



Walking to Maintain and Improve Health: How the Integration of Sidewalks and Walking Paths in Senior Communities Promotes Successful Aging

Jack Carman, FASLA; Nancy N. Carman, M.A., C.M.C.

ABSTRACT

People walk throughout their lives and the ability of older adults to walk in safe, secure environments should be a natural part of the aging process. It is essential for the health and well-being of seniors that walking remains an essential component of their daily lives. Providing access to walking paths, nature trails, and neighborhood sidewalks should be mandatory in maintaining independence and the ability to age in place. The integration of sidewalks throughout a community helps people stay healthy, socially connected, and maintain control of their lives.

INTRODUCTION

New parents eagerly anticipate the first few steps their baby will take, ushering them into a new level of independence appropriately called the “toddler” stage. Those first few steps, albeit wobbly and not without spills, are amazing. The toddler has to learn how to balance upon two legs, regulate motion, and focus on a particular destination or object (typically a lamp that has not been secured properly), all the while being photographed and videotaped by a proud family.



Figure 1. Medford Leas CCRC
(photo credit – Jack Carman)



Figure 2. Meadow Lakes CCRC
(photo credit – Jack Carman)

Not long after this developmental stage occurs and the first few monumental steps are taken, walking becomes as routine as breathing for most children. What people fail to take into account is how these basic motor skills under-gird and support our freedom and autonomy throughout life. The simple act of walking can help ensure good health, provide transportation, and promote socialization, all factors that contribute to the happiness and well-being of an individual.

The ability to walk enables us to establish our independence at an early age and maintain it throughout our life. It is important, if not essential, that walking is continued and encouraged at all ages, especially in the later years of life.

RATIONALE

Recent literature has described how the U.S. is faced with a sedentary population, young and old. The implications of this unhealthy trend include declines in public health, increased hospitalization, and shortened life expectancy. Current statistics indicate that more than 60% of adults are not regularly active and that 25% of adults are not active at all (National Center for Chronic Disease Prevention and Health Promotion, 1999). A reduction in physical activity of older adults, overall, also has been identified and quantified. Specifically, “one in three men and one in two women, 75 years of age or older, engage in no physical activity” (National Center for Injury Prevention and Control, 2007). The health care costs for older adults are significant and expected to reach unprecedented proportions with the coming age wave.

“Escalating health care costs, which continue to exceed overall inflation rates, reduce the standard of living for retirees, even when their pensions are indexed to inflation. Men and women who worked diligently for decades with the expectation of being able to enjoy comfortable retirements are facing financial difficulties that they could not have anticipated” (National Coalition on Health Care, 2007, p.



Figure 3. Medford Leas CCRC
(photo credit – Jack Carman)

2). Maintaining good health through regular exercise, such as indoor or outdoor walking, may very likely reduce current and future medical costs along with promoting an enjoyable quality of life for seniors.

Various research data confirm what we all inherently know to be true: walking is good for us. People have walked for centuries. Only with the advent of the car has a majority of people, primarily in the U.S., elected to ride rather than walk. And modern suburban community design has increased the need to use cars to reach destinations, either because of residential isolation or shopping in big box stores surrounded by vast expanses of asphalt parking lots. As a result, the car is preferred to foot transportation; however, “even in spread-out Atlanta, residents in the most compact walkable neighborhoods are 2.4 times likely to get enough physical activity than those in less walkable subdivisions” (Frank & Sallis, 2005).

Neighborhood “walkability” and the proximity of destinations play major roles in the amount of physical activity older women get. In addition, women who live near facilities and services like parks, trails, and shops have considerably higher levels of activity than those whose homes are not within walking distances to such sites” (King & Kriska, 2003).

The need to incorporate amenities and destinations to encourage walking is applicable for all residential communities, whether in senior or multi-generational settings.

The health benefits of walking include “stress reduction and a reduction in the risk of developing heart disease, diabetes, osteoporosis, stroke, and breast or colon cancer. Some experts say that walking relieves constipation and cures impotence. At the very least, it makes you stronger, better looking, and, best of all, more aerobically fit” (Cleveland Clinic Health Extra, 2004).

