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Impact on physical fitness of exercise promotion service utilizing social media

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Summary

Study aim: the purpose of the present study was to survey the impact of a social media platform on physical fitness, physical activity levels and daily sitting time.
Material and methods: a total of 2039 users (1445 women and 594 men) of the social media service (HeiaHeia, Helsinki, Finland) voluntarily participated in the study by answering an online questionnaire provided by a survey.
Results: about 63.8% of the participants reported that the service has advanced their perceived level of physical fitness, while 36.2% reported no impact on their fitness. Most participants (71.3%) with BMI over 25 reported that the service had helped them to improve their physical fitness. Participants with BMI over 35 reported a more positive impact than in any other weight range groups. One-third of the participants (32.3%) sat for more than seven hours a day; 23.5% sat less than five hours a day. More than half of the participants (56.8%) were encouraged to be physical active during the day and aimed to reduce sitting time at their jobs during the workday.
Conclusions: there seems to be a positive impact of web services that promote physical activity on the physical fitness among social media users. Although the present service is not merely well suited for physically active and physical fit users, it motivates users of all fitness levels to exercise. However, more studies are needed to clarify effects of social media on physical activity, fitness and health.

Keywords: Physical activity – Fitness – Social media

Introduction

Previous studies clearly indicate that current levels of physical activity (PA), consisting of leisure time (LTPA), commuting (CPA) and occupational (OPA) physical activity, are insufficient to improve physical fitness and maintain the health among citizens, especially in Western countries [3, 6]. According to the World Health Organization (WHO), sedentary behavior has overtaken obesity and is currently the fourth leading risk for premature mortality [13]. Moreover, high amounts of sitting time (over 7 hours per day), after adjusting for physical activity, are associated with greater risk of premature death. In other words, the higher the amount of total sitting time, the higher the risk [3]. The aforementioned factors have contributed to a decline in physical fitness and an increase in the overweight in populations during recent decades [1, 6, 10].

Now, scientists and practitioners are trying to find methods to increase physical activity among people, especially, among those with high levels of sedentary behavior. To that end, some Internet services utilizing social media for tracking and sharing physical activities online have been created in recent years. These services are designed to motivate individuals and people at work to be more physically active with encouragement from friends and peers. The services also aim to promote the overall well-being of their users and encourage them to utilize social media to enhance physical fitness by producing training programs, technique videos and fitness counseling.

Physical activity promotion services utilizing social media contain hundreds of different sport participation and activity reporting. The services have features designed to incentive the increase of daily physical activity levels. Namely, friends with whom you socially interact are known as physical activity motivators, particularly in adolescents and women [6]. On the contrary, it seems that targeting improvements in physical fitness and recreation activities are the primary motivators in men [11]. Due to the popularity of social media websites among all ages, fitness

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services utilizing social media can be powerful tools for promoting physical activity and fitness. Thus, there appears to be social demand for online fitness services utilizing social media where registered users can invite to join the service those friends and colleagues with whom they wish to share their exercise and training logs. In addition to logging sports and activities, users can exchange virtual cheers and comment on exercises ranging from high-intensity running to light housework and yard work to promote friends and peers to be more physically active. The users can also choose to share activities, training routes and other input on Facebook and Twitter. The web service HeiaHeia offers dozens of different and fun cheers used as rewards for executed exercises and activities.

Currently, mobile applications, which offer a fast and easy to use platform for a social workout between and among friends, are also available for all major mobile platforms. With the growing prevalence of smartphones, tablets and mobile devices account for over 35% of all the traffic on the Internet. Mobile applications make using the service easy and logging in activities and cheering friends almost spontaneous.

