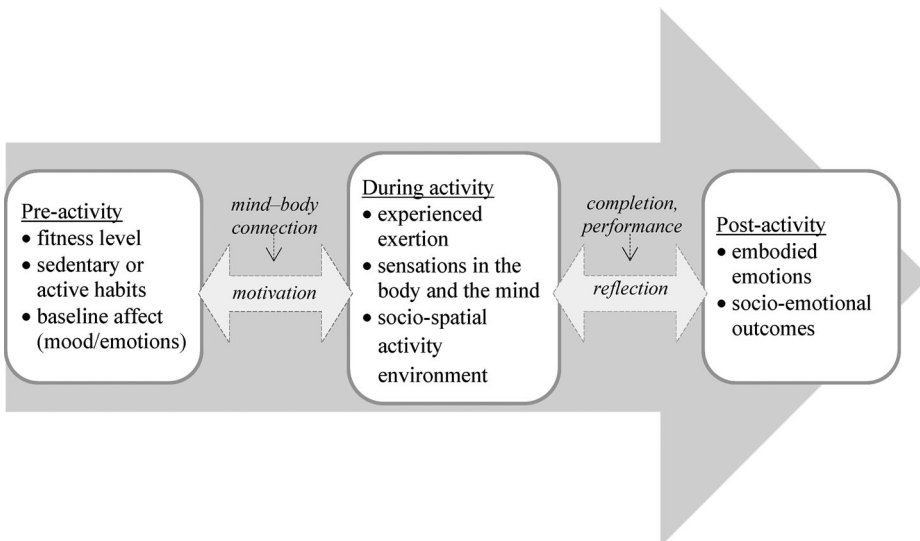


Figure 1. Analytical framework.

Pre-activity fitness level likely influences also experienced exertion and sensations in the body and mind during activity. Particularly low pre-activity fitness level may cause negative experiences and sensations during intense LTPA (Blanchard et al., 2001). Conversely, for physically active individuals, higher exertion may lead to increased positive affect (Blanchard et al., 2004). During activity, the socio-spatial activity environment also plays a role. LTPA in nature, particularly in green spaces (Aspinall et al., 2015) is associated with increased well-being (Lawton et al., 2017). In addition, engaging in group LTPA may decrease anxiety and increase positive social connections (Patterson et al., 2019), whereas engaging in LTPA alone may increase calmness (Plante et al., 2007).

Both pre-activity and during activity experiences influence how individuals reflect on the activity. Whether the activity was completed (e.g., finishing or not finishing the planned route for a run) and how the individual evaluates subjective performance influence the emotions that arise. Physically active individuals engaging in vigorous LTPA may experience positive post-activity emotions likely due to several reasons, such as keeping up with the habit, enjoying the sensation of exhaustion or improved performance. For physically active adults, the bodily sensation of an increasing heart rate during a long jog may be very enjoyable (cf. Koski, 2005). Conversely, sedentary individuals may find exhaustion displeasing. Thus, they may choose to not engage in physical activity, which they predict will be exhausting (Poulton et al., 2002), and therefore likely experience negative emotions following vigorous LTPA. For them, engaging in physical activity with a higher than preferred exertion level, such as experiencing a prolonged subjectively “too high” heart rate, may be very uncomfortable, both physically and psychologically (cf. Lind et al., 2005).

However, previous literature (cf. Blanchard et al., 2001; Blanchard et al., 2004; Hogan et al., 2015; Hyde et al., 2011) seems to suggest that LTPA induces positive emotions in active individuals, but negative emotions in sedentary individuals. This seems too simplistic, as both sedentary and active individuals may enjoy less intense LTPA equally, for example a walk in the forest with a friend. This highlights the potential socio-emotional outcomes of lived LTPA, often missing from laboratory results. Engaging in LTPA alone may help individuals unwind and relax, whereas engaging in LTPA with a friend or a group may serve social needs, and thus increase positive emotions.

In the remainder of this paper, we focus on exploring the relationship between LTPA and emotions based on this analytical framework through exploring working adults’ lived experiences. We pay special attention to the complexity of LTPA-induced positive and negative experiences in both habitually active and sedentary adults.

Materials and methods

We collected data in one city in Southern Finland from the employees of two different workplaces: a retail group and a primary school. We completed 73 interviews in these two workplaces (primary school and retail group, see [Appendix A](#)), reflecting the interviewees’ daily PA habits and resultant emotions (see [Appendix B](#) for the interview protocol). It is noteworthy that both work settings are socially intensive. The workdays are often loud and socially demanding, and even break times are spent with colleagues.

Thus, in addition to the possible physical strain, work in these settings may be mentally exhausting, which is likely to be reflected in our findings.

We incorporated visual projective techniques into the interviews. We showed images of different types of PA (see Freire et al., 2019), such as transport activities (e.g. cycling and walking), exercise and sports activities (e.g. running and football), recreational activities (e.g. throwing a frisbee and playing twister), and active chores (e.g. vacuuming and gardening) (see Appendix C for example photos), and asked the interviewees to choose the images that best and worst reflected their habits to determine what emotions these images elicited in the participants. The photo elicitation allowed us to collect data that are representative of lived experiences in general rather than reflecting a single memory (Snelgrove & Havitz, 2010). This approach also allowed us to examine the processual nature of emotions, as the participants' stories include motivation, experience, and reflection.