All systems of the body undergo gradual change as we age. Graying hair and facial wrinkles are visible changes. Less visible are the changes that cannot be seen, such as sensory, cognitive, and musculoskeletal system declines. The loss of visual acuity, decreased muscle strength and flexibility, combined with a slower transmission of information regarding one’s position in the surrounding environment can cause a loss of balance, resulting in a fall (American Physical Therapy Association, 1999). According to the American Academy of Orthopaedic Surgeons, falls are the leading cause of fatal and nonfatal injuries to older people in the U.S. Each year more than 11 million people age 65+ fall, which is one in three seniors (American Academy of Orthopaedic Surgeons, 2000).

The good news is that many falls can be prevented. Balance is a skill that most of us can keep well into our senior years. Deterioration in muscle strength, flexibility, and endurance is not a natural part of aging, but a lack of regular exercise brought on by inactivity or a fear of falling is (American Academy of Otolaryngology, 2007). Along with low-impact strength training and daily stretching, walking done on a regular basis can improve a senior’s muscle tone, strength, and coordination, significantly reducing the risk of falling. As an added bonus, cultivating the habit of regular walking can improve mood and brighten the spirit. “Walking stimulates the brain to release endorphins, the body’s natural opiates, which can make you feel better about life right away. It also



Figure 4. Medford Lakes CCRC
(photo credit – Jack Carman)

stimulates the brain to increase production of the neurotransmitter serotonin, another potent mood elevator” (Cleveland Clinic Health Extra, 2004).

INDEPENDENCE

Independence is important to people throughout their lives, especially older adults who may not be as active or mobile as they once were. The ability to control what happens in one’s environment can be a critical factor in how well a person ages. Take, for example, driving, which Americans take for granted and almost view as a birthright. The vast majority of adults in this land have been able to drive themselves when and wherever they want since their late teens. Once the ability or opportunity to operate a motor vehicle ends, the feeling that one has lost their freedom and become dependent upon others can be debilitating. So, what are the alternatives?

An alternative to driving is public transportation. This is a reality in most urban areas; however, the suburbs currently offer few forms of public transportation. There are public buses and trains. Light rail lines are being extended into the outer areas of the downtown areas of cities. Specialty bus and van services for seniors exist in some communities; however, these opportunities are more the exception than

the norm. Federal and state funding needs to be directed to developing programs for convenient senior transportation, especially if we want people to age in place.

An alternative to using motorized vehicles, whether an automobile or public transportation, is the development of safe pedestrian corridors and routes that allow people to walk from their home to a specific destination and back. These pedestrian-friendly sidewalks and pathways should be throughout a community, linking all private and public areas. Sidewalks and walking paths should be universally accessible to people of all physical abilities. Someone desiring to walk should not be afraid to use the sidewalk because he or she fears the conditions are unsafe and might lead to a fall or physical harm. Any number of unsafe conditions can deter older adults from using community sidewalks. Examples may include cracks in the cement, narrow pathways, poor or nonexistent lighting, or impossible accessibility. To promote walking, the environment should be perceived to be both physically and psychologically safe. It also should offer the opportunity to sit and enjoy the surrounding landscape.

EDUCATIONAL AND WELLNESS PROGRAMS

Older adults vary in physical abilities, as does every segment of the population. Individuals who have remained physically fit throughout their lives and are able to continue to walk can benefit from walking programs. Others who have not been as physically active or who have experienced a recent injury may benefit from educational programs and social support. Having a good understanding of the health benefits derived from remaining physically active can encourage older adults to participate in walking programs. “A moderate amount of physical activity can be obtained in longer sessions of moderately intense activities (such as walking) or in shorter sessions of more vigorous activities (such as fast walking or stair walking)” (National Center for Chronic



Figure 5. Meadow Lakes CCRC
(photo credit – Jack Carman)

Disease Prevention and Health Promotion, 1999).

