UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Recommendations for a Stair Wrap Intervention at UBC

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Executive Summary

The purpose of our study was to investigate how the University of British Columbia's (UBC) community perceives the implementation of a stair wrap intervention and to determine their motivations for stair usage. We want to use this information to provide a set of recommendation guidelines for a stair wrap intervention and ultimately improve future physical activity campaigns at UBC. To abide by our purpose, we evaluated the influences of stair wrap interventions on health behaviour choices and types of motivations involved when faced with a decision of taking the stairs or taking an elevator through a literature review process. The reviewed literature on this topic included highlighting the increasing issue of inactivity among students which needs to be addressed through health promotion strategies such as stair wraps to enhance overall physical activity levels and wellbeing across campus. Analysis of previous stair wrap intervention studies provided us with insight on how health benefits are perceived when put into words on a stair wrap to promote motivation and participation in physical activity bouts throughout the day. We also reviewed the aesthetic impact of stair wraps as a key factor in fostering an effective health promotion intervention. There is also attention given to the type of motivations that relate to influencing health behaviour choices and changes (Radtke & Rackow, 2014). After gaining a background of knowledge through reviewing previous research on stair wraps, we decided to collect data from the students, staff and faculty of UBC by creating a survey. We used our research to create questions that provided us with insight on which types of motivation, prompts, and aesthetic appeal are most likely to influence the UBC population's likeness to take the stairs rather than elevators. We promoted participation in our survey across campus by putting up recruitment flyers, emails and sharing via social media posts. We managed to recruit 99 diverse survey participants who have various roles on campus. Upon gathering the responses to our survey questions, we then compiled the results into a table where we were able to organize the data into themes regarding motivation and aesthetic appeal. From these themes, we were then able to develop recommendations that we think would be most effective in promoting physical activity participation for future stair wrap interventions that can be implemented on campus. Our recommendations include focusing on the type of motivation used, aesthetic appeal, and the stimulation of prompts by renewing them over time and keeping interest. By applying our recommendations, we hope that physical activity levels will increase by promoting stair use in everyday life and enhance overall student and staff wellbeing and health across campus.

Introduction:

In 2018, the UBC Undergraduate Experience Survey (UES) found that 45% of its students are not meeting Canada's recommended guidelines of 150 minutes of moderate to vigorous physical activity per week (UBC, 2019). Physical activity is movement of the body that requires energy expenditure and includes exercise, active transport, house chores, working and various forms of recreational play (World Health Organization, 2020). Being physically inactive or lacking physical activity can negatively impact one's overall health and wellbeing (UBC, 2019). Meanwhile, the UES findings have demonstrated that the students who were physically active reported greater satisfaction with their university experience, a greater sense of belonging and a greater sense of community on campus (UBC, 2019). All of these factors contribute to a holistic healthy lifestyle, where components of mental, physical, emotional and spiritual wellbeing overlap and interact (Alliance of Community Health Plans, 2017).

Guided by the Okanagan Charter, UBC launched the *Wellbeing Strategic Framework* (2019) in an effort to collaborate, innovate and include aspects of wellbeing at all levels of the university (UBC, 2019). According to the *Wellbeing Strategic Framework* (2019), some of UBC's target goals as a health-promoting university are to reduce the prevalence of sedentary behaviours by 10% and see a 10% increase of improved physical activity opportunities and programs available to all community members by 2025. Implementing a stair wrap intervention at UBC may assist in reaching these target goals by promoting the daily use of stairs and encouraging UBC's students, staff, faculty and community members to lead more physically active lifestyles. By using intriguing artwork and other communicative materials, this study investigates ways to encourage stair use where possible, through the use of stair wraps. The

following literature review will examine the existing literature and how aesthetics and types of motivation have impacted certain stair wrap interventions in various universities and workplaces.

Literature Review:

How to Increase Motivation

Individuals often have compensatory health beliefs (CHBs), where they believe engaging in healthy behaviours, like taking the stairs, will compensate for unhealthy behaviours, such as prolonged sitting. Radtke & Rackow (2014) evaluated the impact of autonomous motivation on CHBs to boost behaviour change regarding elevator and stair use. The study found that increasing autonomous motivation and CHBs lead to healthier lifestyle choices such as taking the stairs instead of the elevator. It was also found that flyers or posters to promote physical activity should aim to increase internal motivations in the target individuals (Radtke & Rackow, 2014). These findings support that the use of compensation strategies aimed at achieving internal rewards are more effective than using external rewards to create healthy behavior changes. Internal rewards for taking the stairs instead of the elevator may look like improvement of the cardiovascular system and burning more calories to lose weight. As found by Eves et al. (2012), using weight loss facts as a motivator to increase stair use was effective in creating behaviour change. External rewards include appearing to be healthy to others or saving energy used by elevators to benefit the planet. Using internal rewards as motivation for making health decisions have been found to be most effective in creating behaviour change (Radtke & Rackow, 2014). In addition to these findings, it was concluded that targeting motivations towards attitude change by providing reasons why the behaviour should be performed deemed to be most effective in resulting in changes of unhealthy behaviours (Eves et al., 2012).