In analyzing the data, we used a qualitative, narrative lens as “a meaningful way for us to produce knowledge that deepens and enlarges our understanding of people's lives, including their leisure experiences” (Glover, 2003, p. 146). Utilizing thematic analysis, we composed six activity vignettes allowing us to illustrate contextualized experiences while portraying the natural complexity of lived experiences (cf. Parry, 2007). Building the composite vignettes began with categorizing the data using QSR NVivo12 software. Two researchers completed separate rounds of analysis to find common themes, such as emotions, motivation, location, and PA. A third researcher completed the final round of categorization by representing individual interviewees' stories in terms of the emotions they linked to certain types of LTPA (see the evidence tables in Appendices D & E). In this process, we chose the classification by Laros and Steenkamp (2005) for considering different emotion labels, because it synthesizes a large body of existing emotion classifications based on consumer experiences. It contains eight basic emotions: contentment, happiness, love, and pride under positive affect, and anger, fear, sadness, and shame under negative affect.

Because LTPA is the focal point of this paper, the vignettes reflect different activity patterns at work and during leisure time. While we focus on LTPA, we expect that workday PA can influence LTPA. On the one hand, physically exhausted individuals may be less likely to engage in LTPA. On the other hand, those who are physically active at work may have good physical fitness and thus be more likely to engage in LTPA. Thus, we estimated PA during the workday based on interviewee self-reports and the tracking information shared by some of the interviewees. In general, those who experienced work as very light likely took fewer than 3 000 steps during the workday. Those whose workday was moderately active likely took 5 000–7 000 steps during the workday, whereas the very active interviewees experienced work as somewhat strenuous and most often achieved or even surpassed 10 000 steps during their workday.

Regarding leisure time, we chose to divide the participants between those who did and those who did not report active hobbies, as adopting PA as a leisure time hobby reflects a level of commitment to the activity. The purpose of the activity level-based division was to explore whether and how LTPA-induced emotions differ between adults with different activity habits, as, for example, lower activity levels at work and during leisure time are often linked with undesirable health outcomes. Notably, through asking

about the interviewees daily habits, we explore LTPA-related routines. This is important to note, as our data was collected prior to the COVID19-pandemic, which has had a drastic impact on routines and daily habits. Thus, if the study was repeated, the findings would likely be different. Nevertheless, routines explain most of daily activity, including leisure time hobbies. Routines are also important in seeking a good work-life balance. Thus, while very little is unpredictable in the subjects' stories, the stories can be considered trustworthy illustrations of everyday life – at least prior to the COVID19 pandemic.

Because the mechanisms of emotion experiences are somewhat universal (Lazarus, 1991), our vignettes are age and gender neutral, reflecting working adults. A key distinction is that while we experience our bodies in gendered ways (e.g. Yarnal et al., 2006), emotions and bodily sensations are not gender specific (cf. Maguire, 2011; Scherer & Fontaine, 2013). Thus, when the unit of analysis is the sensory experience of emotions and not the bodily sensations of the LTPA itself, a gender-neutral approach is appropriate. This highlights the experience of the emotion, not the experience of the LTPA or the body itself. Consequently, we have chosen gender-neutral names for our vignettes and use the personal pronoun form s/he in our discussion thereof.

Findings

Different activity patterns

We analyzed the emotional content of our data through six composite vignettes (Table 2), highlighting different activity patterns.

During LTPA, the more sedentary Hayden, Kim and Taylor seem to have similar core physical sensations, reflecting relaxation, serenity and convenience. *Hayden* wants to have total time control, so LTPA is often a by-product of something more important. S/he is driven by self-blame and by preventing possible physical problems due to being mostly sedentary. *Kim* enjoys grounded, relaxation-oriented LTPA. S/he particularly enjoys productive LTPA, as the results are immediate and pleasing. *Taylor* focuses on mental resilience through activities that are enjoyable. S/he seeks energization and atmosphere rather than physical exhaustion. In contrast, the more physically active Cameron, Jordan and Robin seem to experience happiness, vigor and enthusiasm as the core physical sensations. *Cameron* engages in LTPA to stay healthy and keep fit. S/he enjoys relatively low-intensity activities, which encourage a sense of contentment and happiness. *Jordan* uses LTPA to recharge after the workday and detach from everyday worries. LTPA is both for the body and for the mind for Jordan. *Robin* finds LTPA an important balance for work activity. For Robin, vigorous exercise is often the way to find relaxation.

LTPA-induced embodied emotions

The core emotions across the vignettes were contentment, happiness, and anger. *Contentment* reflected enjoyment of the activity or its surroundings (“Fresh air makes me feel ... content”). This highlights the mind–body connection; activity in the body (expanding the lungs with fresh air) equals contentment in the mind. *Happiness*

Table 2. Six composite vignettes of activity patterns.

