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The use of cycling workstations in public places – an observational study

T. Torbeyns [a], S. Bailey [b], B. de Geus [a], R. Meeusen [a,c,*]

[a] Department of Human Physiology & Sports Medicine, Vrije Universiteit Brussel, Brussels, Belgium
[b] Department of Physical Therapy Education, Elon University, Elon, USA
[c] School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Queensland, Australia

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ABSTRACT

Objectives: To determine the use of cycling workstations in public places; how long are they used, who uses them, and why do people use them.
Study design: Mixed methods study; observations in combination with questionnaires.
Methods: Cycling desks with a charging feature (We-bike) at Brussels National Airport and Brussels South railway station were observed. Data about the number of users, time spent using the workstation, cycling and charging behaviour, were collected by observation. Data about sex, age, body mass index (BMI) and the reason of the use, were obtained via a survey.
Results: Approximately three people per hour cycled on the workstation. Mean (SD) cycling time was 15.2 (11.9) minutes and mean (SD) cycling intensity was 2.11 (1.16) on the modified Borg scale. 88% of the users charged a device. About two-thirds of the observed people were male and the majority was between 26 and 45 years old (44%). The average BMI (SD) of the surveyed participants was 24.0 (3.1) kg/m^2, with 26.1% of the participants being overweight. People used the desks because they thought it was fun, relaxing, a good distraction, healthy, good for maintaining shape and/or eco-friendly. However, the majority of the participants (83%) used it because of the charging feature and only one-third of the people would also use the desk if a charging feature was not available.
Conclusions: Cycling desks at public places are used by approximately three people per hour. The charging feature is an important motivating factor as only one-third of the people would use the cycling workstation if there would not be a charging feature. As this easy-to-use machine brings about a decrease in sedentary behaviour and an increase in energy expenditure, the availability at places accessible to everyone, could contribute to a less sedentary society and could thus contribute to the prevention of diseases and mental problems related to prolonged sitting.

* *Corresponding author*. Department of Human Physiology & Sports Medicine, Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussels, Belgium. Tel.: +32 2 629 22 22; fax: +32 2 629 28 76.
E-mail address: rmeeusen@vub.ac.be (R. Meeusen).
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Introduction

It is known that participation in moderate to vigorous physical activity for at least 150 min per week is associated with improved population health, and a reduced risk of developing a wide range of non-communicable diseases.[1] Physical inactivity (not meeting the recommended physical activity levels), is identified as the fourth leading risk factor for global mortality.[2]

Furthermore, there is growing evidence that sedentary behaviour, referring to 'any waking activity characterised by an energy expenditure ≤1.5 metabolic equivalents and a sitting or reclining posture',[3] is associated with an increased risk of all-cause mortality, cardiovascular diseases, poor cardio-metabolic risk biomarker profiles and type 2 diabetes.[4,5] Besides these increased health risks, it has been shown that higher levels of sitting time are associated with poorer mental health, independently of sex, age, education and physical activity levels.[6] People showing higher physical activity levels and lower sitting time, experience a better quality of life as well as a better mental well-being.[7,8]

In contemporary society, prolonged sitting has been engineered into our lives across many settings, including transportation, the workplace and the home.[5] In 2008, worldwide, around 31% of adults were insufficiently active (28% of men and 34% of women) and approximately 3.2 million deaths each year were attributable to insufficient physical activity.[9] A report about sedentary behaviour in the United Kingdom, mentions an average sitting time of ten hours per day. This is more than half of an average waking day.[10] As this sitting has been shown to pose a threat on public health, there is a need for interventions tackling this problem. These could be directed to different settings. For example, studies investigating commuter cycling and physical activity in the workplace show that these interventions can contribute to an increase in physical activity levels and to an improvement in people's health and well-being.[11–13] However, most studies investigating possibilities to decrease people's sedentary behaviour and to increase physical activity levels, are directed to a private environment. Only few studies investigated if offering the opportunity of reducing sedentary behaviour in public places could contribute to an overall reduction of sedentary behaviour.

Humpel, Owen[14] and Sallis, Heather[15] found that neighbourhoods built to support physical activity have a strong potential to contribute to increased physical activity levels, with the most activity-supportive neighbourhoods having 100% higher rates of sufficient physical activity levels compared to those with no supportive attributes.[15] The installation of Fitness Zones in parks also seemed to contribute to an increased estimated energy expenditure in the parks where those Fitness Zones were installed.[16] Furthermore, there is strong evidence that point-of-decision prompts, environmental modifications encouraging stair use, signs, music and art posters in stairwells are effective in increasing the use of stairs.[17,18]

Recently, cycling workstations have been placed in public areas (Belgian and French railway stations, airports, motorway service areas along the French motorways). The availability of these bikes in public areas has large potential to contribute to the prevention of several diseases and mental problems caused by prolonged sitting, as people receive the possibility of interrupting their sedentary behaviour. However, it has not yet been established if these bikes in public areas are being used and thus are contributing to a reduction in people's sedentary behaviour, what exactly the motivational factors for using these bikes are, and if extra promotion of these bikes is needed to achieve an optimal use. Therefore, the purposes of this study were to 1) determine the use of these workstations, 2) describe the characteristics of people who use these workstations, and 3) understand the reasons why people use the workstations.

Methods

Observations

Data about the behaviour of the people using the workstations were collected in January 2014, on three weekdays for a total of 27 h between 7 am and 7 pm at Brussels South railway station and on three weekdays for a total of 21 h between 8.30 am and 15.30 pm at Brussels National airport. People were discretely observed by one of our researchers (T.T.) while using the workstation and were asked to complete a questionnaire when they finished cycling. The observation did not interfere with the people's normal behaviour. While observing, notes in a predefined table were made about cycling time, charging behaviour, and sex. Data were collected and analysed in 2014.

Data collection included data about the number of people, the amount of time they spent using the workstation, whether they cycled and whether they charged a device. The relative numbers of people cycling and charging a device were calculated.

Questionnaire

People who used the workstation, were asked to fill out a questionnaire. Data about sex, age, BMI (kg/m^2) and nationality of the people using the workstation were obtained. The questions used to survey participants about the workstations are displayed in Table 1. Most questions were multiple choice or dichotomous (yes/no). Perceived effort was measured using the modified Borg scale (10-point scale). To cluster the answers on the open questions, QSR nVIVO 10[19] was used to perform thematic analysis. Before collecting the data, possible themes within each question were thought of by T.T. (deductive). After collection, raw data were coded. Based on this codes, additional themes based on frequently arising answers were added (inductive). Consequently, the respective codes were assigned to the respective themes.

Cycling workstation

The cycling workstation that has been placed in these public venues is called 'We-bike' and manufactured by the Belgian company 'WeWatt'.[20] The bikes are equipped with a charging feature – allowing a device (e.g. laptop or mobile phone) to be charged by cycling. The We-bike point at the airport consists