Older adults should consult their doctor before participating in a structured walking program, whether they are planning to join a walking club or just enjoy occasional leisurely strolls. This will help to establish a baseline that can be used to measure improvements in health and well-being. If the older adult has not been a regular walker or is deconditioned, it may be beneficial to begin with simple exercises to improve balance, strength, and overall stamina. A physical therapist or other appropriate health care professional should be consulted.

Apart from being utilitarian, walking can be fun, and a sport. There are a number of well-designed walking programs that can be implemented on an individual or group basis. One such program is called ChiWalking, a unique approach to walking created by Katherine and Danny Dreyer in 1999. ChiWalking combines walking with the basics of tai chi, the ancient Chinese practice now popular throughout the U.S. that focuses on health, meditation, and soft martial art (ChiWalking, 2007).

Another variation on walking has been the introduction of yoga and walking. This form of walking introduces an element of meditation into a walking regime. It requires walkers to concentrate on their breathing and to focus attention on each step as they

walk. This can be helpful for an older adult who may be unsteady on his or her feet. Slowing down the act of placing one foot in front of the other and being mindful of the process will help a person build up confidence and become more self-assured of his or her ability to walk (ABC of Yoga, 2007). For those older adults who are capable of walking a distance, the introduction of mindful breathing combined with the repetitive nature of walking introduces the art of meditation into the walking exercise. A location, such as a park, or other peaceful setting that does not require crossing traffic is important because it will not disrupt meditative walking (Jerard, 2006).

No expensive, specialty attire is required to undertake a therapeutic walking program. In order to enjoy the physical, social, mental, and spiritual aspects of walking, a senior need only have comfortable walking shoes with non-skid soles, socks, and clothing that is not too binding and appropriate for the weather outside. Sunglasses, sunscreen, and a wide-brim hat should be a standard part of one's walking apparel on bright, sunny days. When walking indoors, a medium weight top and comfortable pair of pants work very well for clothing. Many walking enthusiasts use pedometers to measure the number of steps they have taken while others employ the use of a walking stick to ensure good balance.



Figure 6. Medford Leas CCRC
(photo credit – Jack Carman)

ACCESS

People walk from their front door of their residence to get the mail, pick up the morning paper, or get in their car to go to work. What if they were no longer dependent upon the car and could reach destinations by foot? Senior communities, a housing alternative for older adults, are increasing in number and many times are designed to support and even encourage walking within the community itself. If designed properly, the resulting community encour-

ages residents to walk and participate in activities, such as bird watching, that require them to walk throughout the campus.

There are continuing care retirement communities (CCRCs) that have been designed to locate dining and other community services in the center of the campus with housing for people who are frail immediately adjacent to the center of activity. Independent residents typically reside in apartments or cottages located in the outer circle of the campus and can easily walk to the community center and