Work	Light	Moderate	Strenuous
<i>Hobbies</i>			
<i>Inactive</i>	<p><u>Hayden</u> I don't move around that much at work. I often choose to sit down rather than stand up. I don't really have any active hobbies, either, so I end up using self-blame as motivation to do at least some active things. I like choosing what I do and when, so the activity may be a side product of spending time with my family, for example. I also like convenience, which means that walking is a good way for me to unwind and have some time with the family. Sure, I know I should be active to stay healthy, but often I just don't see the point. I do have fun playing badminton or swimming and such with my kids, but it's more about the social aspect than the exercise. I sometimes go to group exercise classes to balance my rather monotone work, which makes me happy in a way, but I don't like anything too complicated. For example, I hate Pilates; the breathing is too difficult. I'd much rather work on shoveling snow or renovating the house, as then I get to see the results immediately.</p>	<p><u>Kim</u> My work is moderately active; I get around a fair bit. So, in my leisure time, I kind of look for mindfulness rather than physical activity. I like to do things that make me more relaxed and recharge me for work, like going for a walk outdoors. Having fun with family and friends is also important for me, so we tend to play many yard games. I know physical activity can help me control my weight, but mainly I aim for convenience. Sometimes I feel guilty about it, for example, owning a good bike but not riding it. But when I want to be physically active, I prefer doing so at home, just dancing to my favorite music, following an online workout, or simply gardening. That makes me happy. I really hate big groups and mass events; I would never ever take part in a marathon, for example. I also have some school traumas about cross-country skiing, so that's not my thing. Being productive, like renovating or doing some woodwork, is much more my style, then I can find contentment in the result.</p>	<p><u>Taylor</u> My work is quite strenuous, so I don't really need such active hobbies. Instead, I look for activity that maintains my mental resilience. I need to relax and recharge my batteries for work, so I just do things that make me feel good. I'm still somewhat active, because I want to stay fit and healthy, but it's not about the effort for me. For example, I don't like too strenuous sports like football. Instead, I quite like gathering berries and mushrooms in the forest, as the fresh air makes me feel happy and content, and there's the bonus of the healthy food. I've tried ice swimming a few times—I was a bit afraid of the cold, but I've heard it's really good for you. I also quite like the atmosphere in group exercise classes, as it energizes me. I've also participated in running events, as they give me a bit of a high. In terms of physical activity, I'm not really a team player, though, so no group games for me.</p>
<i>Active</i>	<p><u>Cameron</u> My workdays tend to be physically rather light. However, I do have some active hobbies. Physical activity is a way to relax for me, so I particularly seek the calmness of nature. For example, hiking, just enjoying the scenery and getting some exercise on the side. Of course, it also helps me keep fit and stay healthy. For convenience, though, I often move in ways that are easily accessible. For example, in addition to taking my dog for a walk in the forest, I enjoy walking just to get around. I'm often active alone, as it is easier. Sometimes it is nice to meet friends for some yard games like pétanque or croquet or take part in an</p>	<p><u>Jordan</u> I try to keep moderately active at work, so that, for example, I would rather stand up and move around a bit than sit down all the time. I also have some active hobbies, as I find exercise a good way to detach from everyday worries. I find that physical activity keeps me in a better mood overall. I get energy from it, and it makes me happy to get that sense of pride and accomplishment that comes with the effort. I also like to keep fit and stay healthy, so sometimes I even push my boundaries a bit. It's a good balance between work and leisure that I'm after. Sometimes it's nice to take out my bike and either get around or just cycle aimlessly. That</p>	<p><u>Robin</u> Often, I walk around all day, so most days I end up with more than 10 000 steps during working hours. Still, I also want to have active hobbies, as the strain on my body at work needs balancing. Being active also just makes me feel good and happy—it refreshes me and calms me down. I like to get around by walking or taking my bike, and I want to take care of my physical fitness as well as motoric skills so that I can also stay healthy in the future. Yoga is good for that. With friends, we like to use e-scooters to get around town, which is a lot of fun. Some activities, like disk golf or yard games, are linked to having fun with friends and family,</p>

(continued)

Table 2. Continued.

Work Hobbies	Light	Moderate	Strenuous
	exercise class, but mainly it is for resting my own mind. It's also a scheduling thing, as I don't have the time to participate in a class every week at the same time—that makes me a bit sad. It does make me happy, though, when I do participate in an exercise class, as they are usually effective and well planned. In contrast, I really don't like running or sweaty ball games in large groups. Why would you run around chasing a ball? That makes me angry. I'd much rather do some gardening, try planting new things, or do some renovation around the house. That makes me feel content. In general, I don't like to push my boundaries; I'd much rather just do things I'm good at and find enjoyable.	makes me content, but at other times, it's really nice to get a group of friends together and play some yard games. I also love meditative activities, like running or gardening, where I can just be alone with my thoughts. Hiking is another good example, just trying to be one with nature, finding peace and quiet. I do like moving for myself rather than competitively. For example, ice swimming; it might make me angry thinking about it and take me a lot to go there, but I'm always happy I did afterwards.	while others, like gardening or the gym, are mainly for me. I like that I can see and feel the results I get from going to the gym. Swimming also makes me happy, as it's fun and it's an easy way of getting a really good workout. I kind of like skiing, which I used to hate, but coming back to it as an adult, I've found that it's actually quite a nice way to enjoy the winter scenery. I still have mixed feelings about shoveling snow, as it is so repetitive and boring it makes me angry, but then again, it is very good exercise and I am happy and content with the result.

reflected LTPA that was particularly enjoyable, often due to social circumstances (“Having fun with family and friends is also important for me”). Happiness also emerged following a negative experience (“It might make me angry thinking about it ... but I'm always happy I did afterwards”). Thus, happiness is also clearly connected to pleasant sensations in the body.

Anger reflected disliked LTPA and the necessity of performing such activities, such as shoveling endless amounts of snow in the winter. Anger was also visible in pre-activity considerations (“Why would you run around chasing a ball?”). With anger, the connection between the mind and the body seems complex. First, anger arises through a dislike of the bodily effort in performing the necessary activity (“It is so repetitive and boring”). Second, anger emerges from a dislike of the idea of a certain type of LTPA, such as chasing a ball. Third, anger links to bodily inability (“I hate Pilates; the breathing is too difficult”).

The less common emotions we found are love, pride, fear, shame, and sadness. The label *love* was reserved for LTPA that was experienced as particularly meaningful and positive (“I love hiking”). This also reflects the importance and weight generally given to the word *love* in the Finnish language. *Pride* was linked to perceptions of skill and endurance (“to get that sense of pride and accomplishment”). *Fear* reflected concerns over physical safety (“I was a bit afraid of the cold”). *Shame* was visible as self-blame (“I end up using self-blame as motivation”). *Sadness* reflected upon lost opportunities (“I don't have time ... that makes me a bit sad”).