Previous Stair Wrap Interventions

It is important for university students to be physically active, as it decreases the possibility of living a sedentary lifestyle. Physical activity reduces risk for disease, obesity, stress, anxiety, and also creates healthy lifestyle habits that will drastically increase quality of life (Fagaras et al, 2015). Along with university students, it is necessary for the faculty and staff to demonstrate active living. A study performed by Lewis and Eves (2012), compared the efficacy for increasing stair-use on a university campus through two different interventions: volitional and motivational (5 days), and solely motivational (5 days). The goal for the volitional component was to interfere with habitual behaviour when it instantly occurs, in this case, making the choice to take the elevator instead of the stairs. On the latter, the motivational component aimed at influencing an individual's attitude on stair use, doing this by use of poster's inside elevators. The overall percentage before the intervention was 59.4%, during the motivational component it was 55.1%, and lastly during the volitional component it was 60.1% (Lewis and Eves, 2012). The results of this study identified that the motivational component alone was not beneficial, and that the volitional component was needed to actually change behaviour. Lewis and Eves (2012) noted that in order for the volitional prompt to be successful, a prior objective to be more active is necessary. To compare, a study by Howe and Young (2011) attempted to identify if the use of posters and competitive challenges increase stair use at university residence buildings. Two buildings were divided into a control group and an intervention group, both baseline percentage of stair use being at 27.8% and 24.9% (Howe and Young, 2011). The two-week intervention program resulted in an increase of stair use from baseline percentage to 33.24%, although when the program ended and incentives came to a halt, the percentage reduced (Howe and Young, 2011). This indicates that the incentives were successful and greatly needed to sustain stair use.

Stair climbing is a convenient and low cost opportunity to engage in physical activity at worksites for able-bodied persons. Bellicha and colleagues (2016), evaluated the short and long term effectiveness of a stair climbing program through two intervention phases at a worksite. In the short term, point of decision (POD) prompts on the health benefits of stair climbing were placed where individuals decide to use the stairs or elevator (Bellicha et al., 2016). The second phase included prompts and directional signs like arrows or footprints to guide individuals towards the stairs which resulted in an increase of stair use compared to baseline results (Bellicha et al., 2016). The Public Health Agency's (PHA) (2017), "A guide to implementing a workplace based stair use programme" suggested that motivational prompts should be changed on a regular basis to maintain staff interest and the use of novelties like music in stairwells, recording devices or smart tracking technology can also benefit behaviour change. Another aim of physical activity promotion programs is the concept of external validity and whether the program could be transferred and maintained in real life situations. Bellicha et al. (2016) identified a barrier they encountered while implementing the initiative which was the placement and location of posters in an area that was typically dedicated to corporate communications. The company made adaptations to address the lack of visibility through the use of colorful stickers to improve the aesthetics of the stairs in addition to original motivational and directional prompts. To enhance the feasibility of major stairwell modifications at worksites, the PHA (2017) recommends regular maintenance and a clean, tidy, well lit and conveniently located stairwell with posters displayed in a straight and symmetrical formation to include messages upon exits, to enhance motivation and provide encouragement.

Aesthetics

One recurring factor that has been shown to increase the effectiveness of a stair wrap intervention is the aesthetic quality of the stairs. Studies have investigated how enhancing stairway aesthetics impact the use of stairs through the use of music, interactive paintings or other visual changes (Swenson & Siegel, 2013; Kerr et al., 2004). These studies found that when stairwells were made more aesthetic, stair use increased in office spaces (Swenson & Siegel, 2013; Kerr et al., 2004) and multicultural companies (Bellicha et al., 2016). The study by Bellicha et al. investigated the effects of stair use through two different 1-month stair wrap interventions. The first intervention implemented motivational signs and directional arrow stickers for the stairs and the second improved the stairway aesthetics by putting colorful stickers that contained motivational messages on the vertical side of the stairway. The study found that the second intervention greatly increased stair use at the intervention location; however, stair use was decreased at the control site. After the intervention concluded, the increase in stair use at the intervention site was not observed. The barriers that the study identified regarded the visibility of the motivation posters in the first intervention as they were smaller and in niche locations. Based on this information, stair-wraps are seen as a better intervention due to their greater visibility. Swenson and Sigel's study (2013) was conducted in an office work space, implementing interactive maps and storyboards in paintings along the stairway which was found to increase stair use significantly. In one study by Kerr et al., (2004) motivational signs for stairs were not observed to be effective until music and artwork were also added to the intervention, which suggests that visual and auditory aesthetics are a factor that should be considered when implementing any kind of stair-wrap intervention rather than simply motivation messages. The findings from various studies have shown that there needs to be careful consideration when

implementing a stair-wrap intervention so that behaviour change can occur to promote health effectively and avoid unhealthy decision-making.

Methods:

Population Identified

According to the Undergraduate Experience Survey (UES) at UBC, outcomes revealed that students who meet the Canadian physical activity guidelines are more likely to have increased satisfaction, belonging, and connection with their campus experiences (UBC, 2019). UES outcomes also discovered that 45% of students do not meet the Canadian physical activity guidelines of 150 minutes of moderate to vigorous physical activity per week (UBC, 2019). Deliens et al. (2015) found that "higher levels of sedentary behaviour are associated with indicators of poorer well-being, increased risk of depression, and weaker cognitive functioning." These findings relate to UES's statement that mental health affects everyone at UBC including students, staff and faculty (UBC, 2019). Adding opportunities to engage in physical activity to the daily lives of UBC's community members may aid in preventing the negative health impacts associated with physical inactivity. These findings paint UBC students to be an ideal target population for a stair-wrap intervention. Using a stair-wrap strategy to increase students' motivation to take the stairs rather than elevators will improve the amount of physical activity and movement they participate in each day. It is important to include diverse and inclusive opportunities to add movement to everyday living and encourage ways of active and sustainable transportation (UBC, 2019).

