Physical Activity Design Guidelines for School Architecture

Evidence Rating Key:

- ● **Substantial Evidence** = 2 longitudinal studies or 5 cross-sectional studies supporting a relationship between the school built environment strategy and PA
- ◉ **Emerging Evidence** = empirical research supporting the strategy exists, but is of a preliminary or pilot nature
- ○ **Best Practice** = theoretical support and/or practice-based experiential support for the strategy, but no formal evidence base

1 School Siting and Community Connectivity

	EVIDENCE RATING
Consider locating new schools and/or renovating schools in higher density neighborhoods where students live close to school	●
Consider safe walking/cycling and public transportation access in choosing school sites	●
Structure built and natural elements on and around the school site for variety and visibility that will be pedestrian-friendly and pedestrian-safe	◉
Consider cultural, gender, and neighborhood differences in perceptions of safety and aesthetics in potential active commuting routes around schools	◉
Connect to existing and/or planned community trail networks, and locate schools near other community and recreational facilities where possible	◉

2 Building Massing and Programming

Consider age-appropriate scale in massing of building components	○
Consider building connections and spatial patterning as opportunities to promote physical activity	○
Orient building to amplify outdoor views	○
Mass and orient building to allow penetration of natural light from most areas of the building interior	○
Locate building functions to encourage bouts of walking throughout the school day	○
Provide convenient and secure covered bicycle storage on school sites	○
Provide community-use spaces that can accommodate healthy community activities (e.g., local farmer's market, active participatory events)	○
Allow for ample school and grounds space per student	◉

3 Smart Fitness Facilities

	EVIDENCE RATING
Provide multiple and varied outdoor fitness facilities	●
Include an indoor gymnasium, ideally with an indoor track and ample space to support vigorous physical activity and PE curricula, especially in locations with frequent inclement weather	●
Provide a 'gymatorium,' in addition to a gymnasium, and instead of a traditional auditorium; a gymatorium has a stage and seating that is flexible or on one side, and provides space for physical activity when an auditorium is not needed	○
Create visibility of fitness and physical activity activities from other parts of the school, such as navigation areas	○
Locate fitness facilities such as gyms and pools centrally if possible for access and visibility	○
Incorporate dedicated interior spaces for a range of types of fitness activities (e.g., smaller, quieter rooms for yoga, Tai chi, etc. in addition to a large gymnasium)	○
Include both soft-surfaced (e.g., soccer/footballs field), and hard surfaced (e.g., basketball and tennis courts) exterior sports areas	◉
As sites allow, include hiking and biking trails, and natural areas	◉
Design indoor and outdoor physical activity facilities to accommodate use of both fixed and movable equipment	●
Design floor markings that can be used for numerous activities, in addition to using standard court markings in gymnasiums and on hard-surfaced outdoor courts; consider age-appropriateness for types of markings	◉
Incorporate natural lighting and outside views from interior facilities and provide visibility to outdoor facilities	○

4 Active Classrooms

	EVIDENCE RATING
Provide ample room for children and teachers to move in and around the classroom, supporting potential activity breaks, as well as physical activity programs	◉
Design modular areas and learning hubs, including activity and reading nooks	○
Provide a flexible classroom layout to allow for multiple and changing configurations	◉
Allow space for student-defined learning areas	○
Provide easy access from classrooms to outdoor play and learning areas, especially for young children	○
Provide active time-out space and equipment	○

5 Outdoor Learning Areas

Provide outdoor classroom spaces, with cover and/or shade as ppropriate for the local climate	◉
Locate outdoor classrooms adjacent to outdoor and natural learning opportunities	○
Include gardens as learning and activity areas, in addition to trails and natural areas	◉
Provide drinking fountains with good-tasting water in outdoor learning areas	○
Provide infrastructure (power, water, lighting) to support high utilization of outdoor classrooms and learning areas	○

Brochure developed for the NCCOR-sponsored symposium, *Healthy Places: Using Behavioral Design to enhance Active Living and Healthy Eating*, presented at EDRA 48 Madison in 2017

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National Collaborative on Childhood Obesity Research

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6 Active Play and Leisure Areas

	EVIDENCE RATING
Include both hard and soft surfaces, green or 'natural' areas, and variations in sun and shade, to promote varieties of activity and exploration of nature in outdoor playground areas	●
Renovate and/or build playgrounds and break areas to include fixed play equipment with age-appropriate challenge, and less structured space for use of portable equipment	●
Include multi-color ground markings in playground areas to delineate spaces for many types of activities	◉
Ensure sufficiently large interior play and gathering areas in regions with frequent inclement weather	○
Provide drinking fountains with good-tasting water in play areas	○
Define arrangements to encourage active adult/supervisor interactions with children in play, recess, and break areas	◉

7 Active Navigation Areas

	EVIDENCE RATING
Locate visually appealing stairs in prominent circulation areas with natural lighting, and place elevators less conspicuously	◉
Provide alternate routes from place to place where possible	○
Provide variation and interest in views (indoor/outdoor) throughout navigation areas and pathways	○
Install features of interest that serve as 'movement temptations' in navigation areas to encourage physical interaction with built elements; possibly include elements typically found outdoors	◉

8 Signage and Wayfinding

	EVIDENCE RATING
Include signage with point of decision prompts for stair use and other PA opportunities	●
Develop a wayfinding system that addresses appropriate active navigation (e.g., walking, running) throughout the school and grounds	○
Incorporate educational signage that encourages physical civity, promotes its benefits, and is also age-appropriate and fun	○
Use educational signage to prompt specific physical activity opportunities, beyond stair use	○
Integrate educational signage and wayfinding graphics into the learning curriculum, with potential for social marketing use	○

9 Furniture Specifications

	EVIDENCE RATING
Specify dynamic furniture that is ergonomically appropriate forage, and embraces children's natural tendency to move and fidget	◉
Specify adjustable, stand-biased desks with stools, and modular furniture, in classrooms	◉
Specify a variety of furniture to promote choice options and changes in postures for group work, free work, individual work, etc.	○
Specify furniture with casters to promote agile configurations and novel settings	○

10 Mobile Technologies and Virtual Designed Environments

	EVIDENCE RATING
Incorporate infrastructure for use of technology to promote mobile learning and exploration, and opportunities for health-oriented social marketing fostering physical activity motivation and competition (e.g., support for school-based mobile devices, real-time feedback dashboards, etc.)	○
Consider designing virtual reality spaces in conjunction with school physical spaces to support PA across the student athletic ability spectrum	◉

These activity-promoting design domains and guidelines were developed from a comprehensive literature review and transdisciplinary collaboration of public health researchers, practitioners, and designers, and were published in 2015. The full article may be accessed at this link: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0132597.

Reference

Brittin J, Sorensen D, Trowbridge MJ, Lee KK, Breithecker D, Frerichs L, Huang T. 2015. Physical activity design guidelines for school architecture. PLoS One 10(7):e01232597.

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