Interestingly, all vignettes reflect on finding peace of mind. For Hayden, peace of mind is in convenience and contentment. For Cameron, it means relaxation. For Kim,

peace of mind stems from mindfulness. For Jordan, it means detaching from everyday worries. Taylor looks for mental resilience to achieve peace of mind. Robin finds peace of mind in vigorous exercise, which s/he finds relaxing and energizing. These notions likely reflect the socially demanding work of the participants, but can also echo the Finnish mentality, where time spent alone is deemed natural and important. All the vignettes also highlight the health benefits of LTPA, indicating that these are highly internalized. However, only Kim mentions weight control as an important factor. This is interesting, as sedentary adults in particular are often motivated to engage in LTPA for weight reasons.

All the vignettes reflect both affective (relaxation, enjoyment) as well as non-affective (health, fitness) motivation. We also found several indications of post-activity emotions, such as contentment with the results of shoveling snow or renovation work. Nevertheless, most embodied emotions seemed to occur during PA.

Temporality in the experienced emotions

As expected (cf. Lazarus, 1991; Maguire, 2011), we found emotions before, during, and after LTPA. While each temporal phase was individually distinguishable, the emotions were clearly linked to each other. Often, a secondary, subsequent, or less prominent emotion would appear alongside the primary, first, or more prominent experience, highlighting the possibly overlapping and frequently sequential nature of emotions.

The emotions that arose *before* LTPA (37 examples from the participants) often prevented the considered activity. In the case of *anger*, dislike toward the type of activity prevented participation. Anger was also directed at the perceptions of a particular type of LTPA; for example, golf was described as expensive and elitist. *Sadness* occurred when an individual would have liked to engage in a type of LTPA, but could not. *Fear* of accidents or injury also prevented participation in activities individuals were curious about. Fear of a setting was also mentioned, for example, a fear of large animals in the forest.

The *before* emotions were principally negative in our findings, but some of them were linked to a positive secondary emotion. Runners angry at a lack of motivation found contentment when they did go out for a run, and golfers disliking the actual activity found joy in their partner's enjoyment of it. Similarly, schooltime traumas about skiing melted away at the pleasant winter scenery, whereas the unpleasant sensations causing fear of ice swimming—a Finnish national peculiarity—turned into enjoyment of the bodily sensation afterwards.

Emotions *during* LTPA (439 examples from the participants) represent the vast majority in our data. *Contentment* was found in enjoying the type of LTPA and in the social interaction encouraged by activity. The environment and atmosphere where LTPA took place also influenced feelings of contentment. *Happiness* had similar triggers, often connected to fun with friends or the particular enjoyment of a certain type of LTPA. Many also felt happy about physical challenges and the perceived effectiveness of a workout. *Love* was experienced as an even more heightened liking of a certain type of LTPA, whereas *pride* stemmed from feelings of accomplishment.

Anger had many triggers during LTPA. Perceived inability, a dislike of performing the activity, finding the activity pointless, or an aversion to the surroundings triggered strong negative reactions toward LTPA. *Fear* was also clearly linked to safety concerns during LTPA. For example, previous injuries or physical problems triggered fear. *Sadness* was triggered during an activity at the thought of what else one could be doing when completing a disliked task.

Secondary emotions also emerged *during* LTPA. For example, the positive emotions of love, pride, happiness, and contentment often emerged simultaneously. In effect, for example, finding pride in superior skills was linked to enjoying the activity. Most notably, whereas many participants expressed anger at having to clean, most also expressed contentment with the result. Happiness toward a type of LTPA was also turned into anger at a low skill level, for example, when losing disk golf frisbees in the forest. Many also reported sadness or anger at not performing beneficial LTPA, such as not going to the gym often enough. Some also reported a dislike toward the environment of an otherwise liked type of activity, for example, anger at crowds at the swimming pool.

The emotions that appeared *after* LTPA (35 examples from the participants) were mostly positive, reflecting *contentment* and *happiness*. These positive experiences reflected the results or outcomes of LTPA: for example, the pristine home after cleaning or the relaxation after ice swimming. On some occasions, *anger* would arise, mainly caused by inability: the expectation that no flowers would sprout from the planted seeds, or pain in the body after a difficult type of physical exercise. Secondary emotions linked to these primary experiences often reflected the perceptions *during* the activity. For example, anger and dislike toward the cold water of ice swimming or fears of inability. For some, pre-activity anger worked as motivation to achieve post-activity contentment, for example, by going for a vigorous run.

Exploring the lived experiences

Our data reveal that the LTPA-induced emotions are not that different for sedentary and physically active adults. In addition, the relationship between LTPA and emotions seems complex; individuals experience myriad different LTPA-induced emotions both sequentially and simultaneously. We identify both positive and negative LTPA-induced emotions in all of the studied vignettes. For example, golf-induced anger in Hayden, but at the same time, s/he is content with the LTPA, due to a partner that enjoys the game. Cameron experiences running-induced anger, but when s/he does find the motivation to run, s/he finds contentment in the effort. Kim enjoys contentment induced by gathering mushrooms in the forest, but anger if s/he has to gather berries instead. Similar to Cameron, Jordan finds running anger inducing due to the exhaustion and monotony, but is proud at the accomplishments achieved during a run. Taylor is content at the efforts exerted at the gym, but at the same time experiences self-blame at not going more often. Robin finds enjoyment from swimming due to training for a triathlon, but at the same time experiences fear due to the perceived difficulty. These examples show that LTPA-induced emotions are not always simplistic, and perhaps cannot be considered linear.

