RESEARCH ARTICLE

Toward the Healthy Campus

Methods for Evidence-Based Planning and Design

by Caitlin DeClercq

The college campus is an essential environment in which to intervene to promote short- and long-term health outcomes.

STUDENTS WHO WALK THE HALLS of my home campus are greeted by a series of posters encouraging them to "*be well to do well;*" in other words, to adopt a self-care regimen to achieve positive health—and by extension, academic—outcomes. These posters convey a subtle yet significant message that health is a personal responsibility: *if you find time for sufficient exercise and sleep*, the posters seem to say, *then you will be healthy*. Missing, however, is recognition of how social and environmental settings can help encourage or thwart these desired outcomes.

In fact, the American College Health Association recently articulated a number of objectives for student health in its "Healthy Campus 2020" initiative, including the need to "create social and physical **environments** that promote good health for all" in order to "support efforts to increase academic success, productivity, student and faculty/staff retention, and life-long learning" (American College Health Association 2015a, "Overarching Goals;" emphasis added). This initiative, in highlighting the role of place in shaping student health—and education—outcomes, is a particularly exciting prospect because it invites planners and designers to participate in reenvisioning and redesigning campuses as healthy places.

Yet campus environments—and the planners and designers who give them form—are too often left out of current approaches to college health promotion, which tend to favor individual-level assessments and interventions (Baum and Fisher 2014). How, then, might we realize the health-promotive environments envisioned by the Healthy Campus 2020 initiative? In this article I propose two methods to that end: First, we need to collect and analyze evidence about how the built campus environment impacts student health outcomes. Post-occupancy evaluations, a common assessment tool for understanding how environments are used and perceived once built (Zimring 2001), are well-suited to investigating the environmental contexts of student health behaviors (DeClercq and Cranz 2014). Second, this evidence needs to inform the design of campus settings, a practice known as evidence-based design.

To show how these recommendations can make a meaningful impact on student health, I present examples of how the built campus environment affects two burgeoning student health issues: the rising frequency and severity of mental health concerns and the perils of prolonged sedentary behavior. In response, I identify new methods for designing and evaluating campuses as healthy places.

APPROACHES TO CAMPUS HEALTH: THEN AND NOW

The built environment plays an important role in shaping risk factors and access to resources. Yet interest in the built campus environment has waxed and waned over time.

EVALUATING CAMPUS HEALTH TODAY: THE NATIONAL COLLEGE HEALTH ASSESSMENT

Chances are that if you wanted to learn about the most prevalent health concerns among college-aged students today, you would turn to the National College Health Assessment (NCHA) survey. Each semester, this survey collects students' self-reported assessments of, among other concerns, health issues that have resulted in negative academic outcomes (e.g., grades and attendance). In terms of mental health, the most commonly reported barriers to academic success are stress, sleep difficulties, and anxiety (American College Health Association 2015b). However, though mental health is impacted by individual, interpersonal, and institutional factors (Byrd and McKinney 2012), the NCHA survey offers few insights into the broader *context* of students' behaviors and experiences—for example, where, when, and why students feel most stressed or most relaxed—and thus suggests that individual behaviors are the primary determinants of health and levers for change.

NCHA data about sedentary behavior are similarly limited, in part due to recent advances in our understanding of the perils of prolonged sitting. Previously, those who did not meet recommended guidelines for physical activity were considered "sedentary." However, in light of new research about the unique impacts of prolonged sitting on a range of health outcomes, *regardless of physical activity levels*, scholars in the burgeoning field of sedentary physiology argue that sitting for long periods of time must be accounted for in any definition of "sedentary" (Hamilton et al. 2008). This definition has important implications for understanding student health needs: for example, through the NCHA survey, we can learn the number of students who fail to meet physical activity guidelines (54 percent). Yet this statistic leaves obscured the unique risks and causes of prolonged sitting, particularly those beyond individual motivations and actions.

These data offer limited insights for planners and designers because they do not acknowledge the environmental contexts of these health concerns. Yet it wasn't always this way.