Recruitment

While there seems to be a lack of recommendation guidelines in current literature, there are many quantitative experimental and quasi experimental stair intervention studies that have

successfully promoted stair use using various aesthetic and motivation targeting strategies (Ruff et al., 2014; Bellicha et al., 2016; Howe and Young, 2011 & Eves et al., 2012). We surveyed a sample of 99 people who belong to the UBC community in order to evaluate what kind of stair nudges would be most appropriate, as well as which campus locations would be best suited for the UBC stair-wrap intervention. Similar to Ruff et al.'s (2014) stair use study at urban workplaces, our data was collected using an online survey. A web-link to the online survey was distributed on Tuesday, March 3, 2020. We promoted the survey by posting on various UBC student Facebook pages, such as UBC Class of 2020, UBC Class of 2021, UBC Class of 2022 and three first year residential pages (Totem, Vanier and Orchard). The post to these Facebook pages can be seen in Appendix A. To ensure we reach not only the students of UBC, but also faculty and staff, we emailed various faculty heads and managers encouraging them to forward the survey link to the rest of their faculty and staff. The email sent can be found in Appendix B. Lastly, we posted flyers (see Appendix C) containing the URL and a QR code across high traffic buildings in UBC, such as the Nest. The reason why we did online surveys as opposed to in person surveys was so that we could reach a larger and more representative sample of the UBC community. As an incentive to participate, survey takers were entered into a draw for a chance to win prizes. The prizes consisted of two Lululemon yoga mats and two $25 gift certificates.

Data Collection

The survey was composed of nine questions to identify relevant barriers to stair usage as well as what would make the stairs more appealing to those who are capable of climbing the stairs but choose not to. Referring to Appendix D, we first asked that the survey taker identify their relation to UBC (ie. student, staff, faculty or other), which will be used to ensure that we have a diverse and representative sample from the UBC community. The second question of the

survey is similar to what Ruff et al. (2014) asked in order to roughly assess, on average, how many people currently use the stairs. It should be noted that people often over-report; however, we are still able to get a sense of how many people take the stairs regularly. To get a greater picture of our participants' elevator and stair use, we also ask for their estimated proportion of elevator to stair usage in a week in the third question of the survey. Question number four asks the motivation behind those that do take the stairs as varying motivations may change the amount of stair use with or without an intervention (Radtke & Rackow, 2014). If we learn what motivates people to take the stairs then we can word our messages to cater to their motivations. The fifth question we asked attempts to identify the most prominent reason for why people choose to not take the stairs. All of the options given had been identified as barriers to stair usage in previous literature (Bellicha et al., 2016; Howe and Young, 2011 & Eves et al., 2012); however, we tried to identify the most common barrier to the UBC community specifically.

The sixth question we asked was in relation to potential sources of motivation to be used during a stair wrap at UBC. For example, the option of having a reward at the top of the stairs implies that one cares mostly about external motivation; whereas the option of knowing the health benefits of taking the stairs would target one's intrinsic motivation (Radtke & Rackow, 2014). Other potential responses look at whether people would be more inclined to take the stairs if their friends did so as well (ie. targeting social inclusion) and if the stairs' aesthetic and accessibility affects whether someone takes the stairs or not. Question number seven asked survey takers to identify places on campus where people often choose the elevators as opposed to the stairs. This question helps us identify the location with the greatest need for an intervention and hopefully encourage people who would normally take the elevator to take the stairs at that particular building. Question number eight looked at which type of aesthetic improvement may

be the most favorable to the UBC community. Different studies had various means to make their stairways aesthetic, some by colorful stickers (Bellicha et al., 2016) and others with interactive artwork (Swenson and Sigel, 2013). We wanted to compare how different styles may be more or less favorable and effective. In the last question, we showed the four signs used in Engelen et al.'s (2017) study on types of messaging to encourage stair use. Each sign corresponds to a different message type: Time pressures of daily life (option a), meeting daily physical recommendations (option b), mental health benefits (option c) or equity (option d). Through this question, we are able to prioritize which message strategy should be used when designing a stair-wrap for UBC.

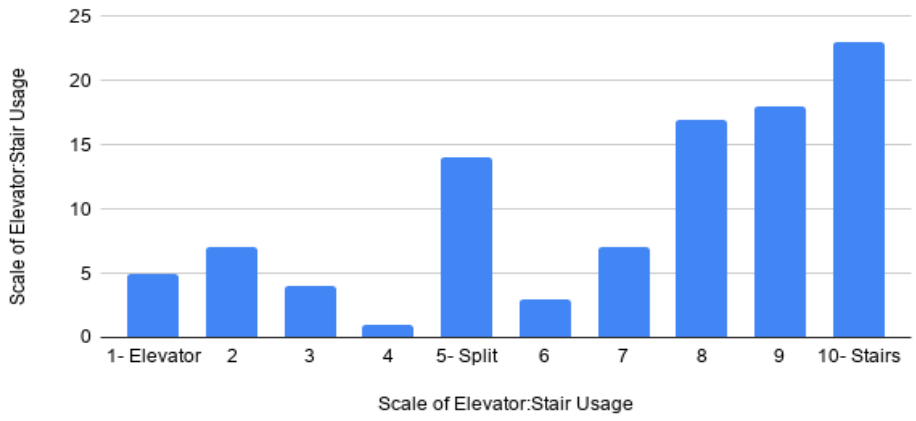
Analysis

To analyze our data, we compiled the reported data into a table that includes the survey questions, answer options, and results (refer to Appendix E). Avitsland et al. (2017), utilized this method in order to organize open-ended questions into categorical themes, and to include the number (N) of responses and its percentage (%) for each answer option. The percentage helped us identify the most frequent and least popular response to each question for the targeted cohorts (student, staff, faculty and other target populations). Subsequently this allowed us to identify recurring themes on preferences for aesthetics and location, which assisted us in making recommendations that coincide with internal and external motivation factors. Lastly, we omitted the responses of those indicating a physical disability preventing their stair usage as recommended by Ruff et al. (2014), in order to make fair and reasonable recommendations on stair usage behaviour for target populations with the ability to participate.