While our findings point out that more sedentary adults may prefer lower exertion levels during LTPA, most of the LTPA types discussed in the vignettes cross over all the vignettes. Thus, in our findings, there is no clear relationship between pre-activity fitness levels and the chosen type of LTPA, opposing our analytical framework. Instead, it does seem plausible that there is a relationship between the mind–body connection and chosen type of LTPA. The vignettes describe how certain LTPA is chosen to achieve certain emotional objectives, such as happiness at a clean home following disliked chores. Within this connection, the link between pre-activity fitness level and chosen activity seems more plausible, indicating a possible moderating effect of how the individual experiences the body in determining what type of LTPA is chosen.

Our findings also highlight the influence of the socio-spatial activity environment in LTPA-induced emotions, which indicates the necessity to explore lived experiences alongside laboratory experiments. Particularly the socio-emotional outcomes of LTPA seem important in our vignettes. For sedentary adults, the social LTPA environment seems highly motivational. Nevertheless, both sedentary and physically active adults enjoyed LTPA both socially and alone. It may be that for sedentary adults, the social aspect is a key motivator, whereas for physically active adults, the social aspect is an additional motive. Both sedentary and physically active adults seemed to enjoy LTPA alone for “calming down”, but this may be idiosyncratic in our findings due to the Finnish mentality or the hectic workplaces of the interviewees.

Discussion

In this paper, we have analyzed *how individuals experience emotions when engaging in leisure time physical activity*. The findings indicate that emotions emerge before, during, and after LTPA based on triggers reflecting motivation, preferences, ability, activity type, and the socio-spatial activity environment. The findings highlight that LTPA induces all types of emotions in both sedentary and physically active adults, and that the emotions may arise both simultaneously and sequentially. Thus, the relationship between PA and LTPA-induced emotions is likely more complex than indicated in previous laboratory experiments. While we cannot claim causal links based on our qualitative data, as we rely on a contextual process explanation (see Maxwell, 2004), we have illustrated LTPA-induced emotions and the embodied experience in natural surroundings, highlighting the sentient nature of LTPA. In doing so, we have indicated multiple relationships between LTPA and emotions, exploring how activity is linked with embodied emotions. We discuss our contribution through propositions designed to act as bases for future research in forming testable hypotheses of the relationships indicated in our findings.

Whereas PA in general has been linked to improved affective states (e.g. Gauvin et al., 1996), our findings show that LTPA can trigger both negative and positive emotions. Depending on the type of LTPA, emotional valence may not always improve post-activity. It seems that all combinations of sequential emotions are plausible. This leads us to propose that

Proposition 1: LTPA-induced emotions may be both positive and negative, both pre- and post-activity.

This notion is important because a large array of negative emotions may be ignored if only positive emotions are considered. Negative pre-activity emotions may remain equally negative post-activity, for example when negative anticipation proves correct. However, negative pre-activity emotions may also turn into positive post-activity emotions, for example when the individual performs better than anticipated. Similarly, positive pre-activity emotions may remain positive, for example when enjoying habitual LTPA. Still, positive pre-activity emotions may turn into negative post-activity emotions, for example due to too high positive expectations. While our analysis takes a simplistic view of temporality, the connection between physical activity and time offers interesting research avenues, for example, in exploring the influence of very long time horizons or temporality during PA.

Building on proposition 1, instead of the assumption that sedentary adults experience negative LTPA-induced emotions (cf. Hyde et al., 2011), we find that both sedentary and physically active adults experience both positive and negative LTPA-induced emotions. While lower levels of overall activity reflect a preference toward gentler LTPA, every individual is able to find some kind of enjoyment of LTPA. This leads to our second proposition:

Proposition 2: In both sedentary and physically active adults, positive emotions are linked to bodily sensations experienced as pleasing, whereas negative emotions are linked to bodily sensations experienced as displeasing during LTPA.

This is an important distinction, as individuals vary on what they consider pleasing or displeasing. Laboratory experiments may seem exhausting to sedentary adults, thus yielding a negative emotional response. Physically active adults in turn may enjoy laboratory experiments for example due to the motivational effect of measurable performance. What our lived experience study shows, however, is that when able to choose the activity, both sedentary and physically active adults experience both positive and negative LTPA-induced emotions. While the chosen LTPA may be different, the variety of emotional outcomes seems similar. Thus, when seeking to motivate sedentary adults, making general statements encouraging LTPA seems less effective than being able to recommend particular types of LTPA based on the individual's current habits and likes. Still, future research taking the participants' pre-activity physical condition and demographic traits into consideration is necessary in order to explore the causal relationships embedded in this proposition. Similarly, while our study cannot claim causality, we encourage future research to explore the possible moderating effect of how the individual experiences the body in determining what type of LTPA is chosen.

Enjoyment may also stem from different sources than from performing the activity. Particularly the socio-spatial activity environment seems to influence LTPA-induced emotions. Whereas previous research highlights the outcomes of PA in natural settings (cf. Aspinall et al., 2015; Lawton et al., 2017; Thompson Coon et al., 2011), we argue that the socio-spatial activity environment may be the key motivating factor for many adults. Engaging in LTPA with friends or close family members has a more social connotation, whereas engaging in LTPA alone seems driven by a wish to wind down. Positive engagement, revitalization, and tranquility are important motivators for both sedentary and physically active adults. At the same time, both sedentary and physically active adults are conscious of the surroundings in which they perform LTPA, placing

emphasis on both ease of access and the enjoyability of the physical environment. While outdoor spaces may be more calming, indoor spaces suitable for a certain type of activity are equally functional. This brings us to the third proposition:

Proposition 3: The socio-spatial activity environment may be a key determinant in LTPA-induced emotions.

