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Workplace primary prevention programmes enabled by information and communication technology

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ABSTRACT

As the workforce is ageing across the globe, employers are implementing primary prevention programmes to encourage their employees to live healthier lives. Information and communication technology (ICT) can support these programmes by collecting, storing and processing data, and by visualizing health progress. However, there is a lack of knowledge of how ICT is utilized in primary prevention programmes at workplaces and how its utilization affects social issues. This paper fills that gap by presenting an illustrative case of a primary prevention programme in Finland. We find that offering employees the opportunity to use ICT for data collection, storage and sharing, contributes to their acceptance of the programme. Moreover, our findings show that while visualizing the effects of the programme through ICT contributes to lifestyle change, such soft factors as the involvement of doctors are just as important.

1. Introduction

An increasing share of the workforce is over 60 as retirement ages are increasing in many countries (Burtless, 2013). People in their 60s and 70s are increasingly capable of working because physically intensive jobs are increasingly being replaced by knowledge-intensive jobs (Christensen et al., 2009). Older workers are not necessarily less innovative than younger workers, as shown by a recent study (Ng and Feldman, 2013). Keeping older employers healthy is thus an increasing concern for employers, not only to increase productivity but also to reduce health-related costs (Baicker et al., 2010; Perez et al., 2009; Weldon, 2011). Organizations increasingly recognize the importance of wellbeing in the workplace (Ylikoski et al., 2009) and the impact of health on productivity (van Scheppingen et al., 2012). Employee health is particularly important for knowledge-intensive organizations, as health affects mental functioning and creativity (Leka and Jain, 2014; Zwetsloot and Van Scheppingen, 2007).

People's lifestyles have a strong effect on their health conditions (Blumel and Scheller-Kreinsen, 2010). Lifestyles can be improved by adopting healthier eating and drinking patterns, increasing physical activity and exercise levels, and stopping smoking (Christensen et al., 2009). Primary prevention programmes that stimulate both physical activity and diet improvements reduce absenteeism rates and increase job satisfaction (Goldgruber and Ahrens, 2010). A suggested method to encourage people to exercise more is to prescribe physical activity as a treatment (Aittasalo et al., 2006; Leijon et al., 2010; Smith et al., 2000; Swinburn et al., 1999). In order to be effective, however, their progress needs to be monitored (Aittasalo et al., 2006).

ICT can be an important enabler for primary prevention programmes in the workplace. It can be used to (1) collect lifestyle and health-related data through sensors and online

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applications; (2) store and process lifestyle and health-related data, including early diagnoses and intervention advice based on predictive analytics; and (3) provide feedback to participants by visualizing the effects of the programme. It is unclear, however, how ICT should be applied in primary prevention programmes and how it affects social issues of acceptance and privacy, and lifestyle.

This paper discusses the impact of implementing ICT in primary prevention programmes in the workplace. We build on an illustrative case in which ICT enables employees (patients) to visualize and monitor their own health progress. The case is used to discuss the implications and potential effects of the programme.

Section 2 presents the background to ICT and primary prevention programmes. Section 3 explains the case method. The results are presented in Section 4. Section 5 discusses the findings and Section 6 concludes the paper.

2. ICT and primary prevention programmes

ICT is often considered a driver of innovation in healthcare (Dobrev, 2010; Ho, 2007). ICT solutions for e-healthcare are expanding rapidly (Currie and Seddon, 2014) and healthcare is shifting towards personalized services with distributed care processes (Seppälä et al., 2012). E-healthcare, which includes tele-care and tele-medicine, refers to a wide range of services, such as remote medical monitoring, assisting, supporting, and emergency alarm services (Oh et al., 2005). In preventive programmes that are part of e-health, healthcare professionals often use ICT tools, for example portable health clinics (Ahmed et al., 2014). Nevertheless, patient-driven solutions are also emerging (Swan, 2009). The value of new solutions comes from the analysis of personal data and motivating individuals by visualizing their personal improvements, for instance in the form of graphs (Ruckenstein, 2014). In addition, social community tools are increasingly being utilized.