THE HEALTHY CAMPUS IN HISTORY

Since the founding of the earliest colleges in the United States, campus officials have designed and modified the built campus environment to promote a healthy student body. This concern for student health was exercised through various levels of campus planning and design, including site selection and the provision and design of housing and gymnasiums.

- *Site placement and campus planning*. The earliest American colleges were built away from cities—"sequestered from the various temptations attending a promiscuous converse with the world, that theater of folly and dissipation" (Maynard 2012, p. 12). Further, while men's colleges consisted of multiple buildings arranged as an "academical village" (e.g., the University of Virginia), Vassar College was designed as a single, large structure to better shelter and "ensure complete control over [female] students' minds and bodies" (Prescott 2007, p. 15) and therefore help ensure student health and hygienic practices (Turner 1984).
- *Student housing*. In 1900, faculty at the University of California (Berkeley), concerned about a decline in attendance, found in a survey of students that "sickness and not idleness or lack of interest" was to blame for students' absenteeism (Prescott 2007, p. 65). Additionally, a survey of student housing uncovered the unsanitary conditions that plagued many students' residences and threatened their well-being. In response, the campus enacted plans to oversee sanitary interventions in student housing facilities.
- *Gymnasiums*. As early as 1855, college administrators blamed "the [failing] health of the students" on "the sedentary life of the scholar, during which physical exercise is neglected" (Prescott 2007, p. 30). In response

to this concern, college educators and physicians initiated mandatory physical activity courses and physical examinations, both of which were housed in campus gymnasiums. In fact, gymnasiums were often among the first buildings to populate the earliest American college campuses.

These examples express a multilevel intervention into the built campus environment, enacted over time, to promote particular visions for student health. Today, however, the importance of the relationship between the campus environment and student health has waned in favor of individual-level evaluations and behavioral interventions. Yet this individual perspective does little to promote resources or remediate risks inherent in campuses environments; further, it overlooks how architects, planners, and the places they design shape student health.

ADDRESSING CAMPUS HEALTH TODAY

To address mental health and sedentary behavior on campus requires a new approach that accounts for the relationship between people (students) and places (campuses as social and built environments) in the particular setting of the college campus. Thus, in this article, I propose new measures for evaluating a healthy campus and offer insights into how these measures can inform interventions in the built and social environment (via programming and design). In so doing, I illuminate the role and responsibility of designers, campus officials, and health professionals in rethinking campuses as healthy places.

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METHODS FOR PROMOTING STUDENT HEALTH

The practice of health promotion seeks to enable "people to increase control over the determinants of health and thereby improve their health" (Nutbeam 1998, p. 351). But what are the determinants of health? If we see health as individually determined, then we aim to improve it through individual behavior change and skill acquisition; yet if we see health as shaped by external forces, then we look to interventions in social and built environments as change agents.

THE INDIVIDUAL PERSPECTIVE

A primary method of health promotion is health education, which aims to build the capacity of individuals and populations to increase their health knowledge and literacy (Nutbeam 1998). However, the limitation of health education is that, even when employed on a large scale, it is most often individually focused, aiming to promote knowledge, behaviors, and attitudes in *individuals* (Crosby, Kegler, and DiClemente 2002) and thereby limiting the scope of and burden for change (Baum and Fisher 2014).

THE ENVIRONMENTAL PERSPECTIVE

Health promotion also aims to influence "underlying social and economic conditions and physical environments which impact upon health" (Nutbeam 1998, p. 354). But how, specifically, does the environment impact health? The environment can be

- A "*medium for disease transmission*": e.g., early campus officials sought to mitigate such risks via site placement and sanitary interventions;
- A "*stressor*": e.g., campus environments that preclude individual control over noise or other ambient conditions or contribute to feelings of isolation;
- A "*source of safety or danger*": e.g., crime, including actual and perceived safety and the impacts of each on

health (Nasar and Jones 1997) or occupational hazards (e.g., the lack of ergonomic, adjustable-height furniture);

» An "*enabler of health behavior*": e.g., this can be facilitated through proximity to resources or health-promotive social norms, including those relating to postural variation in educational settings (DeClercq and Cranz 2014); or

» A "*provider of health resources*": e.g., policies that provide accessible mental health care to students (Stokols 1992, pp. 12–14).

