



# Practical strategies for providing wellness in outdoor environments

Presented by the ICAA  
Environmental Wellness  
Work Group

It is nearly impossible to separate the environment from any discussion of wellness—the positive state of well-being and good health. The two concepts are intimately linked and dependent upon each other. Every action of humans exists within the environment that surrounds us. We intuitively know that environment and wellness are linked based on history, and a growing body of research confirms this belief.

The term *environment* is a complex one, often used in a dual context of both the natural, organic world and the man-made or built environment. For this paper, the attention will focus on nature and the outdoor environment.

The Environmental Work Group members of the International Council on

Active Aging® (ICAA) promote the idea that environmental wellness means a living environment that is healthy, safe, clean, accessible and in a balanced relationship with the natural world. It is the connection between one’s self and the natural environment, existing in harmony with the physical, social, intellectual, spiritual, vocational and emotional dimensions that support human wellness.

An environment supporting wellness should minimize harmful impacts; offer safety and security; and influence the health and well-being of elders and all other people in the community. The benefits of wellness are found both indoors and outdoors. Opportunities for wellness exist within a formal program featuring structured activities as well as in informal settings, such as when an individual walks through a garden.

**Examples of wellness spaces connecting to nature**

Environmental dimension	Crossover wellness dimensions
Gardens, such as flower, herb, vegetable, and community gardens	Physical, professional/vocational
Meditation gardens	Spiritual, emotional
Walking and biking trails	Physical
Patios, porches, balconies that are accessible and protected	Physical, social
Recreation areas (lawn games, etc.)	Physical, intellectual/cognitive, social
Labyrinths	Spiritual, emotional
Chapel in the woods	Spiritual, emotional
Ponds for swimming	Physical
Water gardens (for viewing)	Intellectual/cognitive, emotional
Perennial gardens for cutting flowers	Physical, professional/vocational, spiritual, emotional
Meadows	Intellectual/cognitive, emotional
Sculpture/destination gardens	Physical, intellectual/cognitive
Exercise trails	Physical

**THE EVIDENCE BASE: VALUE OF THE ENVIRONMENT TO OLDER-ADULT HEALTH**

Connection to the natural world is fundamental to well-being. Humans have an innate drive to experience the outdoors, and this connection has a direct relationship to our overall wellness and well-being.

The primary concern of middle- and older-age adults as they look to the future is maintaining their physical and cognitive health; the next most common concern is maintaining financial stability.<sup>1,2</sup>

Time spent outdoors has the ability to address these concerns by maintaining or improving physical, mental and spiritual health—all at reasonable or no monetary cost. A recent compilation of research on the interactions between the environment and health included 15 environmental factors of the natural and built environment (including green space, walkability, transport, housing condition and hazards). The authors noted that there is a growing awareness



*Through thoughtful environmental design and programming, residents of Meadow Lakes have ample opportunities to experience fresh air, exercise and socialization. The croquet field (also shown on the cover of this paper) offers shade and seating. Image courtesy of Meadow Lakes, Springpoint Senior Living in Hightown, New Jersey*



that humans, through their intervention in the environment, play a vital role in exacerbating or reducing health risks.<sup>3</sup>

There are numerous positive benefits from the ability to go outdoors:

- Spending time in natural environments—for example, forests and coastlines—promotes stress reduction and mental recovery from mentally demanding activities, according to a research team looking at environ-

ment as an active method to improve well-being. The authors of this study note that even viewing a gardenlike scene through a hospital window can enhance a patient’s post-operative recovery.<sup>4</sup>

- Reductions in stress and mental fatigue can occur in everyday locations, such as parks, backyard gardens and transformed vacant lots.<sup>5</sup>
- Even small amounts of outdoor exercise, beginning at five minutes, can elevate mood and self-esteem, according to a meta-analysis of 10 studies. Coauthor Jules Pretty commented that “for the first time in the scientific literature, we have been able to show dose-response relationships for the positive effects of nature on human mental health. You get a very substantial benefit from the first five minutes. We should be encouraging people in busy and stressed environments to get outside regularly, even for short bits of time.”<sup>6</sup>
- Research studies summarized by Susan Rodiek, PhD, and Chanam Lee, PhD, found that “older adults who spend time outdoors may derive health benefits such as better sleeping patterns, less pain, decreased urinary incontinence, less verbal agitation, better recovery from disability, and even increased longevity.”<sup>7</sup>
- People who left their residence every day beginning at age 70 experienced “significantly fewer new complaints” of sleep problems, musculoskeletal pain, urinary incontinence and troubles with activities of daily living when they reached age 77 than those who did not go outdoors.<sup>8</sup>
- Among 800 women with functional limitations, those who walked at least eight blocks a week reported better health than those who did not and, one year later, experienced less de-