Proposition 3a: Socio-emotional settings motivate LTPA choices based on the desired emotional outcome.

Proposition 3b: Activity environments motivate LTPA choices based on functionality.

Particularly for sedentary individuals, LTPA-induced positive emotions may emphasize the socio-emotional outcomes of LTPA, as even if the bodily sensations of LTPA induce feelings of exhaustion, the enjoyment of good company may turn the whole into positive. For both sedentary and physically active adults, socio-emotional outcomes from engaging in LTPA alone or with friends influences activity choices. When looking to reinvigorate with friends, the LTPA choices are different than when looking to spend time alone to unwind. Thus, socio-emotional outcomes are important in considering LTPA-induced emotions. Similarly, while previous research highlights the benefits of green spaces, if the individual wishes to engage in indoor sports, highlighting green spaces is not motivational. Thus, we argue that activity environments motivate LTPA choices based on functionality. This indicates that servicescapes may be an important addition to the discussion on LTPA-induced emotions. While urban green spaces are critical in offering a natural setting for LTPA, functional indoor spaces are equally important in ensuring suitable services for different LTPA needs. Again, while our findings indicate a relationship, we cannot claim causality. Nevertheless, the motivating role of social activity is another interesting point for future research. Similarly, balancing mental and physical strain in different work–leisure settings offers an interesting avenue for future research.

While it seems plausible that maintaining a desired physical appearance is a key motivation for LTPA, in contrast with feminist research (cf. Coffey, 2019), our data does not emphasize such body work. Similarly, in contrast with gendered experiences (cf. Coffey, 2019; Fullagar et al., 2019; Yarnal et al., 2006) we were not able to identify a clear difference between male and female experiences of LTPA – although we must note that the majority of our participants were female, and thus our data may be slightly skewed. Nevertheless, this offers an interesting future research avenue for feminist research, gender studies and other scholars in exploring when are LTPA experiences gendered. For example, the gendered experiences during predominantly male sports such as ice hockey and predominantly female sports such as synchronized skating may reveal interesting insights, when compared to possibly less gendered LTPA types such as walking, which this study highlights.

Conclusion

We contribute to the literature on the relationship between PA and emotions through increasing the understanding of LTPA-induced emotions in free-living settings. Our findings highlight that instead of purely positive or negative, LTPA-induced emotions

are often mixed and volatile, evolving in and over time. Thus, the relationship between emotions and LTPA is more complex than revealed in laboratory experiments. As previous research on emotions and PA focuses on emotion scales measured in laboratory experiments, the novelty of our approach lies in exploring labeled emotions in natural LTPA settings. The need to explore lived experience arises from the need to understand everyday activity patterns, which may differ greatly from the laboratory settings. We also highlight how different LTPA types and individual habits influence emergent emotions, indicating the necessity of personalizing PA promotion. Similarly, by showing that the emotions related to LTPA may stem from sources other than the activity itself, we contribute to the literature on socio-spatial activity environments and urge studies on PA to extend into servicescapes and urban green spaces.