ICT solutions can be used for primary prevention programmes in several ways. First, ICT generates new opportunities to automatically collect lifestyle and health-related data from employees. Health data can increasingly be collected automatically, especially by sensors in watches, necklaces and wearables (Ricquebourg et al., 2006). Although the cost of integrating sensors in every object used to be very high, costs are dropping rapidly thanks to rapid technology advancements (ScienceDaily, 2011). For instance, smartphones are also equipped with advanced sensors and they can be used as always-on sensors of life, collecting data on people's everyday behaviour (Klasnja and Pratt, 2012). Sensors collect data on heart rate, medicine intake, blood pressure, activity level and sleep patterns directly from a person's body or environment (Oh et al., 2005). While collecting data from different types of sensors is challenging due to fragmentation (Wichert et al., 2012), platforms are emerging that may integrate different devices and services (Nikayin et al., 2013).

Secondly, ICT can be used to store and process lifestyle and health-related data. Services such as Endomondo, Polarpersonaltrainer and Microsoft HealthVault are increasingly used to store and process such data. Predictive analytics plays a major role in the processing of data (Appel et al., 2013). For instance, small changes in the activities of daily life can signal the early stages of illness, such as dementia. Other examples in the health domain are the early identification of epidemics (Liebowitz, 2013) and the application of evidence-based medicine (i.e. systematic reviewing of clinical data to make treatment decisions based on the best available information) (Kayyali et al., 2013).

Thirdly, ICT plays a major role in providing feedback about the effects of lifestyle interventions. Previous studies show that primary prevention programmes that visualize the effect of lifestyle on work, family and social life can induce lifestyle changes (Weisburger, 2002). For instance, consumers are increasingly visualizing their own health status for self-care purposes; this is known as the 'quantified self' movement (Swan, 2009).

To summarize, emerging sensors and mobile technologies will create tremendous opportunities to automatically collect health data on people. While seizing such opportunities is currently challenging, new service platforms that integrate information from heterogeneous sensors and assistive devices are emerging. Current technological advancements are creating opportunities for healthcare providers to offer more effective and less costly services for individuals. At the same time, technology is enabling individuals to more effectively manage their health in order to prevent chronic health conditions.

3. Method

This paper illustrates the implementation of an innovative ICT-driven primary prevention programme in Finland, where ICT is used to collect, store and process data and to provide feedback to participants. The case is an illustration of a primary prevention programme in the e-health sector, rather than an explanatory case study with predefined conceptual propositions.

3.1. Case selection

The Finnish context was chosen for a number of reasons. First, employee health is prominent on the policy agenda. For instance, a recent OECD report[1] points out that retirement ages in Finland need to be increased and hence employee health should receive more attention. Secondly, primary prevention programmes are regarded in Finland as the main instrument to improve employee health. For example, the national Current Care Guidelines developed by the Finnish Medical Society Duodecim[2] point out that increasing physical activity is crucial to prevent health problems. At the same time, studies show that Finnish employees engage in less physical activity as they get older, and that one in five employees does not exercise at all (Husu et al., 2011). Thirdly, employers in Finland are legally obliged to offer preventive occupational healthcare to all their employees. Most employees receive their healthcare from healthcare service companies that are contracted by the employer. Employers pay for the healthcare of their employees as well as for primary prevention programmes.

The specific case used in this paper is a pilot project that was started in 2011. The aim is to implement the Physical Activity Prescription (PAP) programme, in which medical doctors (MDs) prescribe physical sports and exercises in order to improve employees' physical health. Through dedicated

[1] http://www.oecd.org/eco/surveys/economic-survey-finland.htm.
[2] http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli//hoi50075.

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appointments with MDs and pharmacists, patients' health problems are identified and customized physical activity programmes are created for them.

The programme is offered by one of Finland's leading occupational healthcare providers and its associated MDs. In addition, one of the largest pharmacy chains in Finland is involved, as is an international pharmaceutical company that produces generic drugs and specialty pharmaceuticals. Finally, a start-up firm – the creator of the PAP programme – provides training courses and workshops to doctors and pharmacies on wellbeing and physical activities, support technologies and how to address patients. The pilot project is co-funded by one of the largest Finnish government innovation and research funds.