### Examples of wellness programs connecting to nature

Environmental dimension	Crossover wellness dimensions
Physical activity classes conducted on patios or lawns, for example, tai chi, seated exercise	Physical
Physical activity set outdoors, for example, parcourse, stretches against walls or tree trunks	Physical
Walking or biking clubs	Physical, social
Caretaking of public resources, such as nature centers, community grounds	Professional/vocational
Volunteering for environmental organizations	Professional/vocational, social
Organic community garden	Physical, professional/vocational, social
Cooking classes using produce from the community garden	Physical, professional/vocational, social
Concerts in the park	Intellectual/cognitive
Theater performances in the park	Intellectual/cognitive, professional/vocational
Art shows	Intellectual/cognitive, professional/vocational
Poetry on the patio	Intellectual/cognitive, professional/vocational
Stories around the campfire	Intellectual/cognitive
“Memoirs” in the meadow	Intellectual/cognitive, emotional
Nature walks with educational guides	Intellectual/cognitive, physical



cline in walking speed and functional ability than women who walked less than eight blocks a week.<sup>9</sup>

- Sunshine is the primary source of vitamin D. Background to the 2010 Position Statement of the International Osteoporosis Foundation states that preventing vitamin D deficiency has a major impact on falls and osteoporotic fractures, while deficiency is associated with decreased muscle strength in older men and women.<sup>10</sup>

The prevalence among older adults of hypertension, heart disease, arthritis, obesity, diabetes and mobility disability is well documented. Equally well known is that these health conditions can be prevented and/or treated through physical activity, healthy eating, smoking cessation and stress management.<sup>11,12</sup> Providing opportunities to experience the natural environment helps encourage physical activity, a cornerstone of prevention.

For those who may not be ready to increase their physical activity, exposure to nature can nudge them in the right direction. They may then start to reap the benefits that will motivate them to take a walk, follow the designated trail and try other options to explore the outdoor environment.

In a survey of people in 11 countries, those who lived in neighborhoods with amenities such as transit stops, sidewalks and low-cost recreational facilities were more likely to report moderate-to-vigorous activity at least five days a week compared to residents of neighborhoods with no activity-friendly amenities or neighborhoods designed for cars. Access to sidewalks was the most important factor for increased activity level.<sup>13</sup>

If something as mundane as access to a sidewalk can have a profound impact on a person's ability to stay healthy, imagine

## Wellness dimensions

### **Dimension:** Emotional

*Describes ...* managing and directing feelings; coping with challenges and behaving in trustworthy and respectful ways

*Examples ...* peer counseling, stress management, humor/laughter, personal histories

**Dimension:** Intellectual, cognitive  
*Describes ...* engaging in creative pursuits and intellectually stimulating activities; problem solving and reasoning  
*Examples ...* classes with a cognitive component, cultural activities, arts and crafts, journaling, games/puzzles, reading

### **Dimension:** Physical

*Describes ...* choosing lifestyle habits

that maintain or improve health and functional ability

*Examples ...* exercise, nutrition, sports, sleep, self-care, alcohol/drugs and tobacco cessation, medical self-care

**Dimension:** Professional, vocational  
*Describes ...* maintaining or improving skills, abilities and attitudes that help oneself or others stay productive and satisfied with the work they produce  
*Examples ...* paid work, volunteer work, skills classes, mentoring, tutoring, hobbies, caregiving

### **Dimension:** Social

*Describes ...* interacting with others for mutual benefit; awareness of the larger community and participation within it  
*Examples ...* clubs, volunteering, dancing, visiting friends and family, group and intergenerational activities, travel

