



STEPPING



IT UP

The role parking professionals can play getting their communities moving, even on the stairs.

By Nima Chhay, Sean Laraway, Susan Snycerski, and Marjorie Freedman

The Centers for Disease Control and Prevention (CDC) report that more than one-third of adult Americans are obese, which threatens their health and costs our nation \$147 billion in health costs annually. As members of a university community, we are concerned with the health and well being of our colleagues and students. Surveys at San Jose State University revealed that about 40 percent of our students described themselves as slightly or very overweight and 48 percent of our university employees can be classified as overweight or obese. Therefore, our campus seemed an ideal place to try to increase physical activity.

The CDC recommends that healthy adults participate in 2.5 hours of moderate-intensity physical activity (MIPA) each week. Examples of MIPA include climbing stairs, walking briskly (3–4 mph), and cycling. The agency says short bouts (~10 minutes each) of various intensity physical activities throughout the day are sufficient to help prevent chronic diseases and improve the quality of life for most adults.

In a national health survey, about 20 percent of U.S. college students reported getting at least 30 minutes of MIPA five or more days weekly, and 25 percent reported no physical activity at all (ACHA, 2012). Among adults and college students, the most frequently reported barriers to physical activity include lack of time, an unwillingness to pay extra fees for fitness classes or gym memberships, and a lack of knowledge about using exercise equipment. To address these barriers, we implemented a point-of-choice sign prompt to promote stair use in a campus parking structure. Using the stairs instead of an elevator represents a no-cost exercise option that requires only small changes to daily routines and little investment of additional time. In addition,

using the stairs saves electricity and reduces wear and tear on elevators, driving down their operating costs.

Stair climbing is considered a MIPA, and an eight-week progressive stair-climbing regimen has been shown to decrease low-density lipoprotein cholesterol (LDL-C, a cardiovascular risk) and increase VO₂max, which is a marker for cardiorespiratory fitness. Because of its potential as an efficient and convenient form of exercise, government agencies, including the CDC and the New York City Department of Health and Mental Hygiene (NYC DHMH), have promoted stair climbing.

Making it Happen

Several research studies have examined interventions to increase stair use. These interventions included placing point-of-choice signs prompting stair use near stairwells, offering competitive challenges with prizes for stair climbing, and making changes to the stairwells, such as painting them pleasant colors and adding artwork. Given the cost, effort, and logistical difficulties involved in more active interventions, we explored the use of point-of-choice prompts to



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motivate people to use the stairs instead of the elevator in a campus parking garage. The prompts used in previous studies used messages suggesting various benefits of stair climbing (e.g., maintaining good health, maintaining healthy body weight, saving time, and saving energy). Although some studies have found no effect of such prompts, other studies have shown that prompts can increase the use of stairs instead of escalators or elevators. Despite the mixed results, sign prompts are fairly inexpensive and easy to implement, which makes them attractive as a means to increase stair climbing.

Recently, Lee et al. (2012) reported that the NYC DHMH stair prompt significantly increased stair use when placed in a health clinic, academic building, and affordable housing site. The NYC DHMH stair prompt has a stick figure climbing stairs with a large message reading, “Burn calories, not electricity, take the stairs,” and a small print message that reads, “Walking up the stairs just two minutes a day helps prevent weight gain. It also helps the environment.” The prompt increased stair use across these settings, so we felt it held promise for promoting stair use on our campus. After receiving permission, we tested the effects of the NYC DHMH stair prompt. Because Kerr et al. (2001) found that a time-saving message increased stair use in commuters, we added a similar message stating that it often takes less time to climb stairs than take the elevator. Our modified sign appears at right.