Results & Findings:

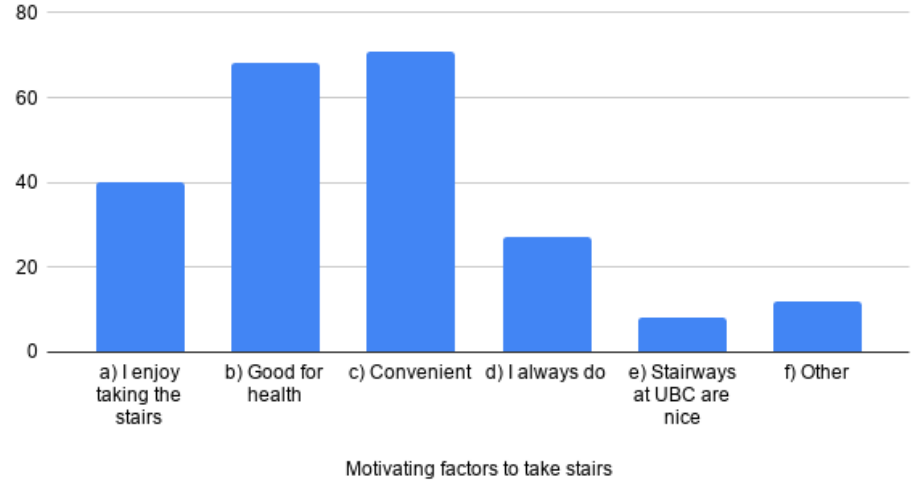
99 people participated in this study. 74.7% were students, 20.30% were staff, 5% "other", It should be noted no faculty members chose to participate in this study. From this sample (see figure 1), we found that most participants regularly favored the stairs over the elevator, resulting in an estimated ratio of 8:2 stair to elevator usage or greater. There was also a great spike of people who favored the stairs and elevator equally and very few participants favored elevators over stair use.

Figure 1: Average Proportion of Elevator:Stair Usage in a Week



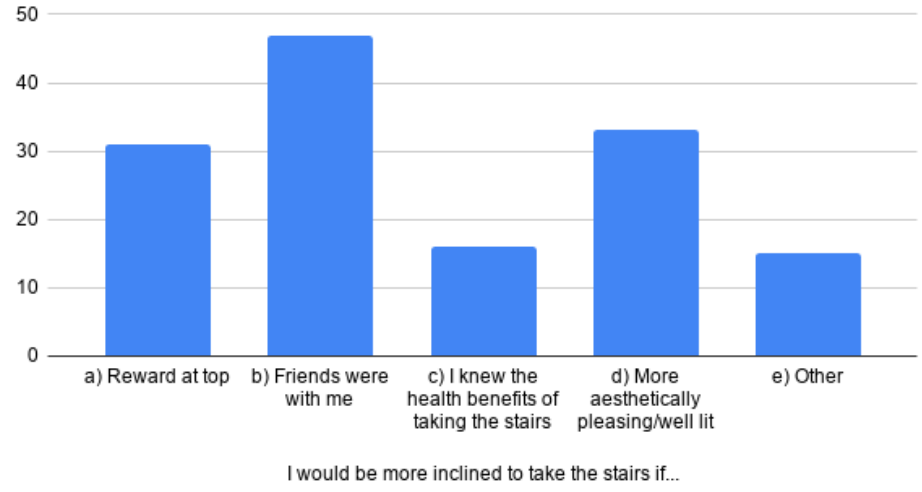
When taking the stairs, participants stated (see figure 2) that their motivators included for convenience (c), their health (b), because they enjoy taking the stairs (a), because they always do (d), for other reasons not listed (f), or because they enjoy the stairways at UBC (e).

Figure 2.



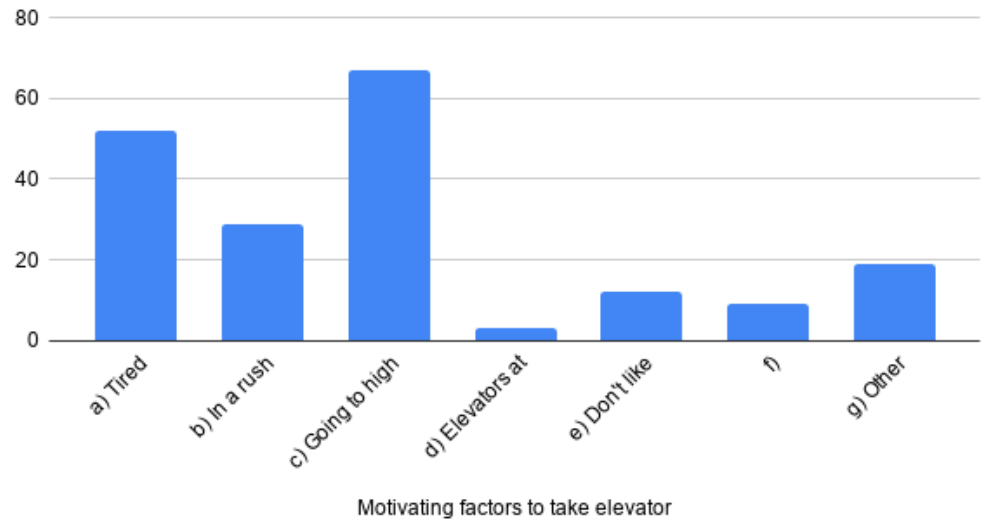
In order of preference (see figure 3), participants stated that they would be more likely to take the stairs if: they had a friend with them (b), if there was a reward at the top (a), if it was more aesthetic (d), if they knew the health benefits of taking the stairs (c), and for other reasons not listed (e). This implies that they were more likely to take the stairs if there were externally motivating incentives.