Implied above is the need to consider individual behaviors and/or control over resources and risks *in tandem with* environmental conditions. Recalling the need to identify new measures of student health, this model exposes the role of *both* environmental conditions (e.g., environmental affordances, qualities, risks, resources) *and* the relationship between people and environments (e.g., perception, access) that shape health outcomes.

Further, the creation of health-promotive environments enables change in all five dimensions described above, meaning that (campus) planning and design not only have the power to influence individual behaviors and interactions, but also can support individual and collective practices and organizational policies and services. Given this vast potential for change, "interventions to modify the environmental factors that influence behavior have become integral to health promotion theory and practice" (Wechsler et al. 2000, p. 133), particularly in educational settings.

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Below I offer three recommendations intended to recognize and respond to the role the built environment plays in the design of healthy campuses.

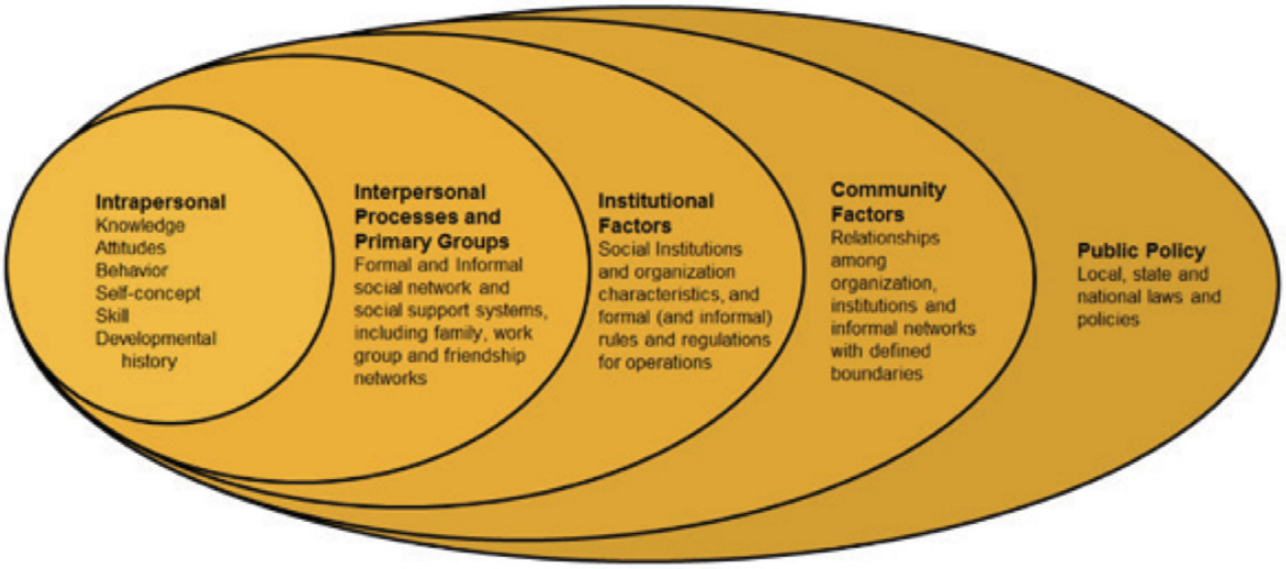
RECOMMENDATION 1: REVIEW WHAT WE KNOW ABOUT PLACE AND HEALTH

Each semester the NCHA survey provides data to illuminate the prevalence of student health behaviors, risks, and incidences of reported or experienced health problems. Yet these aggregated data, though helpful in identifying trends in student health, are limited in scope and obscure the social-environmental determinants of health. Thus, if we take seriously the idea that student health is impacted by a range of built and social environmental factors that shape student experiences, behaviors, and—by extension—risk and protective factors, then we must wonder what we are missing with individual measures of student health.