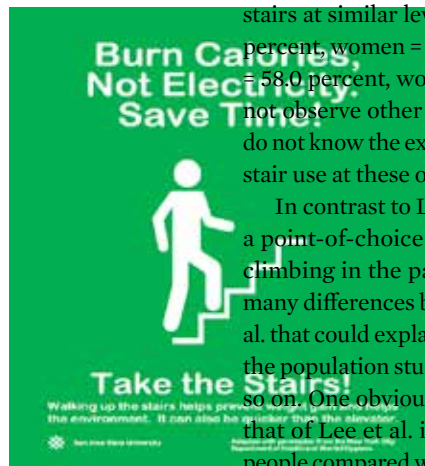
Watching

We observed the percentage of visibly able-bodied people (those who were not observed using a wheelchair, cane, or other mobility device) who took the stairs to a higher floor, excluding those who had something that would make stair climbing difficult or impossible (e.g., large packages or rolling carts). Observations occurred twice a week on weekday afternoons for 26 days. The parking structure observed in this study has six levels with multiple stairwells. The stairwell we observed is adjacent to the elevator.

This study had two phases. During the baseline (control) phase (n = 14 days), no sign was present. For the intervention phase (n = 12 days), we placed the modified NYC DHMH stair prompt sign (22 x 28 inches) on a metallic chrome sign stand (60 inches tall) next to (but not blocking) the elevator entrance. Across both phases, we observed a total of 2,486 people (1,289 men, 1,183 women, and 14 undetermined).

The percentage of people using the stairs was slightly lower in the baseline (724/1285 = 56.3 percent) compared to the intervention (681/1201 = 56.7 percent) phase, but this difference was not statistically significant, $X^2(1) = 0.03$, $p = .86$, odds ratio = 0.99 (95 percent CI = 0.84–1.15). We did not observe statistically significant gender differences, with men and women using the stairs at similar levels during the baseline (men = 54.5 percent, women = 57.7 percent) and intervention (men = 58.0 percent, women = 55.2 percent) phases. We did not observe other stairwells or other buildings, so we do not know the extent to which our prompt influenced stair use at these other locations.

In contrast to Lee et al. (2012), we did not find that a point-of-choice prompt appreciably changed stair climbing in the parking garage. Obviously, there are many differences between our study and that of Lee et al. that could explain the discrepant findings, including the population studied, setting, geographic region, and so on. One obvious difference between our study and that of Lee et al. is sample size. We observed ~2,500 people compared with the ~18,500 people they observed.




The Results

Beyond sample size, one plausible reason for our results was that we observed a relatively high level of stair use in the baseline phase (56.3 percent). Such a high level of stair climbing might represent a ceiling that reduced the relative effectiveness of our stair prompt. It is possible that given the choice between taking the stairs and the elevator, there might be some upper limit in the number of people willing to expend the energy to take the stairs. Changing habits is relatively difficult, and perhaps a simple sign is not enough to motivate new behavior in some people. In their review, Nocon et al. (2010) reported that only three out of 10 studies that used point-of-choice prompts to increase stair climbing over elevator use found statistically significant increases. In all three of these studies, the increases were relatively small. Therefore, our results are consistent with a majority of studies on this topic (but conducted in settings other than parking garages).

To our knowledge, only one other study has examined the effects of point-of-choice sign prompts on stair climbing in parking garages (i.e., Bungum et al., 2007). Therefore, there is still much work to be done to determine what aspects of sign prompts might effectively promote stair climbing in this type of setting. Despite the mixed findings on the effectiveness of point-of-choice prompts in the research literature, the fact that such prompts have been found effective in some studies provides a rationale for further research. In addition, the relatively low cost and ease of implementing such prompts compared to other possible interventions make them an attractive first step (pun intended) in increasing stair climbing and reducing elevator use. Given a high-traffic parking garage, even small increases in the number of people climbing the stairs could have substantial cumulative effects over time.

We are academics, not parking professionals, so we do not have the same experience you do in the management of parking structures. We can only guess at what kinds of interventions might work on your home turf. Because of your unique skill set and perspective, you are in an excellent position to develop effective interventions tailored for your specific parking structures. We doubt there is a one-size-fits-all model, and different structures will likely require customized solutions. We encourage parking professionals to contribute to the investigation of cost-effective and simple interventions to promote stair use and decrease elevator use in able-bodied users of parking structures. By doing so, you may help improve the health of Americans, save money on elevator maintenance and electrical costs, and improve the sustainability of parking structures.

In addition, you will likely teach us academics a thing or two about changing human behavior. 

Note: These data were collected as part of Nima Chhay's thesis for the MA in Research and Experimental Psychology at San José State University.

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