### **Dimension:** Spiritual

*Describes ...* living with a meaning/purpose in life; exploring beliefs and values that create personal peace and understanding

*Examples ...* group and/or individual faith-based activities, personal meditation/reflection, mindful exercise (yoga, tai chi), experiencing nature

### **Dimension:** Environmental

*Describes ...* ways to use the environment for wellness, as well as eco-friendly products, services, processes and designs, which contribute to a healthier world

*Examples ...* meditation gardens, walking paths, city and community design

**Source:** International Council on Active Aging, [www.icaa.cc/about\\_us/wellness-overview.htm](http://www.icaa.cc/about_us/wellness-overview.htm)



*The meditation garden is at the center of the La Posada campus, with the labyrinth as the focal point. It is surrounded by several vignette-style gardens, all connected by walking paths. Image courtesy of La Posada in Green Valley, Arizona*

the potential when attention is focused on several areas of one's environment, not just a single component. As Jules Pretty and Peggy Bartlett (Urban place: Reconnecting with the natural world) point out, "[the] evidence suggests that green spaces and nearby nature should be seen as a fundamental health resource."

### VALUE OF THE ENVIRONMENT TO AGING SERVICE PROVIDERS

The reality of market trends for all aging service organizations demands that wellness and environment play an important role in the overall success of the organization's mission. Trends in retirement communities identified by Brecht Associates and Mather LifeWays,<sup>14</sup> Ziegler Capital Finance,<sup>15</sup> International Council on Active Aging<sup>16</sup> and other organizations point to wellness as a key element of the future, and the outdoor environment as an important area for wellness development.

As noted in American Institute of Architects Design for Aging Review, sociologists, anthropologists and market demographers have observed a "generational shift in the expectation of the new continuing care retirement community consumer, a shift that clearly has motivated much of the exploration of new paradigms within the CCRC building type."<sup>17</sup>

A paradigm shift also is occurring among providers, who are recognizing that empowering older adults to take charge of their own health and well-being is a more sustainable and mission-fulfilling approach than assuming decline in older adults and taking care of them. There is a parallel recognition by individuals that they need to be in charge of their own health and well-being, and that means finding a lifestyle that supports an engaged and fulfilling life course.

Wellness spaces combine with wellness programs to bring value to older adults and the organization. Here are a few examples:

- **Maintaining or improving health lowers costs.** As outlined above, research shows that contact with nature maintains physical and mental health. Better health means individuals save money on doctor visits, medications, aids and other expenses associated with unmanaged health conditions. Assisted-living and continuing care retirement communities save money when residents stay more functionally independent.<sup>18</sup>
- **Maintaining physical and mental health creates a positive atmosphere for older adults, families and staff.** When older adults feel the elevated mood and self-esteem associated with being out in nature, their good moods are likely to transfer to the people around them.
- **Outdoor wellness spaces provide marketing advantages.** A quick survey of the websites of retirement communities shows that many feature their outdoor activity spaces in photos and text. These places (like the wellness center) are usually highlights on a tour for potential residents.
- **Outdoor wellness spaces increase the amount of usable space for people and programs.** No longer are activities limited by the rooms in buildings. On a nice day, education—yoga or painting or bird watching—can be enjoyed outdoors. So can concerts, wine and cheese receptions, and other social activities.
- **Features do double and triple duty.** For example, therapeutic gardens not only offer relaxation and restoration, but also provide opportunities for physical activity and improved nutrition by using produce from the

garden. A network of sidewalks and trails performs for active transportation, physical activity, environmental stewardship when older adults perform maintenance, and areas for staff wellness.

- **Natural features meet the needs of the “next” older generations.** People who are ages 45–65 assume they will continue with active lifestyles, and are concerned with environmental stewardship. Outdoor spaces and activities meet this need.
- **Design trends for livable communities demand outdoor features.** Landscaping that invites people to go outdoors and features that enable walking and biking are key elements of livable communities.<sup>19</sup> In the 2010 ICAA Industry Development Survey, outdoor areas (walking trails, meditation garden, gardening area) were among the most frequently mentioned planned additions to a property over the next two years. In addition, survey respondents said that they planned to increase the number of outdoor exercises classes over the next two years.<sup>20</sup>

Organizations embracing the connection between the environment and wellness enhance the lives of their clients and build the value and marketability of their communities.