3.2. Data collection

Multiple types of data were collected between 2011 and 2014:

- Fifteen interviews were held with the stakeholders involved, typically multiple times during the research period (see Table 1). The interviews were used to understand the programme, the value provided, the technologies and the business model.
- Information was gathered through workshops with the stakeholders in which marketing plans, business models and IT requirements were developed.
- Two rounds of questionnaires were executed with employees while the service was being piloted. In a one-week period, MDs prescribed physical activity to 38 employees. The employees answered the questionnaire when their fitness was assessed in the pharmacy for the first time. The same questionnaire was repeated three months later when they returned to the pharmacy and their fitness was assessed for the second time. The questionnaire consisted of 5-point Likert scale questions on the employees' perceptions of service quality (Parasuraman et al., 1988), motivational effects (e.g. 'Do you think body age assessment is an effective way to motivate people to be more physically active?') and acceptance (e.g. 'I will certainly come and have my physical fitness assessed again'; 'I will recommend the service to my friends'). On the basis of two rounds, we also calculated the actual retention rate of the patients. The survey items are provided in Appendix 1.

4. Results

In this section, we describe the setup of the primary prevention programme, including the underlying ICT. We then discuss the effects of ICT in the programme on the basis of interviews with stakeholders and surveys among employees.

Table 1
Interviewees.

Stakeholders	Job description	Number of interviews
Occupational healthcare provider	Service development directors	4
	ICT development manager	1
	Doctors	2
Pharmacy	Pharmacist	1
	Sales and marketing manager	2
Pharmaceutical producer	Marketing manager	2
Start-up firm	CEO	3

4.1. Description of ICT-enabled primary prevention programme

The PAP programme is offered as an occupational healthcare service. The programme comprises the following steps. First, the employee makes an appointment with an MD at the occupational healthcare provider. The MD carries out a medical check-up and can prescribe physical activities to the employee. The employee then visits a pharmacy where the pharmacist assesses the employee's wellbeing (e.g. body age index, body mass index, body fat percentage). Taking into account the employee's age and underlying medical conditions, the pharmacist provides instructions regarding the physical exercises. After receiving the prescription, the employee visits the pharmacy every three months for a check-up, during which the pharmacist motivates the employee further, provides guidance and plans the next steps. After one year, the employee visits the MD for a re-evaluation of his or her physical wellbeing and to renew the prescription. The physical exercises can be tailored to specific user groups, for instance focusing on stress management and the physiology of an ageing body.

The steps in the PAP programme are supported by ICT throughout:

- Collecting lifestyle and health-related data: during all appointments, the fitness, health and wellbeing data are stored in a web service platform. Data can also be collected in real-time during the programme through pedometers, activity metres, sleep tracking devices and Wi-Fi scales.
- Storing and processing lifestyle and health-related data: data from the platform are available to MDs, pharmacists and the employee. On an aggregated level, for instance to occupation or age groups, data is made available to employer organizations, pharmaceutical and insurance companies, public authorities and researchers.
- Providing feedback to participants: the platform can be augmented with mobile apps to encourage users to exercise regularly, to sleep sufficiently and to watch their weight. Furthermore, the employer can utilize existing social media services, where workers can post their personal training plan, track their progress and stimulate their colleagues. In addition, social media services can be used to set a joint target for the organization or team, for instance the amount of exercise each month. Alternatively, social media services can be used to create competition among colleagues.

4.2. Effects of ICT in the programme

4.2.1. Collecting lifestyle and health-related data

According to the interviewees, the way that ICT is used to collect lifestyle and health-related data in the PAP programme does not change the existing medical routines of the users. The programme took into account the routines of people who already have a medical condition. As they already visit doctors and pharmacists regularly, participation in the programme fits in seamlessly with their everyday lives. The stakeholders were confident that by fitting the programme as such in to the daily life of participants, barriers to adoption are removed, which

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may lead to increased acceptance of the programme. The following quotation illustrates this finding:

> *You don't break the basic habit of the customer who regularly goes to the pharmacy for her medicine. And that's one part that we are looking for. Not breaking that habit. It's the basic model.* [Interview with CEO of start-up firm, 2012]

The stakeholders initially saw the fact that the service did not require the patients to have any ICT skills as a major strength of the programme. The basic service allowed the wellbeing of the employee to be assessed by a trained pharmacist using specialized fitness assessment technology. The results could be printed out together with instructions on how to increase physical activity, and be handed over to the patient.

However, in the pilot survey 80% of respondents had used personal e-health technology previously and 20% were using it regularly. This implies that many people are already familiar with personal e-health technology. Therefore, during the pilot the stakeholders came to the conclusion that in addition to the basic service, the programme should provide a more ICT-oriented option.