In contrast to the individual approach, ecological models "acknowledge the powerful social, institutional, and cultural contexts that influence people's health" (Neuhauser, Syme, and Kreps 2013, p. 229; see also Stokols 1992). For example, Kaplan (1999, p. 117) proposes an ecological model to consider the social and built environment from a "dynamic, multilevel, and upstream perspective" including individual risk factors, social relationships and living conditions, neighborhoods and community influences, and factors related to institutions and social and economic policies, all of which are rooted in the environment and expressed in health consequences over the life course. The American College Health Association's Healthy Campus 2020 initiative similarly advocates an ecological approach to student health and uses a 1998 model from McLeroy, Bibeau, Steckler, and Glanz (American College Health Association 2015a) to articulate the ways in which health is affected by *intrapersonal*, *interpersonal*, *institutional*, *community*, and *policy*-level factors (figure 1). Yet, as long as the NCHA survey serves as the primary evaluation of student health, the multilevel influences

of health implicit in these ecological models will remain obscured.

Figure 1 **Ecological Model**



Source: McLeroy et al. 1988, as cited in the American College Health Association's (2015a) Healthy Campus 2020 initiative.

Using the ecological model advanced by the Healthy Campus 2020 initiative, here I illuminate a range of risks and resources in the built and social campus environment that can inform both the evaluation and design of campus settings with regard to understanding—and responding to—mental health issues and sedentary behaviors among college students.

MENTAL HEALTH

Students' mental health outcomes are affected by a host of risk and protective factors; for example, at an *intrapersonal* (individual) level, stress reduction skills, coping ability, and self-care practices such as spirituality affect students' stress levels and associated health outcomes (Byrd and McKinney 2012; Galbraith and Brown 2011). At an *interpersonal* level, the availability of social support can be a protective factor in student mental health while alienation and social isolation can be risk factors (Byrd and McKinney 2012; Jodoin and Robertson 2013). *Institutional* climate can also affect students' mental health, as can the structure of a curriculum; for example, medical school and architecture programs are notoriously stressful settings. Students' lives necessarily transcend the borders of campus, so *community*-level factors such as cost of living, social connectedness, and safety can also impact student stress (Jackson 2003; Nasar and Jones 1997). At a *policy* level, land use and the provision of and access to resources are shaped by policies on campus as well as in the broader community (e.g., access to mental health care).

SEDENTARY BEHAVIOR

Buckworth and Nigg (2004) looked at the contexts of sedentary behavior among college students, which they divided into two categories: recreational (e.g., watching TV or playing computer games) and obligatory (e.g., studying, reading, or doing school-related work on a computer). This study represents an early attempt to quantify the amount of sitting students do on a weekly basis, but the category of "obligatory" sedentary behavior begs the question of context.

For example: What is it that makes sitting obligatory? Is it the provision of furniture and the range of postures it affords, the norm of a classroom to allow only one person (the teacher) to stand, or merely an individual's personal choice of posture? *Intrapersonal* level factors that shape sedentary behavior include motivations, lifestyle, and the number of breaks taken, all of which can be influenced by knowledge about the deleterious effects of sedentary behavior. At an *interpersonal* level, sedentary behavior can be influenced by social norms in peer groups as well as in places like classrooms, where sitting is the norm—an estimated 70 percent of class time is sedentary (Saunders 2011)—and enforced by disciplinary and environmental factors (DeClercq and Cranz 2014; Huse 1995; Monahan 2002). At an institutional level, prolonged sitting can be driven by occupational requirements (Hamilton et al. 2008); colleges might be seen in a similar context of risk given the "obligatory" sedentary behaviors implied in campus settings (Buckworth and Nigg 2004; Nelson et al. 2008). Finally, access to resources like sit/stand desks or adjustable-height chairs may be limited by institutional *policy*.