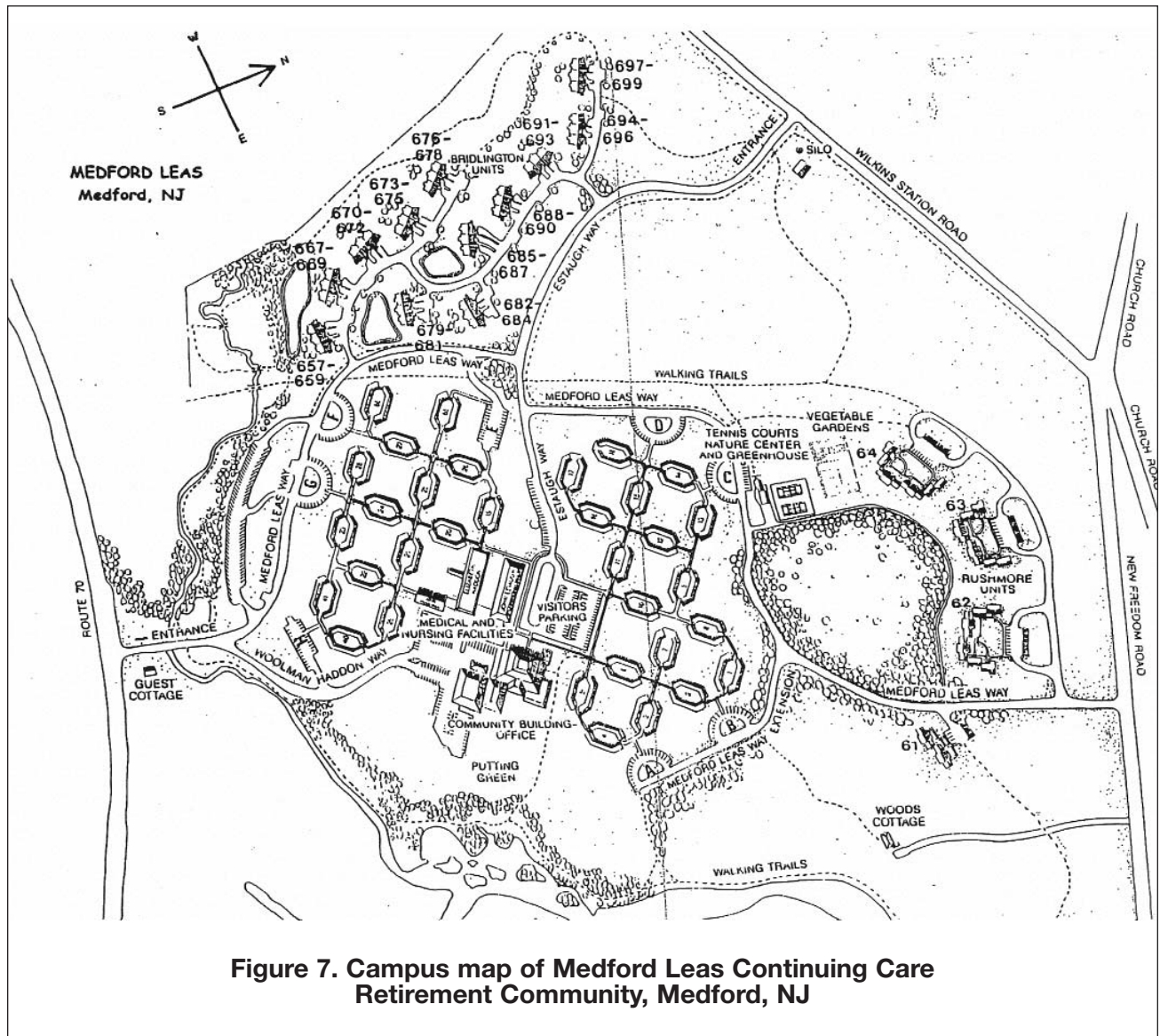


Figure 7. Campus map of Medford Leas Continuing Care Retirement Community, Medford, NJ

throughout the campus. An example of this is the campus of the Medford Leas Continuing Care Retirement Community (refer to **Figure 7**).

In assisted living residences, the community settings are similar; however, all residences and community amenities are typically contained in one building. There are corridors that connect to the center of the building where support services are located, along with dining and other community activities. In this setting, supervised walking should be encouraged.

The goal is to create a physical environment where anyone can walk any time. The physical environment should support a person's ability to walk from one destination to another. Walking should not be hampered by a lack of sidewalks, steeply sloped walks, no benches for resting, unattractive settings, and other environmental factors that discourage walking.

People like to walk in a variety of settings, including open park areas, wooded settings, decoratively designed shrub beds, and many other landscape styles. The intent is to be able to offer people the opportunity to walk in a range of landscape settings. A person living in a senior community setting, such as a 55+ active adult community, CCRC, skilled nursing facility, or memory care residence, should

have a range of walking opportunities.

SITE DESIGN AND ANALYSIS

One of the next steps, and sometimes the most difficult one, in the process of developing pedestrian circulation systems in a community is the actual installation of the sidewalk and/or walking path itself. Analysis of needs, the design of the pathways, determination of materials, and construction, as well as the actual installation of the circulation route can take time, money, and the patience to see it through until completion. This process applies to new communities as well as the restructuring of existing communities.