## ENVIRONMENTAL FEATURES THAT SUPPORT WELLNESS

Recognizing that there are many benefits to going outdoors and experiencing nature is the first step. The next step is to consider what features are most likely to be used by older adults.

The results of a study of 68 assisted-living communities in three climate areas were reported by Susan Rodiek, PhD, and Chanam Lee, PhD. This survey of residents and staff showed that the out-

door features most associated with usage of outdoor spaces were: high accessibility, clear indoor-outdoor connections, safe paving, good maintenance, round-trip walkways and a choice of comfortable sitting areas with appealing views.<sup>7</sup>

Rodiek and colleagues built on these findings to develop core design principles for outdoor areas that encourage utilization by residents.<sup>21</sup> These are:

1. **Contact with the world beyond the community.** Create opportunities to watch and/or interact with people, elements and/or other activities from outside the property, such as the ability to watch the road.
2. **Indoor-outdoor connection.** Insure that the outdoor area is very easy to see and reach from the main indoor places where residents spend time.
3. **Freedom, choice and variety.** Provide a variety of locations, activities, focal points, views and seating that allow residents to choose among alternatives.
4. **Comfortable and accessible.** Make navigation easy, provide seating and shade, and consider use by people who may have diminished physical and cognitive abilities.
5. **Enjoyment of nature.** Plan for an array of natural features, such as flowers, greenery, trees, water and wildlife.
6. **Places to be active.** Maintain the landscaping and offer safe walkways with seating options. Add stretching or exercise stations, and areas for parties, games and special events.
7. **Safe and secure.** So people feel safe, minimize features that may be hazardous and keep the places well maintained.



*Sounds of running water, a lovely view and plenty of windows help to encourage Meadow Lakes' residents to go outside. Image courtesy of Meadow Lakes, Springpoint Senior Living in Hightown, New Jersey*

Residential communities that have choices in outdoor features, such as a swimming pool, walkways, gardens and courtyards, also have more active residents, according to a report from the Active Living by Design group. Covered walkways between buildings and highly visible outdoor areas also increase activity levels.<sup>22</sup>

Gardening is a favorite activity of older adults. In a 2008 survey, 52% of people ages 55–64 years, 55% of those 65–74 years and 41% of individuals 75 years and older said they gardened for pleasure.<sup>23</sup> Besides enjoyment, preliminary research indicates that older adults who garden can significantly improve cholesterol and blood pressure levels as well as improve psychological health and strengthen social integration.<sup>24</sup>

Therapeutic gardens have become a mainstay of many retirement communities.<sup>17,20</sup> Gardens can fit into large, small and awkward spaces and prove beneficial to people with dementia and mobility considerations at the same time they benefit people who are functionally

independent. Eliminate steps and steep slopes to aid accessibility, add texture to sidewalks and consider surfaces that reduce glare, advises landscape architect Jack Carman, FASLA.<sup>25</sup> Carman suggests including plants and features that encourage smell and sound (trickling fountain) to add to the visual stimulation of a setting.

Walking is the most common physical activity choice of older adults. According to a 2010 ICAA survey of 496 providers (retirement communities, seniors centers and clubs), 61% had walking trails and 22% planned to add trails in the next two years.<sup>20</sup>

### **STRATEGIES TO OVERCOME BARRIERS FOR OLDER ADULTS**

Although there are many advantages to living in communities that enable access to the natural environment, there are two general barriers for older adults: accessibility (allowing an activity to occur) and motivation (encouraging one to partake in an activity).

#### **Barrier: Accessibility**

- Lack of shade, nearby restrooms
- Steps, irregular trails, incomplete sidewalks
- Traffic—vehicular and otherwise
- Lighting—or lack of it
- Lack of a clear route and/or access to the outdoor environment

#### **Approaches to improve accessibility**

- Eliminating physical barriers (high curbs, cracked sidewalks, trees or other objects in pathways) is the baseline action that allows the potential for an activity to occur outside.
- Strive to provide universal access to all trail systems through careful consideration of paving materials, slopes and handrails (compliance with prin-



principles of the Americans with Disabilities Act and Universal Design).