> *We're now adding an option so that the employee can, instead of going to the pharmacy for assessment, acquire for him- or herself some personal health technology, such as blood pressure tools, heart rate monitors, scales with Wi-Fi connection, etc. and perform the assessment at home. All health data is then uploaded to the platform. The platform will also include social community for sharing experiences and, for instance, agreeing on group walks etc.* [Workshop presentation by CEO of start-up firm, 2014]

The reasoning was that some people may find it more motivating to be able to assess their fitness by themselves (or, for example, have someone at their own fitness club do it) and share the results not only with the MD but perhaps also via social media. In some cases, the costs of new personal hardware could be covered by the employer. From the point of view of the service providers, the most relevant issue is that regardless of the assessment method a predefined set of data is available from all participants. This ensures that the data can be quantitatively analysed and, for instance, aggregated over a certain group of people. The following quotation from one of the workshop participants illustrates this finding:

> *Regardless of the tools used, we need to have a certain basic set of metrics describing the changes in the physical fitness of a person. Only then can we aggregate the results to, for example, company level and have reliable data for further analysis.* [Discussion in a workshop, 2013]

4.2.2. Storing and processing lifestyle and health-related data

Empowering the employees to store and share their lifestyle and health-related data was an important issue in the programme. Employees receive information on their fitness status and insights tailored to their needs and wishes. The information on changes in the fitness of the employee is also available to the MD, who can combine this data with, for example, laboratory tests and other medical data. According to the stakeholders interviewed, this would improve the effectiveness of the medical treatment.

The aggregate data on the fitness, changes in wellbeing and other patterns are made available to interested parties, such as the employer organizations, pharmaceutical and insurance companies, public authorities and researchers. In addition to improving brand image, the stakeholders saw this as a way to improve the general public's attitude towards exercising: the effects of the programme on people's fitness could be further analysed and made public by researchers. Moreover, new business opportunities might arise, for instance in the pharmaceutical or the insurance sector. The stakeholders, however, were aware that when providing third parties with access to the database, special attention has to be paid to secure the privacy of the patients.

> *These data could also be made available to researchers and other parties, such as public bodies, insurance companies and so on. They could analyse the data further and publish the results on physical activity prescription health effects in academic and non-academic journals. This would make the programme more well-known and would hopefully also encourage more people to exercise.* [Discussion in a workshop, 2013]

4.2.3. Providing feedback to participants

According to interviewees, using ICT to frequently assess improvements in physical wellbeing and to provide feedback to employees can increase the commitment to maintain the new lifestyle.

> *We have to assess the fitness changes, and then we can keep people physically active. So, we need authority and we need control. This is the simplest model that gets low-activity people to start moving and be active.* [Interview of CEO of the start-up firm, 2012]

The survey results confirmed that fitness assessment, for example the body age index, is a very effective tool to motivate people to be more active. To the yes/no question 'Body age index is a very effective tool to motivate people to be more active', 98% of first survey respondents answered 'yes', and in the second round the 88% answered 'yes'. The body index shows the difference between the age of the physical body and the chronological age of the patient. Based on the body age index, personal training programmes and goals can be adapted to the specific age and condition of the individual. Later on, changes in physical wellbeing are monitored by either personal ICT-enabled devices or specialized devices at the pharmacy.

According to the survey, the commitment to the PAP programme among the employees was considerably high. In the pilot project, 66% of the patients returned to the second physical fitness test three months after the first assessment. This percentage was found by the stakeholders to be 'satisfactory' or even 'good'. The questionnaire results showed high scores on all aspects of service quality (4.58 in 5-point scale). Furthermore, a clear majority of the patients were willing to recommend the service to their friends (4.78 in 5-point scale).

According to the interviewees, besides the technology, involving MDs is just as important for adherence to the programme. The stakeholders explained that receiving the

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physical activity prescription from an MD makes people more committed to the programme because they respect the doctor's authority. The following quotations illustrate this finding.

> *Doctors have an important role to play and the ability to get people to move. The authority is an effective way to initiate the change.* [Workshop presentation by CEO of the start-up firm, 2013]
>
> *The customer or the patient needs to have the doctor's word that you have to exercise to get results. Otherwise, they are not motivated enough. This is probably the key reason the prescription is needed.* [Director of occupational healthcare provider, 2012]

5. Discussion

In this section, we speculate on the findings presented in the previous section in order to discuss opportunities and social issues associated with ICT-enabled prevention programmes.