Literature studying the benefits of using social media to promote physical activity and fitness is, however, limited. Villiard and Moreno [12] noticed that Facebook is a popular discussion venue, particularly among adolescents. Although fitness behavior, physical activity and physical appearance are common topics of discussion among young people, use of Facebook with an educational component together with self-monitoring did not increase physical activity as compared to education-only controls [2]. Therefore, distributing appropriate exercise and health-related information via social media may be beneficial for promoting physical activity and physical fitness, especially in children and adolescents. It has also been recommended that planners should maximize the potential synergy of traditional mass media and new social media in future campaigns in promoting physical activity and health [7]. However, there is a lack of information concerning how social media alone affects physical activity and fitness that distributes knowledge of healthy behavior. Therefore, the purpose of the present study was to survey the impact of a social media platform on the physical fitness, physical activity levels and daily sitting time among HeiaHeia social media service users. In addition, the purpose was to get more information about their daily sitting time.

Material and methods

A total of 2039 users (1445 women and 594 men) of the service (HeiaHeia, Helsinki, Finland) voluntarily participated in the survey, which was conducted as an online questionnaire provided by the web survey company SurveyMonkey (Palo Alto, California, USA). Surveys were available for the service users for a period of one month at the HeiaHeia web page. HeiaHeia is a gamified social media and completely customizable wellness service that is used with a mobile phone or a web browser. It includes a comprehensive exercise and wellness log, which helps users track their well-being behavior and physical activity. Social features, such as cheering on others, motivate lifestyle changes through a sense of community.

The largest age group (27.2%) comprised people aged 31–40 years; 27.4% of them were aged 30 years and under; 72.6% were over the age of 30 years. The survey was open to all users of the service upon login, but participation in the survey was voluntary. Background information asked of the participants included participant's age, gender, body mass index (BMI), self-estimated physical fitness (from poor to excellent), and physical activity level of participants. To assess physical activity, the single-item question on leisure-time vigorous physical activity (SIVAQ) was performed: "Think about last 3 months and consider all leisure time physical activity with duration of at least 20 min per session. How frequently were you physically active?" The choices were 1) less than once a week; 2) no vigorous activities but light or moderate physical activity at least once a week; 3) vigorous activity once a week; 4) vigorous activity twice a week; 5) vigorous activity three times a week; and 6) vigorous activity at least four times a week [5]. All volunteers were also informed about the design of the study, which was conducted according to the 1975 Declaration of Helsinki.

Data Analyses

For statistical analysis, the frequency data were analyzed by chi-square tests, and single proportions were compared with z-tests. Additionally nonparametric Spearman correlation coefficients were calculated. The statistics package IBM SPSS 22.0 was utilized, and the criterion of $p < 0.05$ was used for establishing statistical significance.

Results

Most participants (77.2%) exercised more than three times a week. A majority of them (52.6%) exercised 3 to 4 times a week. Figure 1 presents the distribution of physical activity frequency among the participants. Physical activity levels were lower in the overweight group compared with users in the normal weight range. Participant responses indicated that 3.8% of them had excellent, 20.5% had very good, 47.4% had good, and 28.3% had fair, passable or poor physical fitness.

According to the BMI categories, 33.4% of participants were overweight, 15.7% were obese, and 50.9% were in the normal weight range or under. More men (60.6%)

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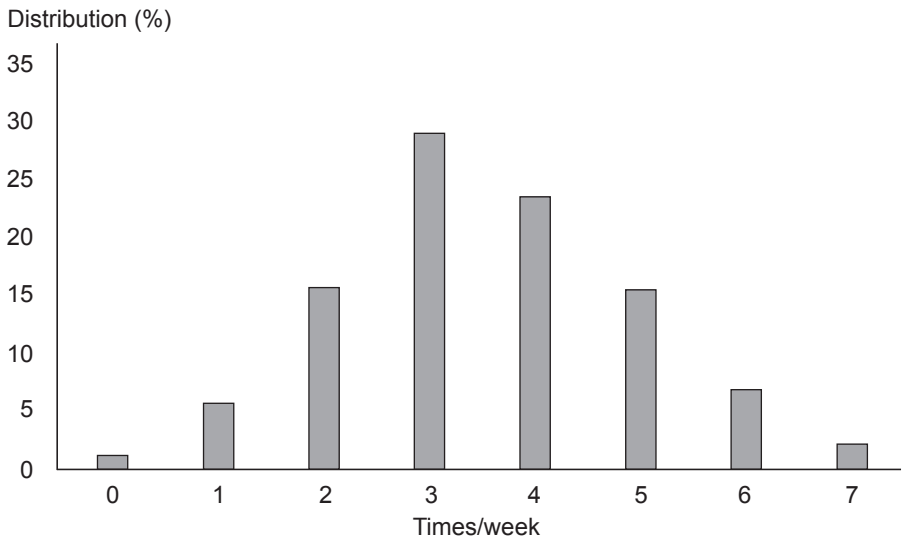