Figure 3

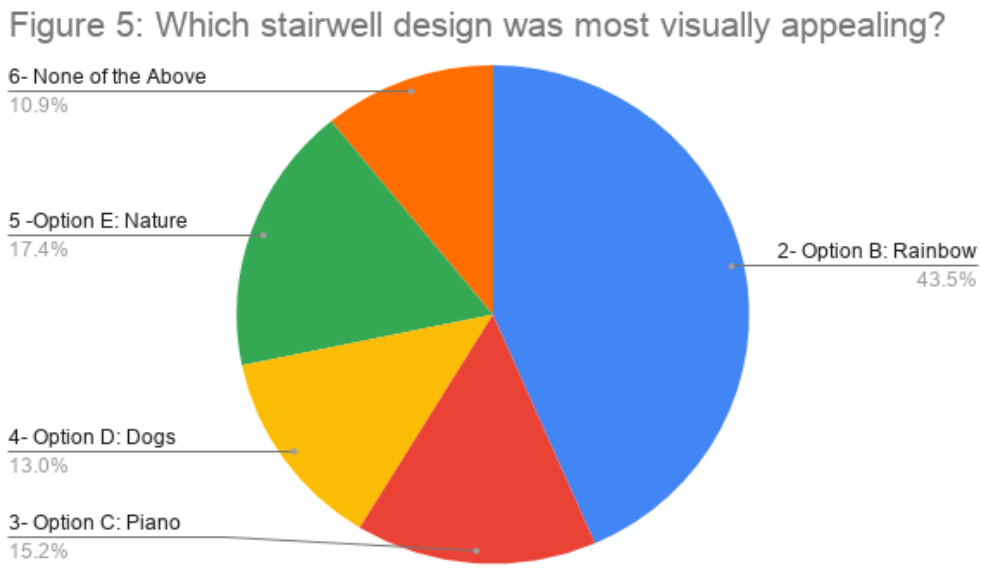


They also stated they would be more inclined to take the elevator (see figure 4): if they were going to a higher floor (c), if they were tired (a), in a rush (b), for other reasons not listed (g), didn't want to sweat (e), if they were injured or disabled (f), and because they enjoyed the elevator aesthetics(d). This is understandable as elevators are a tool for convenience, and motivation to use them is to help one during their daily trek.

Figure 4



In regard to stairwell aesthetics (see figure 5), the majority had preference for colorful stairs at 43.5%, second highest preference was for stairwells with graphics of nature at 17.4%, a piano graphic at 15.2%, a graphic of dogs at 13.0% and 10.9% did not like any of the stairwell graphics. This signifies that color may be a more important factor in creating a well-liked stairwell graphic than the graphic itself.



For motivational messaging (see figure 6), the sign that was highest rated was the "Can't get to the gym?" at 44.4%, next was "Got a minute?" at 30.3%, "Feeling down?" at 21.2% and "Stairs are for everyone" at 4.0%. This implies that people are going to be more motivated to use the stairs as means of exercise than to improve mood or due to lack of inclusion.

Discussion:

What Our Findings Suggest

The focus of this study was to explore the logistics that determine stair usage of UBC students and staff. This assessment will aid future physical activity promotion campaigns with goals of promoting healthy behaviour and increases in daily physical activity. A total of 99 participants answered our survey questions in regard to their current stair usage frequency, motivation behind usage and their preferences and thoughts on aesthetic properties that would encourage the act of taking stairs.

Demographics

Through analysis of our data, we had two main demographics, students (74.7%) and staff (20.2%) responding to our survey. Approximately 5.1% did not disclose or identified their current status as 'other.' UBC Vancouver is home to 54,863 students and 15,705 faculty and staff resulting in a combined 70,568 people. This equates to 77.8% students and 22.2% staff and faculty (UBC 2018-2019). We achieved a similar ratio of responses that is very close to a normal representation of the campus population. This validates the incentive to continue an initiative like the stair wraps. Ultimately, enthusiastic participation from the community informs the allocation of time and resources to improve and alter facilities and programs that promote physical activity and student wellbeing on campus. Notably, we acknowledge that we did not collect in depth data on sub groups such as individual faculties that students belong to. This metric would have been useful to confirm a diverse range of responses.

Stair usage frequency

In our assessment of the average proportion of stair: elevator usage in a week (figure 1) the 8:2 ratio is a positive result. It tells us that the prevalence of stair usage is strong and is

preferred over the elevator. However, around 15% indicated that they favoured the stairs and elevator equally. This finding confirms the necessity to understand the types of motivation behind this choice. These values also serve as a baseline for the UBC population and can be used to gauge whether the 15% of students would change their perspectives with a future stair intervention.

Motivation

To inquire about motivation, we found that the highest ranked reason for individuals being motivated to take the stairs (figure 2) are the associated health benefits and convenience. Reasons for being more inclined to take the stairs (figure 3) were related to doing it with friends, or if awarded upon completion. The health benefits were the lowest ranked aside from other reasons not listed. Of greater interest, is the data collected on motivational signs that lead to taking the stairs. 44.4% indicated that the "Can't get to the gym" sign is most effective in their opinion. This is critical because this opposes the reasons for being inclined to take the stairs. The promotional signs meant to increase behaviour indicates an intrinsic motivation while motivation behind increased inclination points to extrinsic factors. Despite this, findings still imply that meeting physical activity needs is an effective theme to motivate people to take the stairs (Engelen et al., 2017). This finding confirms Radtke & Rackow (2014) recommendations that internal motivation through messages around improving the cardiovascular system and burning more calories would be most effective in creating behaviour change. For our partners at UBC Athletics and Recreation, this theme should be considered when moving forward. We also acknowledge that the signs "Feeling down" and "Got a minute" shared 21.2% and 30.3% of the responses respectively. Therefore the combined 50% is greater than the 44.4%. Overall, there was not a significant majority meaning that a rotation of signage is likely most effective when it

comes to reaching the general population. Certainly, a mixture of intrinsic and extrinsic related motivators should all be considered.