5.1. Collecting lifestyle and health-related data

While technologies are increasingly being used to collect data on lifestyle and health condition, some people are still sceptical. Such scepticism may result from privacy concerns (Bhattacherjee and Hikmet, 2007), personality trait resistance (Laumer et al., 2010) or social factors like age and education. Consequently, a digital divide or digital inequity can emerge (Dewan and Riggins, 2005). In the PAP case, by offering the choice between using or not using advanced ICT, a divide between adopters and non-adopters was avoided. The downside to adopting social media services is that they can create a divide between employees who use social media and those who do not. The social atmosphere at work could be harmed if some people actively take part in social media challenges and others are left out.

Many factors can influence the acceptance of technologies, including users' skills and routines (Holden and Karsh, 2010; Kim and Park, 2012; Lapointe and Rivard, 2005; Pai and Huang, 2011). In the PAP programme, both the technology skills and the current medical routines of users are taken into account when collecting data. Empowering different groups of users by addressing their special needs can play an important role in getting employees to accept the programme.

5.2. Storing and processing lifestyle and health-related data

The data collected on the PAP platform can be used in two ways: 1) employees can monitor their health and fitness and 2) the employer can identify health issues among employees in order to offer specialized prevention programmes. For instance, demographics and predictive analytics can be used to determine possible health risks among employees in order to offer specialized wellness programmes, such as obesity and cardiovascular management programmes. The focus on exercises and fitness in the PAP programme provides a bias towards physical wellness. Physical wellness alone might not lead to better performance at work, and employers should also pay attention to the mental wellness of employees, especially those with stressful and demanding jobs. While physical wellness can improve mental wellness to some extent (e.g., Merrill et al., 2011), certain mental conditions – such as depression, dysthymia, bipolar disorder, social phobia, panic disorder and agoraphobia – may require separate attention from employers (Langlois et al., 2012). Therefore, the possibility to use data on the platform to identify mental or physical issues among employees should not be overlooked.

An important issue with regard to the health data of individuals is personal privacy. For instance, if employers access their employees' medical information, the employees could be concerned that the employer will use such data to discriminate against employees in the workplace. Privacy issues may not only inhibit the acceptance of the programme, but could also provoke a conflict of interest between employer and employees. This problem can perhaps be solved by only providing employers with aggregated information on their employees' wellness. However, the privacy problem would still be apparent in small companies with only a few employees. On the other hand, the more data is being non-personalized and aggregated the fewer possibilities it offers to identify potential personal or group level health issues and to design more specialized occupational healthcare actions.

Making the health-related data openly available or disclosing it to any third parties can provide many possibilities for researchers, public bodies and companies. However, the ownership of data and privacy issues then become even more important. Rohunen et al. (2014) point out that these challenges can be mitigated by carefully selecting trustworthy partners, informing persons how their private data is processed, and giving them control over their data, that is, letting them decide who can access which data. We can therefore also speculate that participants' commitment and involvement in e-health would improve were they to configure and choose freely whether to share their experiences with other parties.

5.3. Providing feedback to participants

Previous studies on employee wellness programmes stress the importance of constant feedback loops to keep employees motivated and committed to the programme (e.g., Hubley and Dutram, 2008). The PAP programme enables feedback by reporting changes in body age index, body mass index, body fat percentage, etc. to show overall fitness progress and encourage the employee to increase his or her level of physical activity. The employees also benefit from yearly feedback from MDs. Nevertheless, the feedback loop from MDs is not so often (once a year). Perhaps more constant feedback from MDs is needed to keep employees committed to the programme.

Another issue is that visiting MDs can be costly for employers and time-consuming for employees. To reduce costs and enable more frequent contact with MDs, ICT communication tools (e.g. forums, chat rooms and voice-over-IP tools like Skype) could be added to the platform to connect employees with MDs. In fact, the healthcare provider company has recently piloted remote medical consultation, whereby employees communicate with their MDs via a video conferencing system. For users without technology skills, other arrangements can be made. For instance, employers may arrange on-site health events a few times per year so that employees can consult MDs about their fitness progress.

As fitness and wellbeing are also related to nutrition, the platform could be extended so that it supports

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nutritional feedback and advice. Educating employees about and guiding them towards a healthy eating behaviour and/or providing dietary guidelines could complement the programme. For example, there are already services whereby employees use their phones to photograph their meals before eating them. A nutrition coach analyses the photos and provides regular feedback. Obviously, providing such additional services requires new partners such as nutrition experts and dieticians to fulfil the task.