- Provide for shaded areas either with the use of shade trees or shade structures that are freestanding or attached to the building.
- Provide a person-locating network (e.g., Lifeline, SpiderAlert, WanderGuard, etc.) for safety, and emergency call box stations, where necessary.
- Organize meetings to learn about potential barriers that may be apparent to older adults, but not to staff and designers. For example, people may not read outside if they must sit in full sun.
- Plan a cohesive and connected sidewalk and path network constructed of a smooth and level surface.
- New or existing walking paths should provide rest areas with benches placed at frequent intervals and nearby bathroom facilities.

### **Barrier: Motivation**

Even if there are no physical barriers to using the outdoor environment, some older adults may have psychological barriers that prevent them from venturing outside. Some motivational barriers include:

- Fear of the environment itself (skin damage from the sun, heat, cold, allergies)
- Worry about falling
- Physical threats or interactions with strangers or wildlife
- Fear of getting lost
- Inclement weather
- Assumption by older adults themselves and their families that they are too old or ill or unable to go outside
- Lack of beauty and design elements in the outdoors that could entice people outside
- Staff members do not encourage people to go outdoors or plan activities using natural environments
- Lack of outdoor programming
- Lack of awareness among older adults of the benefits gained from integrating the environment into their lifestyles

### **Approaches to increase motivation to go outdoors**

- Invite older-adult stakeholders to participate in designing the wellness program. This is the first step in the process to engage and overcome barriers to motivation.
- Provide an attractive and inviting outdoor environment.
- Provide activities that stimulate elders to engage more with the environment. For example, picnics, health fairs, art shows and exercise classes fit very well into the natural environment.
- Provide interactive educational opportunities, such as seminars that speak to the use and benefits of the environment, followed with an outdoor activity that can be replicated without the presenter. Other educational information may include personal information on how to safely utilize outdoor spaces (e.g., shoes and adaptive devices to help stability, clothing that protects from the sun, plants to avoid).
- Providing a mechanism so that older adults can call for a pickup (perhaps in a golf cart) can go a long way to boost their confidence. When pickups are a regular service and there are paths for that type of vehicle, then elders are not embarrassed about being “rescued.”
- Include bus stops, benches and shaded areas for resting, and access to restrooms.
- Examine marketing and promotional materials to see if the images and text include the outdoor environment as a normal part of daily activity.
- The design of the pedestrian circulation systems should include hard surface paths to accommodate three-wheeled bicycles, scooters, mopeds,



*At Seabury, residents socialize while they tend their gardens. The raised beds raise the plants high enough that residents can sit down while weeding and harvesting. Tables, chairs and a sunshade promote conversation outdoors. Image courtesy of Seabury in Bloomfield, Connecticut*



Segways and similar transportation options. Provide for all levels and for all abilities, and encourage frequent use through stimulating settings.

- Provide interpretive signs/maps and indicate destinations along path systems to increase interest. Add distance markers that can serve as goals.

### **BUILD AN ORGANIZATION THAT SUPPORTS ENVIRONMENTAL WELLNESS**

The organization itself can be a barrier to use of the outdoors. Institutional barriers can be based in beliefs or in management priorities. Beliefs can be that older adults don't need to go outdoors, or that it is easier to supervise indoors, or that it's not important.

Management may consider outdoor spaces and activities as a low priority that is not encouraged or funded. If a trial of a single outdoor wellness program fails, management may quickly decide it doesn't work and isn't worth future investment of labor or time. An organization may not know how to fund outdoor spaces and may have concerns about liability in the event of an injury or accident. The organization should enlist the services of a landscape architect experienced in the design of outdoor environments for elders to address these concerns.

Service-enriched retirement communities, such as continuing care retirement communities (CCRCs) that are based on a medical model of wellness, historically focus on care, prevention and protection, which may reinforce an older adult's fears associated with the great outdoors.

Market trends indicate that organizations will be well served by updating the beliefs and priorities of its management and residents to encompass environmental wellness concepts. Retirement communities and seniors centers are rein-

venting themselves to appeal to the Baby Boomers, who are interested in more activity and are comfortable outdoors. Government and community service organizations are exploring the addition of more walkways, paths and bicycle lanes. Organizations can adopt tactics to shift toward provision of environmental wellness.