RECOMMENDATION 2: CONDUCT EVALUATIONS OF THE HEALTHY CAMPUS

The above data make it clear that health assessments must be reformed to include individual and environmental measures in order to uncover multilevel influences that affect mental health and sedentary behavior.

Post-occupancy evaluation (POE) studies—evaluations of built settings in use—are not new to the field of design; however, I argue that they can be employed to uncover novel insights about the health implications of person-environment interactions, as demonstrated in a recent study of a campus library conducted by Professor Galen Cranz and her students at the University of California, Berkeley (DeClercq and Cranz 2014). Recognizing sedentary behavior as a "hidden health issue" among college students, Cranz and her students investigated the social and environmental contexts of sitting as part of a POE of a newly designed campus library.

Through observations, interviews, and questionnaires, the researchers learned that, not surprisingly, the vast majority of patrons sat at the library—and did so for long periods of time, as many used the library as a study space. Yet they also found that those who made quick visits to the library—for example, to check out books—were more active, sitting less and walking and standing more, and that a small number of patrons choosing to study at the library for longer periods of time used environmental affordances to assume postures beyond the normative seated position: some used bookshelves as standing-height desks, others sat or laid down on the floor, and a few used chairs as footrests to enable them to sit in a lounge posture in chairs that otherwise were designed for a 90-degree seated posture. The researchers also learned that students saw libraries as formal environments in which they felt uncomfortable moving furniture to meet their needs—for fear of making too much noise—or using features like staircases as ersatz furniture as is done elsewhere on campus.

This study not only offered a rare look into the duration and contexts of students' sedentary behavior, but also resulted in a variety of recommendations to promote postural variation in the library (and in other campus settings; see DeClercq and Cranz 2014 for more).

RECOMMENDATION 3: EMPLOY EVIDENCE-BASED PLANNING AND DESIGN

The above is not intended to serve as an exhaustive list of the multilevel influences on student health; rather, it suggests the limits of the current model and the benefits of moving toward an evidence-based, socioenvironmental assessment of campus health that can—and should—inform planning and design practices. Below, based on a review of the literature regarding how the environment affects mental

health and sedentary behavior, I articulate a number of recommendations for healthy campus planning.

PRIORITIZE ACCESS TO GREEN SPACES

Access to green spaces—whether achieved physically through outdoor walking paths or gardens or visually through windows to pleasant outdoor views—is associated with both stress reduction and attention restoration (Kaplan 1995; Marcus and Sachs 2013; Ulrich 1984). Green school grounds can promote the mental and spiritual health of students and community members alike; such green spaces can also promote a sense of community and increase social capital by attracting a range of users (Bell and Dyment 2008).

PROMOTE A SENSE OF CONNECTION

Environments that disconnect people from supportive social ties and/or their personal, biological, or historical identity can negatively affect mental health outcomes (Lindheim and Syme 1983). Thus, environments that promote community (e.g., spaces for individuals or groups to use), provide symbolic reference to individual accomplishments or shared communities, and/or offer individuals the opportunity to personalize them can foster positive mental health.

DESIGN FOR SAFETY

Lack of visibility and/or feelings of entrapment can make people feel unsafe (Nasar and Jones 1997); in contrast, defensible spaces—which depend on both visibility and sufficient opportunities for visibility and natural surveillance—can promote both physical and perceptual elements of safety (Newman 1973).

ORGANIZE OPPORTUNITIES FOR INVOLVEMENT

Involvement can have two meanings: First, environments that are designed at a human scale, placed in visible and accessible locations, and made flexible to meet a variety of needs can help engage students (Strange and Banning 2001). Second, engaging users in the design process can help promote a sense of belonging (Lindheim and Syme 1983) in campus environments.