In the PAP case, social media are intended to keep employees motivated. As discussed earlier, however, the use of technology, including social media, may create a digital divide between employees (Dewan and Riggins, 2005). In order to avoid creating such gap, other communication channels (e.g. the internal portal and email of the organization) can be used to facilitate communication between employees to encourage each other to meet their wellness goals. Therefore, media diversity can be crucial to include all groups of employees in the programme.

6. Conclusions

This paper discussed how ICT can be of help in primary prevention programmes in the workplace. Using an illustrative case of a prevention programme in Finland, we showed how ICT can be used to collect, analyse, share and visualize health-related data.

Various health technologies, mobile devices and sensors generate health-relevant data that can be used to predict health issues of employees. Giving employees the explicit choice whether to use ICT by themselves or let professionals use it for them can be important for the motivation and acceptance of the programme. At the same time, collecting health-relevant data raises concerns over data ownership, privacy and the role of the employer. For the case discussed, issues of data ownership and who has the right to use data in which way still have to be dealt with.

Using social media features, ICT can be used to trigger competition between employees or teams of employees to improve their health. It can also be used to visualize the effects of treatment and improvements in physical activity levels. However, for motivating the employees, non-ICT factors such as the involvement of MDs can also stimulate commitment of employees to the programme. The involvement of MDs can be intensified in a cost-effective way through online consulting and feedback sessions.

The illustrative case presented in this paper utilizes only part of the potential of ICT and sensor-based technologies for e-health initiatives. As sensors become more and more ubiquitous and platforms emerge to make data from heterogeneous sensors accessible, opportunities for ICT-enabled prevention programmes in the workplace will increase. However, this will likely require collaboration between different business partners from healthcare, ICT and employer fields that would normally not jointly develop services together (Heikkilä and Kuivaniemi, 2012).

The findings of this study have important implications for future studies on primary prevention programmes in workplaces.

- While in this case the employer pays for the service, it is likely that providing the service in other countries requires relations with other actors such as insurers and government institutions. It would therefore be interesting to study how institutional settings can influence the implementation and adoption of the service.
- The case provided here should be interpreted with care, given the small sample size in employee survey and the specific institutional setting of the case. In Finland, most employees receive healthcare insurance from their employer. Employers are incentivized to keep employees healthy to reduce costs of employees' absence from work. This is likely to motivate employers to engage in primary prevention programmes as well as ICT innovations to increase effectiveness and reduce costs. However, if insurers or the government have to pay for the service, their motivations might differ. Future studies can explore how motivational factors can influence the way workplace prevention programmes are implemented.
- Those who provide the service (e.g. employers or insurers) and have access to the data can also influence the acceptance of the service by employees. Perhaps employees are less sceptical about data privacy if the service is provided by insurers or the government. Therefore, future research can study whether the provider of the service matters in establishing trust relations with employees and motivating them to adopt the service. Such insights can be used to develop extended acceptance model for primary prevention technologies.
- Collaboration for offering prevention programmes requires new business models that ensure value creation for all business partners (Herzlinger, 2006). Future research in this area can explore business model issues that may arise when designing these joint services.
- The prevention programme studied in this paper is mostly focused on less fit, ill and/or recovering employees and not necessarily only elderly people, because focusing only on the elderly could be considered discrimination. This highlights the underlying legal complexity of implementing workplace prevention programmes.

Appendix 1. Survey items

- Have you used health technology solutions in order to get more information about your health and exercises? For instance, heart rate monitors, body composition tools, pedometers, tracking devices and blood pressure measuring devices. (yes, no)
- If you have used health technology, how often have you used it? (regularly, sometimes, only tested)
- Do you think the body age assessment is an efficient way to motivate people to be physically active? (yes, no)

The following items were assessed on a 5-point scale (totally disagree–totally agree)

- The service utilizes modern equipment
- The physical facilities at the pharmacy are visually appealing
- The materials associated with the service are precise
- The service in the pharmacy is trustworthy
- The pharmacy performs the service well
- The personnel at the pharmacy provided enough information
- The personnel at the pharmacy can be trusted

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- I feel I am in good hands when I attend the service
- The personnel at the pharmacy are polite
- The personnel at the pharmacy can provide answers to my questions
- The service takes into account my personal needs
- The assessment service was convenient
- I will certainly come back for a new assessment session
- I would recommend the service to my friends

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