Fig. 1. Distribution of physical activity frequency (times/week) among the service users

than women (44.4%) exceeded the overweight threshold (BMI higher than 25). Fewer participants under the age of 30 years (26.7%) were overweight compared with their counterparts over 30 years of age (56.8%). The prevalence of overweight was highest for those over 50 years of age (61.9%).

The impact of using the web service on physical fitness

With most participants (63.8%), the service had reportedly advanced their physical fitness, while 36.2% of them reported that the service had had no impact on their perceived level of fitness. Figure 2 presents the self-estimated impact of using the service on the physical fitness of participants. The participants who estimated their current level of fitness as good, satisfactory, passable or in the poor categories reported that their fitness improved more often than those with excellent or very good initial physical fitness.

In the overweight group, 71.3% of the participants reported that the service had helped them to improve their physical fitness. Participants with BMI over 35 reported a more positive impact than in any other weight range groups.

Sitting and targeting sitting time in the workplace

About one-third (32.3%) of the participants sat more than seven hours a day; 23.5% sat less than five hours a day. Figure 3 presents the self-estimated daily sitting time of the participants. Approximately half of them (52.0%) were aware of the health risks associated with high daily sitting time, 41.8% had some knowledge about the risks of sitting, and 6.2% had no knowledge about the risks of sitting. Women (94.6%) were more aware of the health risks ($p < 0.05$) than men (92.1%). In order to reduce sitting time, 89.4% of the participants had incorporated walking or active breaks into their daily life, while 74.4% had in-

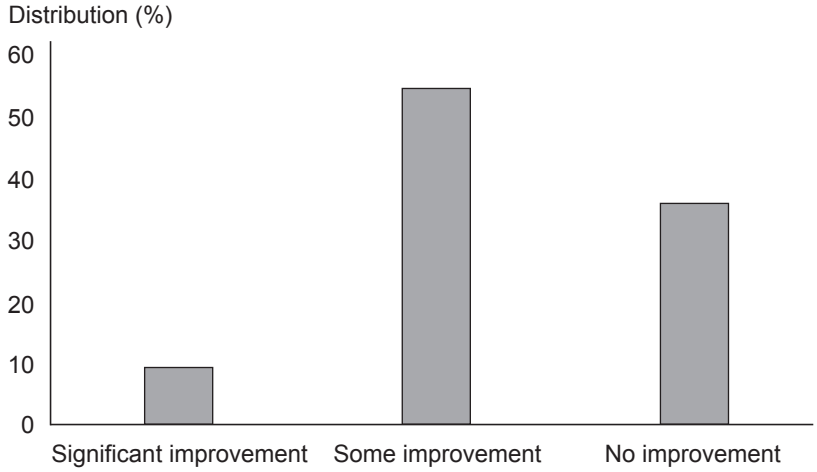

Fig. 2. The self-estimated impact of using the social media service on the physical fitness of the users