Aesthetics

With regards to visual appearance of stair design (figure 2), the rainbow coloured stair wrap option garnered 43.5% of total responses. Despite being the highest number of recorded responses, a combined total of more than 50% indicated options like piano keys, dogs, nature and none of the above as their top preference. This establishes a desirable theme of bright colours and unique designs as a visually appealing promotion strategy. The implications on future studies points to a rotation of signage that will do justice in reflecting these results.

Challenges and Limitations

A challenge in this research study was that it involves self-reporting which may have led to socially desirable responses, where a participant responds favourable to themselves in order to look good, regardless of anonymity (Rosenman et al, 2011). Social desirable responses might occur during our survey process, as the questions are directed at lifestyle behaviours, health knowledge, and motivation. For example, an individual may exaggerate or overestimate their stair usage to seem more socially desirable. This is due to society's negative perception on elevator use when directly comparing it to stair use. Socially desirable responses may negatively impact the validity of the data collection, as it would result in a lack of truthful answers therefore creating a measurement error (Ponto, 2015). To overcome this challenge, we used valid and reliable instruments and friendly graphics. We also used visual characteristics which in turn helped ensure a better response rate (Ponto, 2015). In addition, many of our survey questions examined one's motives for stair use and/or elevator use, where we do not expect any of the options to be more socially desirable than other options. There are only two out of nine questions

that ask participants to estimate their stair usage, meaning while people may over-report during the two questions, there are still seven other questions where over-reporting for social desirability is unlikely. Nevertheless, we take into account the possibility of over-reporting during our analysis of the data and when formulating our recommendation guidelines for the stair wrap intervention.

Another challenge was ensuring that the sample was random and representative of the entire UBC community. While we did our best to promote our survey in various online mediums, the people who actually ended up taking the survey may not have been as representative as we hoped. For example, the faculty heads that we emailed may not have shared the survey with all of their faculty; however, we were happy to hear from certain UBC departments that they did indeed forward the survey to their staff or other faculty members.

We anticipated that ease of response from our target population to reach a desirable number would be most sensible by designing a survey that is short and easy-to-complete. We achieved this through multiple choice questions. This led to a limitation in our study regarding the richness of our data, as we asked few questions and did not conduct interviews. Further research might benefit from larger-scale data collection, to capture a broader variety of perspectives. One possibility is to conduct semi-structured interviews with students and staff, to obtain richer data on their experiences and to find out more specific information regarding stair usage behaviour in various buildings and facilities they enter on a regular basis across campus. This would be a more inclusive approach to understanding how stair implementation would fit in the picture of daily physical activity habits.

Another limitation is that surveys were distributed to UBC campus Facebook groups, as well as friend groups and acquaintances from our research team. There is the possibility of biases

with responses because participants were likely affiliated to our team in some way. Once again, we acknowledge that social desirability can result in socially desirable responses (Chung & Monroe, 2003).

Finally, another limitation is the lack of open ended questions embedded in the survey. For instance, 13 individuals (14% of respondents) chose “none of the above” or “no answer” to the options for visual appearance. Having knowledge on what they would prefer instead, or reasons as to why it does not matter to them would allow us to make stronger recommendations.

Future Outlook

Application for future studies with larger populations should also implement a longer timespan for participant recruitment (eg. 1 month), so that the research team can gather a larger sample size of approximately 200 participants. Our data collection resulted in seven responses using the QR code found on flyers, while eighty-six came from the online survey link. Due to a low number of responses through our publicity efforts in a public space through flyers, we would advise that in-person interaction through an open house setting may be beneficial in garnering more randomized and realistic responses that are generalizable, non-bias and reflect a broader variety of perspectives of the actual daily stair user and non-user population. Setting up a booth in places like the AMS Nest, IKB Library, and the Life building with a computer to fill out the survey is convenient, and eliminates the necessity to take out one’s mobile device to scan the code and load the page.

Additionally, since our goal is to address physical inactivity, a close ended question asking if participants currently meet the recommended guidelines of 150 min of moderate to vigorous physical activity per week should be included. It has significant implications and can help to explain discrepancies in motivational factors and inclination to take the stairs. Once

again, this points to the limitation mentioned above on richness of data that can only be attained through in-depth interviews. This is an approach UBC Athletics and Recreation should consider in their future physical activity promotion campaigns, as the types of messages presented should target and motivate individuals to improve physical activity engagement.

Recommendations:

UBC SEEDS Sustainability Program is partnering with UBC Athletics and Recreation with the goal of increasing campus wellbeing through specific stair interventions. These stair interventions will be used to enhance physical activity within the UBC community and hopefully create a lasting change in lifestyle. In this study we carefully reviewed previous literature on stair wrap interventions and have gained substantial evidence-based recommendations that can be used by UBC Athletics and Recreation. We have also conducted our own study at the UBC campus and have gained feedback and recommendations through the voice of our very own community.