Looking at the design of a new community may be the easier of the two equations because the initial work is easily done on paper. The buildings are designed for specific uses and the manner in which the structures relate to one another is evaluated. The areas or spaces between the buildings are reviewed to see how the people using the buildings interact with one another. These connections are the pathways that enable people to move from one building to another. Doors are placed in convenient locations and windows are added, among many reasons, to be able to see the connections between buildings. All of this effort is spent on thoughtful design in order to encourage people to move about, hopefully, in the easiest manner possible. Ultimately, the spaces between buildings need to be easy to use, relatively convenient, visually appealing, and physically accessible (Carman, 1998).

Existing areas can offer more of a challenge when sidewalk connections are nonexistent or they do not take people where they need to go. Changes in grade, lack of access to buildings, visually unappealing settings, and many other factors can be walking deterrents. An analysis of the overall area is a necessary first step to determine the inherent problems. This can take the form of a post occupancy evaluation where residents and staff are interviewed as to why they can and cannot walk to specific destina-



Figure 8. Medford Leas CCRC
(photo credit – Jack Carman)



Figure 9. Cathedral Village CCRC
(photo credit – Jack Carman)

tions (Frale, Carman & Anderzhon, 2001). The areas under examination are observed by the designer over a period of time (several hours during the course of a week) to see how an area is being used.

DESIGN ELEMENTS

Sidewalks and paths should be specifically designed to promote a safe and secure walking environment. Regulatory guidelines for sidewalks and paths should follow the basic tenants of the Americans with Disabilities Act (ADA); however, Universal Design principals should take precedence (Center for Universal Design, 2007). As an example of ADA requirements, a ramp that is sloped at 1:12 or at an 8.33% grade meets ADA standards; however, an older adult may not be able to use the ramp safely by themselves (ADA, 2007). Even with a handrail for support, a person who is frail or lacks the necessary physical strength may not be able to use the ramp without assistance. A ramp that has been designed with a grade of 2 or 3% can be used more easily by a person who is lacking physical dexterity or is confined to a wheelchair. Side slopes should be 1% to allow water to drain off the surface, yet not create a feeling for the person that they are tipping to one side.

The width of a sidewalk or path must be wide enough to accommodate a wheelchair and two people passing each other comfortably. While many sidewalks along the street are four feet in width, a five-foot sidewalk would permit people to pass easier and encourage greater usage. In retail areas and other locations with higher pedestrian use, six foot or wider widths are more appropriate.

Glare is an issue for older adults as it takes the aging eye longer, sometimes five minutes or more, to adjust to changes in light (McBride, 1999). Light colored and reflective sidewalk surfaces, such as concrete, can be visually uncomfortable. It is a safety issue if a person cannot clearly see where he or she is going and trips or walks into an area that is unsafe. Tinting the concrete can reduce glare by either adding a coloring agent to the concrete mixture while it is in the truck or applied shortly after the concrete has been installed. Older existing concrete can be colored using a liquid stain that is absorbed into the concrete (Scofield, 2007).

Sidewalk materials that cushion the feet are a positive alternative to concrete or asphalt. Some communities are installing recycled rubber sidewalks, mostly replacing sidewalks that have been lifted because of tree roots. These sidewalks are more pliable and will “give” when something causes them to shift. The Rubber Pavement Association has been experimenting with the addition of recycled rubber into asphalt road surfaces (Rubber Pavements Association, 2007). The construction industry may consider looking at ways in which recycled rubber is added into sidewalk surfaces.

All walking surfaces should be constructed of materials that are handicapped accessible. Concrete has been discussed as one material. Gravel surfaces can be used where situations warrant a more permeable surface because of environmental conditions, e.g., around a lake. In this case, a walking surface constructed of mill fines or quarry dust makes a solid walking surface that is handicapped accessible as well as safe for wheelchairs and walkers. A shredded hardwood mulch can be used for “nature paths” when

a more natural walking surface is appropriate.