### **Approaches to encourage environmental wellness programs**

Commitment from top level management and the board of directors is critical to the success of any program. In addition to the leadership team being on board, all subsequent levels of management within an organization need to embrace the wellness program and understand the impact that both the natural and man-made environments have on the success of the program.

- Staff should identify the activities that stimulate elders to engage more with the environment. As part of the process, staff can establish if elders' fears are based in reality, or if they are perceived fears that can be alleviated through education or modification of the environment.
- Establish a clear set of goals and objectives when either planning for a new wellness program or enhancing an existing program. Include environmental wellness in this framework and have the stakeholders help define the terms *environment* and *wellness* so that everyone shares the same perspective.
- Once concepts and terms are accepted, clarify how environmental concerns will be incorporated into existing and proposed programs. Answer questions such as: Will there be physical modifications to existing interior or exterior structures? What will be the impact on the stakeholders if these changes are needed? Is relocation an issue?



- Allow for open and honest communication. Have all stakeholders at the table during times of decision-making to allow for a more complete and well developed wellness program.
- If landscape architects, planners and architects are involved, it is important that they communicate effectively with operational staff and residents. Creating a dynamic wellness program that incorporates the environment is a realistic and achievable goal, as long as there is an open platform for sharing ideas and concerns.
- Partner with other organizations to increase synergy among groups, such as the LeadingAge Idea House that presents concepts for outdoor as well as indoor living.

### **Barrier: Funding**

Funding for infrastructure, garden elements, benches, lighting, resurfacing and other design elements may not be a priority. This may be due to lack of knowledge of the benefits of outdoor spaces and activities.

### **Approaches to develop funding**

- Access funds from endowments for special projects.
- Add small amounts of funding to pay for site modifications to budgeted maintenance of existing landscape.
- Include in the capital budget.

*An example of a vignette garden at La Posada, which connects to the larger garden through pathways. The benches along the path enable residents to rest and contemplate. Image courtesy of La Posada in Green Valley, Arizona*





*The architecture at Meadow Lakes was designed to bring nature in. Pleasant outdoor views help to draw people out. (The geraniums on the sills are propagated and raised by resident volunteers.) Image courtesy of Meadow Lakes, Springpoint Senior Living in Hightown, New Jersey*

- Enlist the support of key advocates.
- Share best practices and success stories from other organizations.
- Insure that there are procedures in place so staff know how to respond, if needed, when residents are outdoors.
- Schedule guest lectures and education sessions on the benefits of nature.
- Plan resident/staff events, such as croquet, bocce, putting, walking and other outdoor activities.
- Consider how outdoor spaces can be part of an employee wellness program.
- Offer residents and employees incentive to use the outdoors, such as food for barbequing or supplies for outdoor crafts.

### THE IMPORTANCE OF FOCUSING ON ENVIRONMENTAL WELLNESS

Whether you are designing a new building, planning a renovation or just trying to enhance existing outdoor spaces, the impact of the environment is integral to healthy aging and a successful wellness program. Our environment shapes our relation to both the indoor and outside worlds. It is not possible to separate ourselves from the environment and good health.

Mounting evidence suggests that organizations that best use the environment to support a wellness model are leading a trend in service delivery. Senior living communities, as well as naturally occurring retirement communities (NORCs) and traditional neighborhoods, will need to demonstrate to future residents how the environment will be lending to their overall wellness.

Public sentiment has begun to push the environmental issue further, as greater numbers of the largest generation, the Baby Boomers, begin to reshape the concept of aging. While much has been and continues to be written about the impact this next generation of older

- Prepare a landscape master plan that can be implemented in phases so costs are expensed across months or years.
- Control labor and start-up costs by partnering with youth organizations (Boy and Girl Scouts), garden clubs, woodworking organizations and similar community organizations.
- Apply for grants through local park and recreation commissions.
- Investigate availability of municipal funds for linking on-site with off-site improvements.
- Get residents/members/staff to donate their time and resources.
- Partner with a university as part of a research study.