Our first recommendation would be to focus on intrinsic motivation with regards to the target population. Radtke and Rackow's study identified that internal motivators are most effective in behaviour change (2014). Intrinsic motivation is when an individual performs an activity not to please other people, but solely because of internal reasons such as personal enjoyment, satisfaction, and pleasure. The motivational prompts that are most effective towards behaviour change are focusing on health benefits, specifically weight loss (Eves et al, 2012). People are more likely to be more motivated when they have a prior objective to be healthier (Lewis and Eves, 2012). This was also supported in our study when we asked participants which motivational sign was more likely to increase stair use. The sign with the slogan: "Can't get to the gym?" targeted individuals desire to live a healthier lifestyle. This means creating an

environment that focuses on the importance of physical activity overall, not specific to stair use. One thing UBC Athletics and Recreation can do is begin by simply referring to the 'Cue to Action' step in the Health Belief Model. In order to get an individual thinking about creating behaviour change, visible, informational prompts are needed around the whole campus, not specifically by staircases. These informational prompts will have basic health statements to get the person thinking about change in behaviour. The Health Belief Model suggests perceived threats, benefits, and barriers are also factors to consider when trying to enhance physical activity. There are many initial concerns when making behaviour changes, specifically when making the decision to take the stairs instead of the elevator. Convenience is one factor that those contemplating the behaviour change will focus on. One could make the argument that taking the elevator is a faster and more opportune activity. However, the perceived benefits can positively impact an individual's decision making ability. If we are able to target an individual's intrinsic motivation and allow them to overlook their perceived barriers, then their perceived benefits may outweigh their perceived threats. With that being said, the likelihood of an individual taking action will be increasingly high.

The second recommendation relates to the aesthetics of the staircase. The Public Health Agency (PHA) recommends keeping a stairwell properly lit, clean, and tidy (2017). If posters and flyers are used as motivation prompts, they should be displayed in a straight and symmetrical formation, in order to appeal to the target population (PHA, 2017). The colour and size of the staircase is extremely important for a successful change in behaviour as well. With motivational prompts, Bellicha et al. proposes that colourful stickers increase change in behaviour (2016). In addition to the colourful stickers, Kerr et al. suggests including music and artwork, as they enhance the impact of motivational prompts as well (2004). UBC Athletics and Recreation

should focus on creating an environment that includes colour, music, and artwork, while also focusing on a reduction in clutter and enhancement in tidiness. Through the results of our own study, the majority of participants indicated they would most likely take the stairs if they had a rainbow design. This evidence only furthers our recommendation to try and make the stair wraps very colourful and visually appealing.

The third recommendation emphasizes the timeline of specific sets of motivational prompts. It is important that there is always some sort of motivational aspect in the staircase that our target population can view, because when incentives are removed from staircases, their use decreases (Howe and Young, 2011). These motivational prompts however should not be stagnant. They should constantly be changing, either auditory or visual changes, as this will ultimately give our target population something to look forward to each time they take the staircase (PHA, 2017). We understand that changing the motivational prompts quite frequently is time consuming and costly, and suggest that they be altered every three to four months (PHA, 2017).

UBC Athletics and Recreation can begin measuring their success by following the aforementioned evidence-based recommendations. It is important that Athletics and Recreation allocate a small group of individuals to this stair wrap intervention. This group will be responsible for ensuring the quality of motivational prompts; which includes keeping them aesthetically pleasing and constantly changing, as well as keeping the staircase carefully organized and meticulously planned to increase behaviour change. This group can also be in charge of marketing the new initiative, through emails, posters around campus, and by word of mouth. As a result of the marketing, more people will know about it and therefore more people will take the stairs. The Public Health Agency suggests to evaluate the program four to six weeks

after the starting point of the intervention (2017). We suggest this be done using a quantitative method, as it will provide feedback necessary in order to continue improving.

To summarize, UBC Athletics and Recreation should use the following steps as a guideline for a successful intervention:

Step 1: Allocate a small group of individuals to take on the initiative

Step 2: Find clean, vibrant staircases in great locations

Step 3: Create motivational prompts that target individuals intrinsic motivation - ie. weight loss facts

Step 4: Ensure prompts are symmetrical, large in size, and colourful

Step 5: Market initiative to UBC community

Step 6: Evaluate program 4-6 weeks after start date

Step 7: Alter prompts every 3-4 months

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Appendices

Appendix A: Facebook Posts

a) Hello Class of ___,
As part of our Health Promotion project for Dr. Andrea Bundon's KIN 464 course, we are working to develop a set of recommendations for the use of stair wraps in promoting a physically active lifestyle. If you are interested in helping us out, please fill out this survey. Participants will be entered for a chance to win some awesome $25 gift cards or Lululemon yoga mats! Thanks for your support, we greatly appreciate your input!
https://ubc.ca1.qualtrics.com/jfe/form/SV_aaziiSChD3dO5Ux

Thanks!

b) Hello ___residence name___!

I'm working on a Health Promotion project for Dr. Andrea Bundon's KIN464 course and if you'd like, please help me and my group fill out this survey!
https://ubc.ca1.qualtrics.com/jfe/form/SV_aaziiSChD3dO5Ux

Thanks!

Appendix B: Emails to Staff and Faculty

Hello ___,

We are a group of Kinesiology students in KIN 464, a course on Health Promotion with Dr. Andrea Bundon. As part of this course, we are to conduct research and develop a set of recommendations for the use of stair wraps in promoting physically active lifestyles. In order to have a representative sample of UBC, we are looking for students, staff, faculty and other community members to complete our short survey. We were wondering if you would be able to forward the following survey link to faculty/staff members in your department? Participants will be entered for a chance to win some awesome $25 gift cards or Lululemon yoga mats! Thanks for your support, we really appreciate it!

https://ubc.ca1.qualtrics.com/jfe/form/SV_aaziiSChD3dO5Ux

Kind Regards,

Angela Law, Bailey Brodie, Christina Tani, Giulia Repole & Merlena Rudy

Appendix C: Recruitment Flyer

THE UNIVERSITY OF BRITISH COLUMBIA

School of Kinesiology
210-6081 University Boulevard
Vancouver, BC Canada V6T 1Z1

Phone 604 822 9192
Fax 604 822 6842
www.kin.ubc.ca

KIN 464: Health Promotion and Physical Activity Class-based Project

If you are a UBC student, staff, faculty or community member, we would love to hear from you!