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Data availability statement

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

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Appendices

Appendix A

Interviews

Code	Age	Organization	Length	Work	Hobbies	Vignette	Activities	Primary emotions	
								Positive	Negative
<i>Aileen</i>	50	Primary school	21:08	Light	Active	Cameron	8	1	7
<i>Alan</i>	55	Primary school	23:09	Light	Inactive	Hayden	7	4	3
<i>Alice</i>	29	Retail group	33:09	Strenuous	Active	Robin	5	4	1
<i>Amanda</i>	50	Primary school	31:41	Moderate	Active	Jordan	9	7	2
<i>Amber</i>	34	Retail group	23:14	Strenuous	Active	Robin	5	3	2
<i>April</i>	46	Retail group	29:01	Light	Inactive	Hayden	13	8	5
<i>Bernice</i>	45	Retail group	25:26	Strenuous	Active	Robin	5	2	3
<i>Beverly</i>	40	Primary school	23:47	Strenuous	Active	Robin	6	4	2
<i>Bill</i>	29	Primary school	26:40	Strenuous	Active	Robin	8	5	3
<i>Brett</i>	57	Primary school	33:26	Light	Active	Cameron	6	3	3
<i>Bridget</i>	38	Primary school	43:33	Strenuous	Active	Robin	9	7	2
<i>Caren</i>	19	Retail group	22:03	Light	Active	Cameron	9	8	1
<i>Carol</i>	40	Primary school	40:55	Moderate	Active	Jordan	6	3	3
<i>Catherine</i>	18	Retail group	28:13	Light	Active	Cameron	8	5	3
<i>Cecilia</i>	47	Primary school	23:15	Moderate	Active	Jordan	7	6	1
<i>Christian</i>	47	Primary school	54:28	Moderate	Active	Jordan	7	3	4
<i>Cornelia</i>	42	Primary school	22:00	Light	Active	Cameron	5	2	3
<i>Daniel</i>	51	Primary school	30:37	Strenuous	Active	Robin	13	10	3
<i>Denise</i>	28	Retail group	30:53	Moderate	Active	Jordan	4	3	1
<i>Eliza</i>	34	Retail group	30:31	Moderate	Active	Jordan	11	8	3
<i>Ellen</i>	40	Primary school	22:24	Strenuous	Active	Robin	9	8	1
<i>Emma</i>	34	Retail group	31:03	Strenuous	Active	Robin	7	4	3
<i>Eric</i>	56	Primary school	43:37	Moderate	Inactive	Kim	6	4	2
<i>Felicia</i>	44	Primary school	44:14	Moderate	Active	Jordan	7	5	2
<i>Gina</i>	31	Primary school	33:46	Moderate	Active	Jordan	8	7	1
<i>Glenda</i>	33	Retail group	27:15	Moderate	Inactive	Kim	8	4	4
<i>Glenn</i>	23	Retail group	28:54	Strenuous	Active	Robin	6	2	4
<i>Harvey</i>	49	Retail group	28:06	Strenuous	Inactive	Taylor	7	7	0
<i>Helen</i>	27	Retail group	27:04	Light	Active	Cameron	4	3	1
<i>Jane</i>	51	Primary school	50:48	Light	Active	Cameron	15	11	4
<i>Janice</i>	23	Retail group	23:55	Moderate	Inactive	Kim	5	3	2
<i>Jason</i>	21	Retail group	18:57	Strenuous	Active	Robin	7	5	2
<i>Jennifer</i>	44	Primary school	25:46	Moderate	Active	Jordan	11	6	5
<i>Jessica</i>	30	Retail group	20:20	Moderate	Inactive	Kim	8	6	2
<i>John</i>	26	Retail group	22:02	Strenuous	Active	Robin	8	5	3
<i>Juliet</i>	24	Retail group	33:41	Moderate	Inactive	Kim	2	1	1
<i>Karen</i>	34	Primary school	41:10	Light	Active	Cameron	7	4	3
<i>Kathleen</i>	51	Retail group	33:19	Moderate	Inactive	Kim	3	2	1
<i>Kevin</i>	21	Retail group	35:22	Strenuous	Active	Robin	11	7	4
<i>Kristen</i>	22	Retail group	32:18	Moderate	Active	Jordan	16	13	3
<i>Laura</i>	54	Primary school	39:57	Strenuous	Active	Robin	5	4	1
<i>Lena</i>	27	Retail group	21:26	Light	Active	Cameron	2	0	2
<i>Linda</i>	32	Retail group	33:41	Strenuous	Active	Robin	11	7	4
<i>Lisa</i>	50	Primary school	39:33	Light	Inactive	Hayden	5	3	2
<i>Lucas</i>	20	Retail group	29:49	Strenuous	Active	Robin	9	6	3
<i>Lucy</i>	20	Retail group	21:45	Strenuous	Active	Robin	6	5	1
<i>Mabel</i>	38	Primary school	34:12	Moderate	Active	Jordan	5	2	3
<i>Martha</i>	50	Retail group	29:23	Strenuous	Active	Robin	4	4	0
<i>Mary</i>	19	Retail group	20:55	Moderate	Active	Jordan	3	3	0
<i>Matthew</i>	43	Primary school	32:33	Moderate	Active	Jordan	5	2	3
<i>Megan</i>	58	Retail group	30:51	Strenuous	Active	Robin	8	7	1

(continued)

Continued.

Code	Age	Organization	Length	Work	Hobbies	Vignette	Activities	Primary emotions	
								Positive	Negative
<i>Michael</i>	32	Retail group	38:54	Strenuous	Inactive	Taylor	4	4	0
<i>Michelle</i>	36	Retail group	31:13	Strenuous	Active	Robin	2	1	1
<i>Miriam</i>	30	Retail group	27:18	Strenuous	Active	Robin	8	7	1
<i>Molly</i>	35	Retail group	34:06	Strenuous	Inactive	Taylor	9	7	2
<i>Mona</i>	24	Retail group	41:52	Strenuous	Inactive	Taylor	9	4	5
<i>Monica</i>	58	Primary school	31:27	Moderate	Active	Jordan	11	9	2
<i>Nora</i>	28	Retail group	28:18	Moderate	Inactive	Kim	8	8	0
<i>Pamela</i>	56	Retail group	29:37	Strenuous	Active	Robin	4	2	2
<i>Peggy</i>	37	Retail group	45:42	Strenuous	Inactive	Taylor	7	4	3
<i>Peter</i>	21	Retail group	30:34	Strenuous	Active	Robin	13	10	3
<i>Rachel</i>	52	Retail group	24:54	Strenuous	Active	Robin	4	4	0
<i>Rose</i>	20	Retail group	26:51	Strenuous	Active	Robin	8	8	0
<i>Ruby</i>	54	Retail group	28:02	Moderate	Inactive	Kim	6	4	2
<i>Sarah</i>	53	Retail group	25:07	Moderate	Inactive	Kim	3	2	1
<i>Scott</i>	21	Retail group	32:38	Strenuous	Inactive	Taylor	11	7	4
<i>Sheila</i>	33	Retail group	27:42	Strenuous	Inactive	Taylor	11	9	2
<i>Sophia</i>	55	Retail group	20:30	Moderate	Inactive	Kim	3	2	1
<i>Susan</i>	41	Retail group	29:55	Strenuous	Active	Robin	1	1	0
<i>Tanya</i>	32	Retail group	26:29	Moderate	Inactive	Kim	2	2	0
<i>Tina</i>	33	Retail group	28:23	Strenuous	Active	Robin	7	5	2
<i>Valerie</i>	32	Retail group	13:04	Strenuous	Active	Robin	6	4	2
<i>William</i>	27	Retail group	20:05	Moderate	Inactive	Kim	5	4	1