The pathway should be a continuous surface if possible. The number of joints or spaces between materials should be reduced. Brick or precast pavers are modular and easy to install; however, they have frequent spaces due to the smaller size of the individual materials (average brick sizes are four inches wide by eight inches long). Concrete construction joints can be saw-cut and spaced at approximately five feet on center. Pavers are a more decorative alternative to concrete and can be safely used to border the edge of a concrete walk to enhance the look of the walk.

The addition of landscape elements will provide physical comfort, safety, security, and a visual respite for pedestrians. Canopy trees provide shade, cool sidewalks due to evapotranspiration, and offer seasonal color during autumn months (Carman & Carman, 2003). Additional shade created by overhead structures, such as pergolas, also offer relief from the sun. Benches offer places to sit and rest as well as comfortable places to socialize with friends. Water fountains provide a welcome drink on a hot day. Fountains and other water features create comforting sounds. Decorative lighting offers direction and safety during dusk and nighttime hours. Signs provide assistance with wayfinding.

The landscape plantings along the sidewalk and path increase the pleasure of the walking experience. Ornamental trees offering seasonal interest is another reason for taking a walk. Perennials and ornamental shrubs attract nature, such as hummingbirds and butterflies, and make walks more stimulating. Bird feeders and bird baths further enhance the experience. These landscape features give people something to talk about and increase their use of the walking areas (Carman, 2000).

‘JUST DO IT’

In an ideal world, everyone walks every day; however, in reality inertia takes over and most of us become sedentary. When it comes to walking, we

need to take “baby steps” and encourage non-walkers to begin to walk a little at a time. And, we need to find ways to make walking easier and more interesting for those who do walk.

The ad line from a well-known athletic shoe manufacturer, “Just do it,” says it best; however, it may be oversimplified to just tell someone to walk. Helping older adults understand, on a personal level, that walking is beneficial and helps to maintain strength and independence is the first step. The reasons why a person should remain active by walking and participating in a regular walking program are extensive, including, but not limited to, improved health, reduced risk of illness, increased socialization, enjoying a positive outlook, and just plain having fun. Overall results show that people who are involved in walking programs do feel better, and walking is one of the easiest forms of exercise.

In addition to personal commitment and motivation to participate in a walking program, communities need to analyze pedestrian circulation systems and take the necessary steps to make sure walking routes are safe, secure, and complete. New walks should be designed and constructed to encourage people to stay actively engaged in their community. Once the walking environment is completed, it is relatively easy to organize structured or informal groups to participate in regular walking programs. Lastly, follow-through needs to be undertaken to make sure that people are walking and that programs are successful. Why not highlight seniors who are walkers and make them spokespersons for the activity in the media? In the long run, lasting fitness and personal vitality throughout a lifetime is the prize at the end of the race.

ACKNOWLEDGEMENT

This paper recognizes the work and wisdom of Lillian Dow, who was our inspiration to pursue careers in the field of aging.