#### Barrier: Staff

Staff members may not always be interested and/or aware of the benefits of nature. They may feel it is “safer” for residents to stay indoors, or consider it more work if residents or clients go outside.

#### Approaches to motivate staff

- Include staff members in planning groups to promote wellness, culture change and use of the outdoors.

adults will have on American society, the challenge of incorporating the environment into wellness is not limited to the United States. Other countries are also facing extraordinary challenges when it comes to offering future generations the opportunities for sustained wellness and activity, both within structured senior housing, as well as traditional neighborhoods and communities.

We should look locally and abroad for new solutions that promote better health. Creative solutions to these issues can be found everywhere, but it takes initiative. Those communities that strive to incorporate the environment into their wellness programs will be the leaders in the industry for future generations.

## Contributors

This white paper was prepared by the ICAA Environmental Work Group.

Authors: Steven Kolnacki, La Posada Green Valley; Jack Carman, Design for Generations; Patricia Ryan, ICAA

Content developers: Mark Epstein, Healthcare Garden Design; Joseph Greipp, Springpoint Senior Living; Jeanette Harris, Total Body Wellness/Anti-aging Fitness; Stacey Judge, Springpoint Senior Living; Courtenay Knox, Seabury

## International Council on Active Aging

The International Council on Active Aging is a professional membership association that focuses exclusively on the health and wellness of adults 50 years and older. ICAA was founded in the belief that we can change the way society perceives aging and create a new vision of older adults who are active—to the fullest extent possible—within all areas of life.

## Resources

Access to Nature for Older Adults  
Evaluation tool, sketches, DVDs  
[www.accessstonature.org](http://www.accessstonature.org)

Active Aging in America: Industry Outlook 2010  
Trends in wellness facilities and programs  
International Council on Active Aging  
[www.icaa.cc/Management/researchandreports.htm](http://www.icaa.cc/Management/researchandreports.htm)

ADA Standards Homepage  
United States Access Board  
[www.access-board.gov/ada/index.htm](http://www.access-board.gov/ada/index.htm)  
Proposed guidelines for Outdoor Developed Areas  
[www.access-board.gov/outdoor/](http://www.access-board.gov/outdoor/)

Design for Aging Knowledge Community  
Design for Aging Review  
American Institute of Architects

<http://network.aia.org/AIA/DesignforAging/Home/Default.aspx>

Environmental Audit Tools  
Community-scale and street-scale  
Healthy Aging Network  
[www.prc-han.org/environment](http://www.prc-han.org/environment)

Global Age-friendly Cities  
Guide and Checklist  
World Health Organization  
[www.who.int/ageing/age\\_friendly\\_cities\\_guide/en/index.html](http://www.who.int/ageing/age_friendly_cities_guide/en/index.html)

Healthy Spaces & Places  
Design principles for active living  
[www.healthyplaces.org.au/site/index.php](http://www.healthyplaces.org.au/site/index.php)

Universal Design Principles  
The Center for Universal Design  
North Carolina State University  
[www.ncsu.edu/www/ncsu/design/sod5/cud/about\\_ud/udprinciples.htm](http://www.ncsu.edu/www/ncsu/design/sod5/cud/about_ud/udprinciples.htm)

Copyright ©2011 by International Council on Active Aging. All rights reserved. Reproduction is prohibited without the express consent of International Council on Active Aging.