WHAT IS THE STUDY ABOUT? The purpose of this project is to explore the impact of stair and elevator wraps as physical activity interventions.

YOU CAN PARTICIPATE IF:

- You are a UBC student, staff, faculty or community member
- You use UBC's facilities and want a chance to win some awesome prizes!

WHAT IS INVOLVED? If you agree to participate, you will be asked to complete an online survey. The survey will take approximately 5 minutes.

WHO IS DOING PROJECT? This is a class-based project for KIN 464: Health Promotion and Physical Activity taught by Dr. Andrea Bundon (School of Kinesiology). The students working on this project are Angela Law, Bailey Brodie, Christina Tani, Giulia Reppie & Merlena Rudy.

If you are willing to participate, please follow the link below or scan the QR code to access the survey. Thank you!

https://ubc.ca1.qualtrics.com/jfe/form/SV_aaziISChD3dO5Ux

Version 1 – January 2020 Project ID: H17-03560

Appendix D: The Survey

Link to Survey: https://forms.gle/SjPgf23fvB1RPfyB9

Q1: What is your status at UBC?

a) Student

b) Staff

c) Faculty

d) Other

Q2: On average, how many floors of stairs do you climb on a daily basis?

____

Q3: What is your average proportion of stair:elevator usage in a week?

(Contains a 1-7 scale)

Q4: What factors motivate you to take the stairs?

a) I enjoy taking the stairs

b) It's good for my health

c) It's convenient

d) I always do

e) The stairways at UBC are nice

f) Other: ____

Q5: What factors motivate you to take the elevator?

a) I'm tired

b) I'm in a rush

c) I'm going to a high floor

d) The elevators at UBC are nice

e) I don't like sweating

f) I have a disability or injury

g) Other: ____

Q6: I would be more inclined to take the stairs if…

a) I was rewarded at the top

b) My friends took the stairs with me

c) I knew of the health benefits of taking the stairs

d) The stairs were more aesthetic and well lit

e) Other: ____

Q7: In your opinion, which UBC building do people prefer to take the elevator instead of the stairs?

a) The Nest

b) Irving K. Barber Library

c) Other: ____

Q8: Which stairwell do you like the most?

a) Option 1: Nicely lit stairwell

b) Option 2: Stairs with pretty meadow

c) Option 3: Piano stairs

d) Option 4: Rainbow Stairs

e) Option 5: Dogs on stairs

f) None of the above.

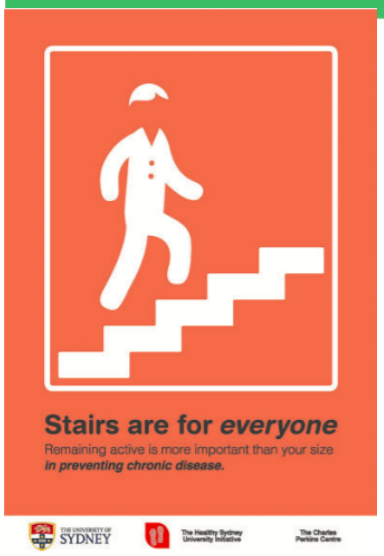
Q9: Which of the following signs do you find the MOST motivating:

a)

b)

c)

d)



e) None of the Above

Appendix E: Survey Data Analysis Table - Template

	Student	Staff	Faculty	Other
Q1: Status at UBC	**74.70%**	**20.30%**	**0%**	**5%**
Q2: Approx. amount of floors climbed on daily basis	**7.1**	**15.1**	**0**	**4.6**
Q3: Avg. Stair:Elevator usage in a week (1-10)	**6.9**	**7.85**	**0**	**6**
Q4: Motivating factors to take stairs				
a) I enjoy taking the stairs	32	8		0
b) Good for health	50	15		3
c) Convenient	54	12		5
d) I always do	21	6		0
e) Stairways at UBC are nice	6	0		2
f) Other	10	2		0
Q5: Motivating factors to take elevator				
a) Tired	43	5		4
b) In a rush	25	2		2
c) Going to high floor	58	4		5
d) Elevators at UBC are nice	2	0		1
e) Don't like sweating	11	0		1
f) Disability/Injury	8	0		1
g) Other	7	11		1
Q6: I would be more inclined to take the stairs if...				
a) Reward at top	23	5		3
b) Friends were with me	40	2		5
c) I knew the health benefits of taking the stairs	14	1		1
d) More aesthetically pleasing/well lit	25	7		1
e) Other	9	5		1
				0
Q7: Which UBC building has more elevator use than stairs?				
a) The Nest	53%	12%		1%
b) Irving L. Barber Library	14%	2%		2%
c) Other	8%	5%		2%
Q8: Which Stairwell do you like the most?				
a) Nicely lit	44%	6%		3%
b) Rainbow stairs	13%	7%		0
c) Piano stairs	6%	0%		1%
e) Dogs on stairs	4%	1%		1%
e) Stairs with pretty meadow	4%	4%		
f) None of the above	3%	2%		
Q9: Which sign is most motivating?				
a) "Got a minute"	20%	8%		1%
b) "Can't get to the gym?"	17%	7%		3%
c) "Feeling down?"	17%	3%		1%
d) "Stairs are for everyone"	4%	1%		0%