REFERENCES

- ABC-of-Yoga. (2007). *Meditation - walking meditation*. Retrieved May 19, 2007, from ABC-of-Yoga Website: <http://www.abc-of-yoga.com/meditation/walking.asp>.
- American Academy of Orthopaedic Surgeons. (2000). *Don't let a fall be your last trip: Who's at risk?* Retrieved May 13, 2007, from American Academy of Orthopaedic Surgeons Website: http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=74&topiccategory=
- American Academy of Otolaryngology-Head and Neck Surgery. (2007). *Why do we fall?* Retrieved May 24, 2007, from AAO-HNS Website: <http://www.entnet.org/healthinfo/balance/fall.cfm>
- American Disabilities Act. (2007). Retrieved June 24, 2007, from American Disabilities Act Job Accommodation Website: <http://www.jan.wvu.edu/links/adalinks.htm>.
- American Physical Therapy Association. (1999). *What you need to know about balance and falls: A physical therapist's perspective*. Retrieved May 18, 2007, from the American Physical Therapy Association Website: <http://www.apta.org/AM/Images/APTAIMAGES/ContentImages/ptandbody/balance/BalanceFall.pdf>
- Carman, J. (1998, May). Exploring nature within the grounds of a senior residence. *Assisted Living Success*, 38-39.
- Carman, J. (2000, March). Nature by Design. *Design 2000 Magazine*, 51-55.
- Carman, N., & Carman, J. (2003, October). The care and use of a special needs garden. *Assisted Living Success Magazine*, 30-31.
- Center for Universal Design. (2007). Retrieved June 24, 2007, from North Carolina State University Website: <http://www.design.ncsu.edu/cud/>
- ChiWalking. (2007). Retrieved June 24, 2007, from Chi Walking Website: <http://www.chiwalking.com/shop/home.php>.
- Cleveland Clinic Health Extra. (2004). *New Research underscores benefits of walking*. Retrieved May 19, 2007, from the Cleveland Clinic Health Information Center Website: <http://www.clevelandclinic.org/health/health-info/docs/3300/3379.asp?index=11466>
- Fraley, I, Carman, J., & Anderzhon, J. (2001, December). Post occupancy evaluations. *Assisted Living Success Magazine*, 18-19.
- Frank, L., & Sallis, J. (2005). *Residents in walkable neighborhoods 2.4 times more likely to get enough activity*. Retrieved August 21, 2005, from The Robert Wood Johnson Foundation Website: <http://www.rwjf.org/newsroom/newsreleasesdetail.jsp?id=10335&print=true>.
- Jerard, P. (2006). *Yoga insights: Walking yoga meditation*. Retrieved May 22, 2007, from the Ezine Articles Website: <http://ezinearticles.com/?Yoga-Insights:-Walking-Yoga-Meditation&cid=294945>
- King, W., & Kriska, A. (2003). *Neighborhood 'walkability' determines activity level of older women*. Retrieved June 24, 2007, from the Senior Journal Website: <http://www.seniorjournal.com/NEWS/Fitness/3-08-29walk.htm>
- McBride, D. (1999). Nursing home gardens. In C. Cooper Marcus & M. Barnes (Eds.), *Healing Gardens* (pp. 385-436). New York: John Wiley & Sons.
- National Center for Chronic Disease Prevention and Health Promotion. (1999). *Physical activity and health: A report of the Surgeon General*. Retrieved May 18, 2007, from U.S. Department of Health and Human Services, Centers for Disease Control and Prevention Website: <http://www.cdc.gov/nccdphp/sgr/sgr.htm>.
- National Center for Injury Prevention and Control. (2007). *Costs of falls among older adults*. Retrieved May 18, 2007 from Department of Health and Human Services, Centers for Disease Control and Prevention Website: <http://www.cdc.gov/ncipc/factsheets/fallcost.htm>.
- National Coalition on Health Care. (2007). *The impact of rising health care costs on the economy: Effects on pension programs and beneficiaries*. Retrieved May 18, 2007 from National Coalition on Health Care Website: http://www.nchc.org/facts/Economy/effects_on_pension_programs_and_beneficiaries.pdf
- Rubber Pavements Association. (2007). Retrieved on June 15, 2007, from the Rubber Pavements Website: <http://www.rubber-pavements.org/>
- Scofield. (2007). Retrieved on June 15, 2007, from the Scofield Website: <http://www.scofield.com/>

© 2007, National Investment Center for the Seniors Housing & Care Industry

Jack Carman, FASLA
President
Design for Generations, LLC
92 Tallowood Drive
Medford, NJ 08055
Phone: (609) 953-5881
Fax: (609) 953-1625
E-mail: jpcarman1@comcast.net
Website: www.designforgenerations.com

Nancy N. Carman, M.A., C.M.C.
Director of Marketing Services
New Life Management & Development, Inc.
20000 Horizon Way, Suite 700
Mt. Laurel, NJ 08054
Phone: (856) 914-9111
Fax: (856) 914-9110
Email: nancy@nlmd.com
Website: www.nlmd.com