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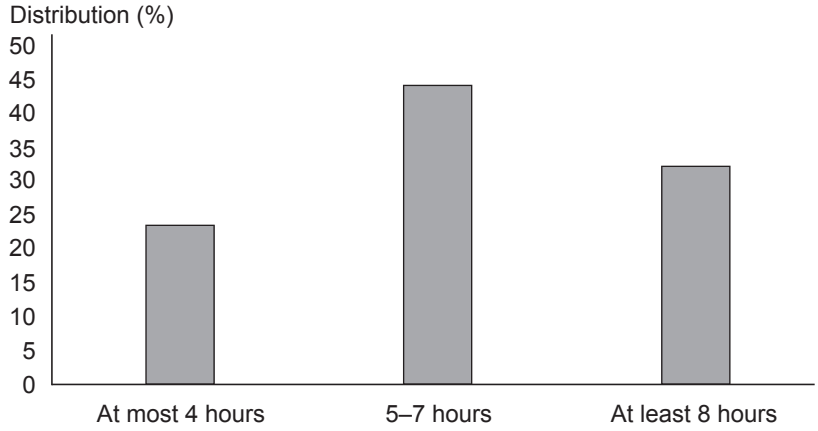

Fig. 3. The on average self-estimated daily sitting time (hours/day) of the users

corporated speaking on the phone in a standing position into their workday.

The survey also revealed that 56.8% of the participants were encouraged to be physically active by employers during the day and aimed to reduce sitting time. In contrast, 43.2% of participants reported that this was not the case at their workplace.

Associations between physical fitness, physical activity, body mass index and using the web service

Associations between physical activity and perceived physical fitness ($r = 0.51$, $p < 0.001$) and BMI ($r = 0.13$, $p < 0.001$) were noticed. The most active group perceived themselves to be more fit than their less active counterparts. In addition, the most active participants were also the least likely to be overweight.

Using the HeiaHeia service had a positive impact on the physical fitness of participants ($r = 0.11$, $p < 0.001$). There is also an association between BMI and improved physical fitness ($r = 0.10$, $p < 0.01$). Greater improvements in physical fitness were noticed in the overweight group than in the normal weight group.

There was an inverse relationship between daily sitting time ($r = 0.12$, $p < 0.001$) and physical activity, but no association with BMI ($r = 0.02$, p ns). The most physically active participants sat the least. In addition, the most physically fit participants sat less than others ($r = 0.12$, $p < 0.001$). About 89% of the participants were happy with their current level of fitness, while those with BMI of 25–29.9 planned to lose weight more often than other participants.

Conclusions

The present study demonstrated that healthy behavior knowledge and use of the social media web service is well-suited for users of all fitness levels regardless of gender or place of residence. Men and women of all ages used the service but, surprisingly, the smallest user group comprised those who were under 21 years of age. A majority of respondents and users were women, which reflects that women seem to be more active service users than men in this regard. This has also been the trend in total volume of HeiaHeia users.

Furthermore, the service motivated overweight, physically inactive users as well as those ones with poor fitness levels to exercise more. Nearly half the users were overweight or obese. A third of them exercised very little and self-estimated their physical fitness level as fair or poor. A majority of users exercised a minimum of 3 to 4 times a week. Most of them estimated their fitness level to be good. Thus, the users seemed to be in slightly better physical condition and more physically active than the general population as a whole [8]. However, their weight corresponded to that of the general population.

According to the national FINRISK 2012 study [8], a slight majority of the Finnish adult population was either overweight or obese (BMI over 27 kg/m^2). Only half of them exercised on a PA level sufficient to maintain their health [8]. The national recommendation for health-enhancing PA is moderate-to-vigorous aerobic physical activity 3 to 5 times a week. In addition, adults should engage in muscle-strengthening and balance training activities 2 to 3 times a week [9]. The sedentary segment of the population should be encouraged to take advantage of social media by utilizing services promoting exercise.

Unpublished data (Master data by HeiaHeia) have demonstrated that service users are at their most active phase at the beginning of the week. Physical activity levels decreased toward the end of the week and during the weekend. The same data also demonstrated that spring and early fall were the most physically active seasons. Despite having more leisure time during the summer and the end-of-year holiday season, physical activity again decreased. The present web service had a positive impact on physical

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fitness among the users. Approximately 64% of them reported that using the service had improved their physical fitness to some or to a large extent. The service seems to especially benefit the less fit users and the overweight users. In particular, the overweight user group (71.3%) reported that their physical fitness level had improved as compared to their normal weight counterparts.