PROMOTE PHYSICAL ACTIVITY

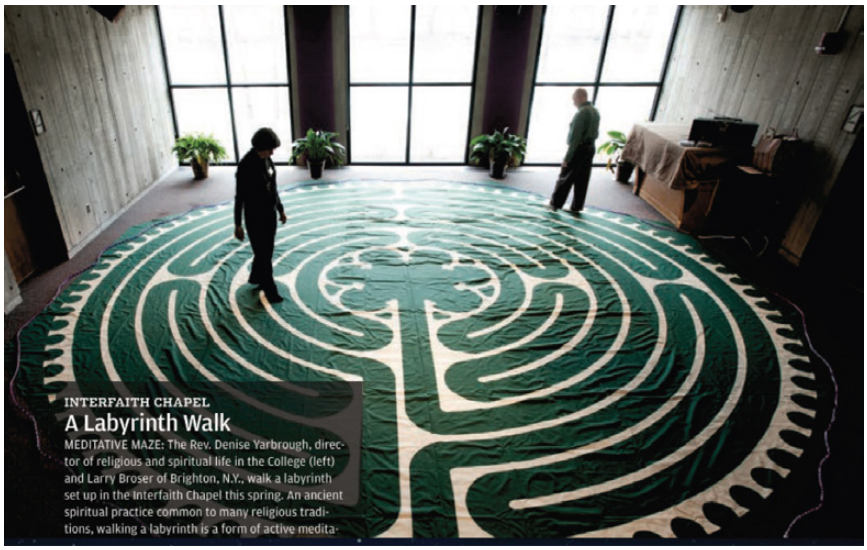
The campus landscape can promote physical activity by providing pleasant, visible, and safe paths for walking or biking; occasional benches or other places for rest; places to securely lock bicycles; and specialized markings or exercise equipment (figure 2). In fact, one study found that the provision of outdoor exercise equipment led to an increase in physical activity *and* safety in a public park; another found that simply marking asphalt with engaging designs increased students' physical activity levels (Crust et al. 2014; Mora 2012). Making staircases visible and interesting can promote use (City of New York 2010), a more active alternative to taking elevators. Further, a walking maze can promote both meditative reflection and physical activity (figure 3), and spaces that encourage stretching can be therapeutic for the body (DeClercq and Cranz 2014).

Figure 2 **Asphalt Markings in Paris, France**

Images of asphalt markings that promote physical activity, as seen on the *Berges de Seine* park in Paris, France.

Photograph by author (left); photograph from https://howtosurviveinparis.wordpress.com (right).

Figure 3 **Walking Maze at the University of Rochester**



A walking maze can be used indoors, as shown here at the University of Rochester's Interfaith Chapel, or outdoors (as seen in figure 2).

Image courtesy of the Rochester Review: http://www.rochester.edu/pr/Review/V75N5/1101_backcover.html.

DESIGN FOR POSTURAL VARIATION

Prolonged sedentary behavior is associated with a host of deleterious health outcomes (Saunders 2011), and the seated posture itself can cause eye strain and back pain (Cranz 2000). Further, though the seated posture is the norm for working and learning environments in campus settings, observations from a campus-based POE showed that students desire greater postural variation (DeClercq and Cranz 2014). Adjustable sit/stand desks and/or a range of desk heights as well as perch-height chairs or stools, rocking chairs, and even treadmill desks can promote a range of postures beyond sitting and, in so doing, interrupt the unhealthy, sedentary norm of campus environments (figure 4).

Figure 4 **Treadmill Desks at the University of California, San Francisco**

The University of California, San Francisco, installed treadmill desks in a library to promote physical activity.

Image courtesy of University of California, San Francisco: http://meded.ucsf.edu/ume/walkstations-available-library-tech-commons.

IMPLICATIONS

The campus setting is one of the most significant environments in which many young people spend their "emerging adulthood" years (18–25 years of age); in this context, students establish their independence, identity, and long-term behavior patterns. Of particular interest is the fact that these emerging adulthood years represent a period of unique importance in the development of long-term health-related behaviors: nutritional intake, physical activity, and sleep in college are associated with healthy behaviors later in adulthood (Nelson et al. 2008). Thus, the college campus is an essential environment in which to intervene to promote short- and long-term health outcomes.