Appendix B

Interview protocol

Main theme	Subthemes
Background info	<p>Job description (+ how much physical activity it contains)</p> <p>How long have you been here (e.g. is the commute routine)?</p> <p>Where do you live (area and road)?</p> <p>How do you travel to work? (home front door <=> job front door) Why?</p> <p>Does it change with the seasons? How long is the trip (time, kilometers)?</p> <p>What alternatives would you have for the commute? Could you consider them, why/why not? Does the tram line under construction influence your commute?</p> <p>What are your hobbies?</p> <p>How do you travel to your hobbies? (movement from door to door) Why?</p>
Everyday mobility, mobility obstacles and incentives [Fund. motives, routines]	<p>Which images reflect your mobility best?</p> <p>Why do you move like this? What does it give you (what emotions does it evoke)? Do you move alone or with someone (often comes out spontaneously)?</p>
Attitude toward active mobility [Fund. motives, basic emotions]	<p>How would you like to move?</p> <p>Why? What might it give you (what emotions might it evoke)?</p>
Mobility obstacles and incentives [Experienced health, kin care, routines, mindsets & values] [routines] [family and work community] [psychological capability]	<p>What prevents you from moving like this?</p> <p>What needs to happen for you to move like this?</p> <p>Do you perceive that your health influences your mobility? How? (bring out subjective experience)</p> <p>What could your employer do to enable this type of mobility? (at work, during the commute, during free time)</p>
Attitude toward active mobility [Fund. motives, basic emotions]	<p>Have you ever moved in this manner? What was different then than now?</p> <p>How would you definitely not want to move? Why? What emotions does this type of mobility evoke in you? Why?</p>
Mobility obstacles and incentives [Mindsets & values]	<p>What is important to you in life?</p> <p>How is mobility connected to these things (repeat what the interviewee mentioned)?</p>

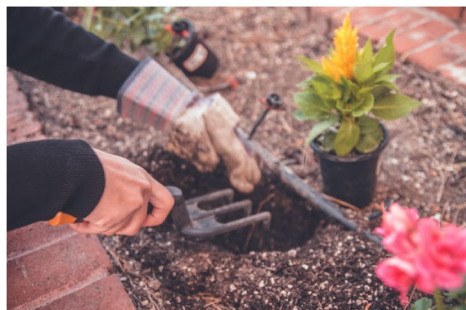
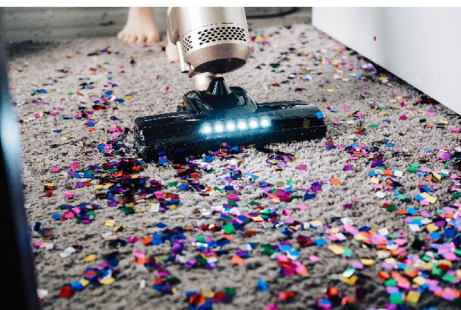
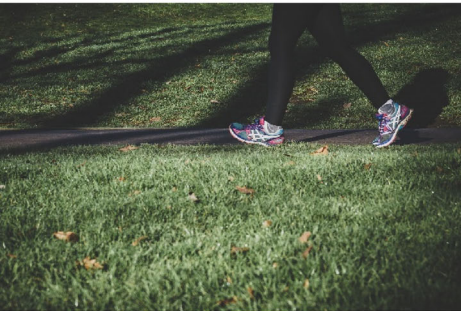
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Main theme	Subthemes
Background info [<i>Fund. motives, available time</i>]	Age Family situation (relationship, children, children's age), what else do you take care of? (parents, pets, etc.) Housing (high rise, row, detached) How many cars in the household?

Appendix C

Examples of photo elicitation material



Appendix D

Emotion experiences among the interviewees

	Interviews	Work	Hobbies	Activities described	Emotion instances	Contentment	Happiness	Pride	Love	Anger	Sadness	Fear
Hayden	3	Light	Inactive	16	25	8	7			10		
Cameron	9	Light	Active	24	64	22	14	1		25	1	1
Kim	12	Moderate	Inactive	25	59	31	10		1	13	1	3
Jordan	14	Moderate	Active	36	110	52	19	2	3	32	1	1
Taylor	7	Strenuous	Inactive	21	58	26	16			13		3
Robin	28	Strenuous	Active	34	195	86	54		1	50		4

Appendix E

Examples of emotion experiences within the vignettes

Vignette	Activity	Emotion*	Timing	Quote
Hayden	Pilates	anger	during	The breathing was so difficult I couldn't do it.
Hayden	renovation	contentment	after	It has a purpose. I don't do it for fun.
Cameron	ball games	anger	before	I can't digest ball games. I don't at all understand running after a ball.
Cameron	group exercise classes	happiness	during	It's fun, it's a ready package. I don't have to think about it, and there's music and everything, which energizes.
Kim	biking	sadness	before	I feel guilty about not riding my bike more often.
Kim	yard games	happiness	during	This is family time. Having fun. Just simply being together; that brings joy.
Jordan	biking	happiness	during	If I feel like it would be fun to bike to work, I do it.
Jordan	swimming	pride	during	Maybe this is what I most think that I can do and I'm good at. Many things are out of my comfort zone, but with swimming, I have good self-confidence.
Taylor	ice swimming	fear	before	I had to try even if I was afraid and didn't want to.
Taylor	gathering mushrooms	contentment	during	I eat them, I like them. I go with my mum often; it's also about doing things together.
Robin	gym	contentment	after	I always feel good afterwards. Usually I plan things for after the gym because I know I'll be energetic then.
Robin	snow shoveling	anger	during	This is boring, very boring.

*According to Laros and Steenkamp (2005). Note that in this categorization, feelings of frustration (e.g. difficulty, boredom) reflect anger.