## References

- Gordon, S., Keegan, C., & Fisher, L. Boomers Turning 60. AARP Knowledge Management, June 2006. [telephone survey of a national sample of 800 Boomers born in 1946]
- Manning, A. Aging gracefully is the biggest concern. USA Today/ABC news poll, October 23, 2005.
- Australian Institute of Health and Wellness (AIHW). (2011). Health and the environment: a compilation of evidence. Cat. no. PHE 136. Canberra: AIHW.
- Depledge, M. H., Stone, R. J., & Bird, W. J. (2011). Can Natural and Virtual Environments Be Used To Promote Improved Human Health and Wellbeing? *Environmental Science & Technology*, Article ASAP, April 19, 2011.
- Kaplan, R., Kaplan, S., & Ryan, R. (1998). *With people in mind: Design and management of everyday nature*. Washington DC: Island Press.
- Barton, J., & Pretty, J. (2010). What is the Best Dose of Nature and Green Exercise for Improving Mental Health? A Multi-Study Analysis. *Environmental Science & Technology*, 44(10), 3947–3955.
- Rodiek, S., & Lee, C. (n.d.) Elderly care: Increasing outdoor usage in residential facilities. World Health Design website. Available February 20, 2011, at <http://www.worldhealthdesign.com/External-space-Increasing-outdoor-usage-in-facilities-for-older-adults.aspx>.
- Jacobs, J. M., Cohen, A., Hammerman-Rozenberg, R., et al. (2008). Going Outdoors Daily Predicts Long-Term Functional and Health Benefits Among Ambulatory Older People. *Journal of Aging and Health*, 20(3), 59–272.
- Simonsick, E. M., Guralnik, J. M., Volpato, S., Balfour, J., & Fried, L. P. (2005). Just Get Out the Door! Importance of Walking Outside the Home for Maintaining Mobility: Findings from the Women's Health and Aging Study. *Journal of the American Geriatrics Society*, 53, 198–203.
- International Osteoporosis Foundation. (2010, May 10). "New Vitamin D recommendations for older men and women." Retrieved May 16, 2010, from <http://www.iofbonehealth.org/newsroom/media-releases/detail.html?mediaReleaseID=132>.
- US Administration on Aging. (2010). Health and Health Care. In *A Profile of Older Americans: 2010*. Available May 1, 2011, at [http://www.aoa.gov/AoARoot/Aging\\_Statistics/Profile/index.aspx](http://www.aoa.gov/AoARoot/Aging_Statistics/Profile/index.aspx).
- Federal Interagency Forum on Aging-Related Statistics. (2010). *Older Americans 2010: Key Indicators of Well-Being*. Available May 2, 2011, from [http://www.agingstats.gov/agingstatsdotnet/main\\_site/default.aspx](http://www.agingstats.gov/agingstatsdotnet/main_site/default.aspx).
- Sallis, J. F., et al. (2009). Neighborhood environments and physical activity among adults in 11 countries. *American Journal of Preventive Medicine*, 36(6).
- Brecht, S. B., Fein, S., & Hollinger-Smith, L. (2009). Preparing for the Future: Trends in Continuing Care Retirement Communities. *Seniors Housing & Care Journal*, 16(1), 47–62.
- Ziegler Capital Markets, Senior Living Finance. Z-News, October 1, 2010.
- Larkin, M. (2010). Environmental wellness: where 'green,' health, and well-being converge. *Journal on Active Aging*, 9(1), 24–33.
- The American Institute of Architects Design for Aging Center. (2004). *Design for Aging Review* (6th edition). Mulgrave, Victoria, Australia: Images Publishing.
- Ryan, P. The business case for wellness programs in retirement communities and seniors housing. A white paper from International Council on Active Aging. 2009.
- Local Government Commission. *Community Design*. Available September 2, 2010, at <http://www.lgc.org/issues/communitydesign.html>.
- International Council on Active Aging. 2010 ICAA Active-Aging Industry Development Survey. August 2010.
- Rodiek, S. (2010). Access to nature boosts physical activity among older adults, saves staff time. *ICAA Green Guide*, 1(1), 18–23.
- Harris-Kojetin, L., Kiefer, K., Zimring, C., & Joseph, A. (2005). *Active living by design: creating activity-enhancing residential settings*. Robert Wood Johnson Foundation report 046505. Institute for the Future of Aging Services, October.
- National Endowment for the Arts. (2009). *2008 Survey of Public Participation in the Arts*.
- Shoemaker, C. A., & Lin, M. (2008). A model for healthy aging through horticulture. *Acta Horticulturae*, 775, 93–98.
- Carman, J. P. (2006). Re-creating 'the backyard' in senior communities. *Journal on Active Aging*, 5(1), 74–75.



## International Council on Active Aging®

3307 Trutch Street  
Vancouver BC V6L 2T3 Canada  
Toll-free: 866 335 9777  
Tel: 604 734 4466  
Fax: 604 708 4464  
[www.icaa.cc](http://www.icaa.cc)