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Moving from an individual assessment of student health to an assessment of the healthy campus illuminates the ways in which place is imbricated in health and therefore can inform meaningful environmental design interventions to promote student health. Further, this perspective necessarily includes those with a range of expertise, including policy makers, campus leaders and educators, and designers and planners.

Regarding the link between health and design, Hill (2002, p. 203) encourages us to ponder, "What if 'health' and 'disease' were redefined in ways that included a role for environmental design?" This article is a call to redefine campus health in environmental terms and, in so doing, expose the role designers play in rethinking and redesigning campuses as healthy places.

REFERENCES

American College Health Association. 2015a. Healthy Campus 2020: About. Retrieved December 15, 2015, from the World Wide Web: www.acha.org/HealthyCampus/About/HealthyCampus/About.aspx?hkey=2c0c96b6-c330-47e1-87fe-747ec8397e85.

———. 2015b. *National College Health Assessment II: Spring 2015 Reference Group Executive Summary*. Hanover, MD: American College Health Association. Retrieved June 8, 2016, from the World Wide Web: www.acha-ncha.org/docs/NCHA-II_WEB_SPRING_2015_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf.

Baum, F., and M. Fisher. 2014. Why Behavioural Health Promotion Endures Despite Its Failure to Reduce Health Inequities. *Sociology of Health & Illness* 36 (2): 213–25.

Bell, A. C., and J. E. Dyment. 2008. Grounds for Health: The Intersection of Green School Grounds and Health-Promoting Schools. *Environmental Education Research* 14 (1): 77–90.

Buckworth, J., and C. Nigg. 2004. Physical Activity, Exercise, and Sedentary Behavior in College Students. *Journal of American College Health* 53 (1): 28–34.

Byrd, D. R., and K. J. McKinney. 2012. Individual, Interpersonal, and Institutional Level Factors Associated with the Mental Health of College Students. *Journal of American College Health* 60 (3): 185–93.

City of New York. 2010. *Active Design Guidelines: Promoting Physical Activity and Health in Design*. New York: Center for Active Design. Retrieved June 8, 2016, from the World Wide Web: http://centerforactivedesign.org/dl/guidelines.pdf.

Cranz, G. 2000. *The Chair: Rethinking Culture, Body, and Design*. New York: W. W. Norton.

Crosby, R. A., M. C. Kegler, and R. J. DiClemente. 2002. Understanding and Applying Theory in Health Promotion Practice and Research. In *Emerging Theories in Health Promotion Practice and Research: Strategies for Improving Public Health*, ed. R. J. DiClemente, R. A. Crosby, and M. C. Kegler, 1–15. San Francisco: Jossey-Bass.

Crust, L., J. McKenna, J. Spence, C. Thomas, D. Evans, and D. Bishop. 2014. The Effects of Playground Markings on the Physical Self-Perceptions of 10–11-Year-Old School Children. *Physical Education and Sport Pedagogy* 19 (2): 179–90.

DeClercq, C. P., and G. Cranz. 2014. Moving Beyond Seating-Centered Learning Environments: Opportunities and Challenges Identified in a POE of a Campus Library. *Journal of Academic Librarianship* 40 (6): 574–84.

Galbraith, N. D., and K. E. Brown. 2011. Assessing Intervention Effectiveness for Reducing Stress in Student Nurses: Quantitative Systematic Review. *Journal of Advanced Nursing* 67 (4): 709–21.

Hamilton, M. T., G. V. Healy, D. W Dunstan, T. W. Zderic, and N. Owen. 2008. Too Little Exercise and Too Much Sitting: Inactivity Physiology and the Need for New Recommendations on Sedentary Behavior. *Current Cardiovascular Risk Reports* 2 (4): 292–98.

Hill, K. 2002. Design and Planning as Healing Arts: The Broader Context of Health and Environment. In *Ecology and Design: Frameworks for Learning*, ed. B. R. Johnson and K. Hill, 203–14. Washington, DC: Island Press.

Huse, D. 1995. Restructuring and the Physical Context: Designing Learning Environments. *Children's Environments* 12 (3): 290–310.