There are many possible methods used to increase physical activity participation to be taken. Thus, devices measuring and tracking physical activity were also widely used and quite popular among the participants. A majority of the users utilized a measuring or tracking device during their exercises. One-third of the participants did not use any device while exercising. GPS trackers and heart rate monitors were the most commonly used devices, while devices tracking physical activity seem to have become a permanent part of daily leisure time and exercise routines. The number of smartphones used during exercises has grown rapidly during recent years in almost every age group. Integrating a tracking device or application to track physical activity may provide benefits to users. Mobile applications with GPS tracking make it easy for users to share interesting biking or running routes on social media websites. Activity logging has increased considerably with the introduction of mobile applications.

There seems to be perceived use for special workplace social media health programming services. However, nearly half of the participants reported that they had no knowledge of these kinds of services. Particularly, workplace fitness campaigns, competitions within companies, exercise statistics and a centralized service were deemed necessary. Through exercise and activity campaigns, the workplace service may help companies motivate their employees to pursue a more physically active workday. Namely, employees should be more physically active during the workday and reduce their daily sitting time. The risk limit lies at seven hours daily sitting time, and sitting time should be limited to a maximum of one hour at a time. The risk of premature death increases by 5% for each one-hour increment when employees sit for more than seven hours a day after adjusting for physical activity [3].

One-third of the participants reported sitting for more than seven hours a day. Total sitting time had no association with body weight; however, it did have an association with perceived physical fitness and activity. Those who perceived themselves to be physically fit and active sat less. The participants were well aware of the adverse health outcomes of sitting for prolonged periods of time. A majority of the participants had reduced daily sitting time by taking walking breaks and handling phone calls in the standing position.

Increasing physical activity in the workplace can be achieved by encouraging employees to be more physically active during commutes, lunch periods and breaks. Some meetings could be held as walking meetings. Sedentary office work could be done standing up by introducing height adjustable work desks. The National FINRISK 2012 study [8] demonstrates how physically active commuting has decreased among Finns in recent decades. On the other hand, there has been a slight increase in leisure time physical activity, but the volume is insufficient to maintain health. Thus, employers should assume a bigger role and more responsibility in promoting the physical activity and wellness at workplaces. On the other hand, sedentary behavior is a predisposing factor to continuously growing lifestyle diseases. Regular exercise and health-enhancing physical activities help to prevent cardiovascular diseases, type 2 diabetes, musculoskeletal diseases, some cancers and overweight. Physical activity also has a positive influence on mental health, overall well-being, and working ability [1, 4].

Risks associated with sitting were a consideration in some of the workplaces. Over 43% of workplaces had not taken measures to tackle the problem. As the need for manual labor decreases, light office labor tasks increase. Responsibility should not lie with employees alone. The example set by superiors and the encouragement of supervisors are important factors to be taken into account when trying to encourage employees to be more active. Therefore, web services provide a good, real-time and motivating workplace to promote exercise and physical activity by utilizing social media. However, social media service should see and seek wider implementation in companies and organizations alike.

In conclusion, there seems to be a perceived need for web service promoting physical activity and physical fitness. These kinds of services seem to have a positive impact on the physical fitness of users. A service like HeiaHeia is not merely a service well-suited for physically active and fit users but a service that motivates users of all fitness levels to exercise. In addition, there seems to be also a perceived need for workplace services. Social fitness campaigns and contests in particular were deemed an important part of workplace wellness and fitness. Employees should be more physically active during the workday because prolonged sitting seems to increase a health risk. Employers should assume a bigger role promoting physical activity among employees. Service users need diverse, personalized exercise and training programs and fitness counseling. The effects of these programs, including the counseling, on physical activity, fitness and health requires further study.

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