Jackson, L. E. 2003. The Relationship of Urban Design to Human Health and Condition. *Landscape and Urban Planning* 64 (4): 191–200.

Jodoin, E. C., and J. Robertson. 2013. The Public Health Approach to Campus Suicide Prevention. *New Directions for Student Services*, no. 141, 15–25.

Kaplan, G. A. 1999. What Is the Role of the Social Environment in Understanding Inequalities in Health? *Annals of New York Academy of Sciences* 896: 116–19.

Kaplan, S. 1995. The Restorative Benefits of Nature: Toward an Integrative Framework. *Journal of Environmental Psychology* 15 (3): 169–82.

Lindheim, R., and S. L. Syme. 1983. Environments, People, and Health. *Annual Review of Public Health* 4: 335–59.

Marcus, C. C., and N. A. Sachs. 2013. *Therapeutic Landscapes: An Evidence-Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces*. Hoboken, NJ: John Wiley & Sons.

Maynard, W. B. 2012. *Princeton: America's Campus*. University Park, PA: Pennsylvania State University Press.

Monahan, T. 2002. Flexible Space and Built Pedagogy: Emerging IT Embodiments. *Inventio* 4 (1): 1–19.

Mora, R. 2012. Moving Bodies: Open Gyms and Physical Activity in Santiago. *Journal of Urban Design* 17 (4): 485–97.

Nasar, J. L., and K. M. Jones. 1997. Landscapes of Fear and Stress. *Environment and Behavior* 29 (3): 291–323.

Nelson, M. C., M. Story, N. I. Larson, D. Neumark-Sztainer, and L. A. Lytle. 2008. Emerging Adulthood and College-Aged Youth: An Overlooked Age for Weight-Related Behavior Change. *Obesity* 16 (10): 2205–11.

Neuhauser, L., S. L. Syme, and G. L. Kreps. 2013. Community Participatory Design of Health Communication Programs: Methods and Case Examples from Australia, China, Switzerland and the United States. In *Global Health Communication Strategies in the 21st Century: Design, Implementation and Evaluation*, ed. D. K. Kim, A. Singhal, and G. L. Kreps, 227–43. New York: Peter Lang.

Newman, O. 1973. *Defensible Space: Crime Prevention Through Urban Design*. New York: Collier Books.

Nutbeam, D. 1998. *Health Promotion Glossary. Health Promotion International* 13 (4): 349–64.

Prescott, H. M. 2007. *Student Bodies: The Influence of Student Health Services in American Society and Medicine*. Ann Arbor, MI: University of Michigan Press.

Saunders, T. 2011. Can Sitting Too Much Kill You? *Scientific American* (guest blog), January 6. Retrieved June 8, 2016, from the World Wide Web: http://blogs.scientificamerican.com/guest-blog/can-sitting-too-much-kill-you/.

Stokols, D. 1992. Establishing and Maintaining Healthy Environments: Toward a Social Ecology of Health Promotion. *American Psychologist* 47 (1): 6–22.

Strange, C. C., and J. H. Banning. 2001. *Educating by Design: Creating Campus Learning Environments That Work*. San Francisco: Jossey-Bass.

Turner, P. V. 1984. *Campus: An American Planning Tradition*. Cambridge, MA: MIT Press.

Ulrich, R. S. 1984. View Through a Window May Influence Recovery from Surgery. *Science* 224 (4647): 420–21.

Wechsler, H., R. S. Devereaux, M. Davis, and J. Collins. 2000. Using the School Environment to Promote Physical Activity and Healthy Eating. *Preventive Medicine* 31 (2): S121–37.

Zimring, C. 2001. Post-Occupancy Evaluations and Organizational *Learning. In Learning from Our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation*, 42–53. Federal Facilities Council Technical Report no. 145. Washington, DC: National Academy Press.

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Integrated planning is the linking of vision, priorities, people, and the physical institution in a flexible system of evaluation, decision-making and action. It shapes and guides the entire organization as it evolves over time and within its community.