

LHIC white paper on Healthy Aging and Planning for the Future

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The Local Health Improvement Coalition (LHIC) workgroup on Healthy Aging has adopted the goal of "**Promoting proactive personal planning for the future for our aging population and their social supports**" as its objective for 2016. This White Paper is intended to help inform that process. It is divided into the following sections:

- Background on aging in Howard County
- What is meant by Planning
- Advantages of planning
- Barriers to planning
- Methods of planning
- How to promote planning
- Recommendations for planning

Background on Aging in Howard County

Aging is an inevitable consequence of living. As we live, we grow older moment by moment. Biologically, aging produces physiological and structural changes in our bodies that affect how we function in life. How do we make the best of where we are in time, and in the time to come? How do we turn ‘normal aging’ into ‘optimal aging?’ It is vital that we understand how to make these extra years healthy and productive. Normal aging refers to our tendencies to dismiss our aches and pains and the warning signs of loss of function as “normal.” Successful aging is what we believe many of us can achieve with planning and some major, and many minor, changes in how we look at and treat our bodies and our minds. Successful aging has been defined as having (a) low likelihood of disease and disease-related disability, (b) high cognitive and physical functional capacity, (c) active social engagement, and (d) high resilience and low stress (Rowe & Kahn, 1997).

Lifespan has been expanding throughout the world, and estimates indicate the proportion of people over the age of 65 will exceed those five years old and younger across all countries. By 2050, globally the number of people over 60 years of age will triple from 650 million (11% of the world's population) to 2 billion (22%). The population of Howard County grew rapidly between 1970 and 2000, but now has slowed except for the population 65 and older, which will continue to grow into 2040, while the population under 65 will see no growth after 2020, even allowing for in-migration (Fig. 1).

Compared to 2010, it is estimated that in 2030 the older adult population will grow dramatically (146%) even as the number of adults aged 45 to 54 actually decline (-12%). The decline in the ratio of people age 75+ (i.e., those most likely to need assistance) relative to those age 40-54 (i.e., age group containing most adult children) is problematic because the majority of assistance (upwards of 75%) to those older adults that do develop disabilities comes from this population of adult children (Fig. 2).

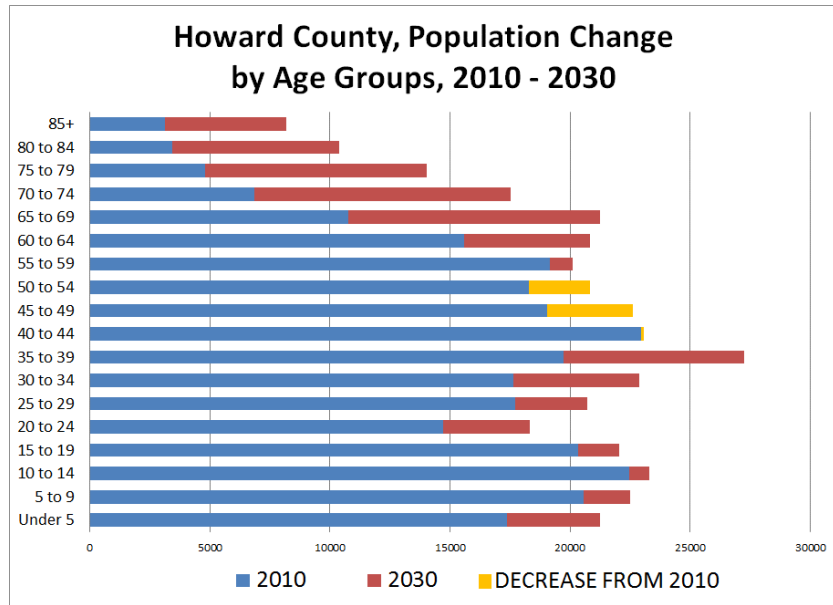


Figure 1 Population trends in Howard County

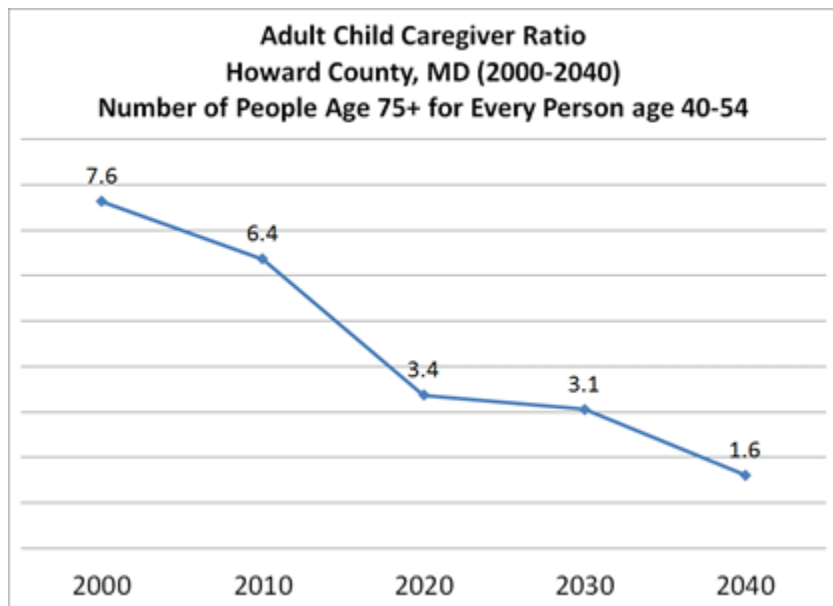


Figure 2 Adult caregiver ratios trends

Howard County residents between ages 45 to 64, in 2011, were 48% male and 52% female. Of those 65 and over, 44% were male and 56% were female, with 26.6% of women widowed or divorced compared to 8.9% of the men. As the population ages, the numbers living without partners increases, as do the numbers with at least one disability (28% of all residents 65 and older in 2011). As Figure 3 illustrates, the raw number of older adults in Howard County (65+) with physical disabilities is forecasted to rapidly grow over the next 25 years. Part of this growth is due to overall population growth, but it is amplified by the impact of the obesity epidemic (Fig. 4).

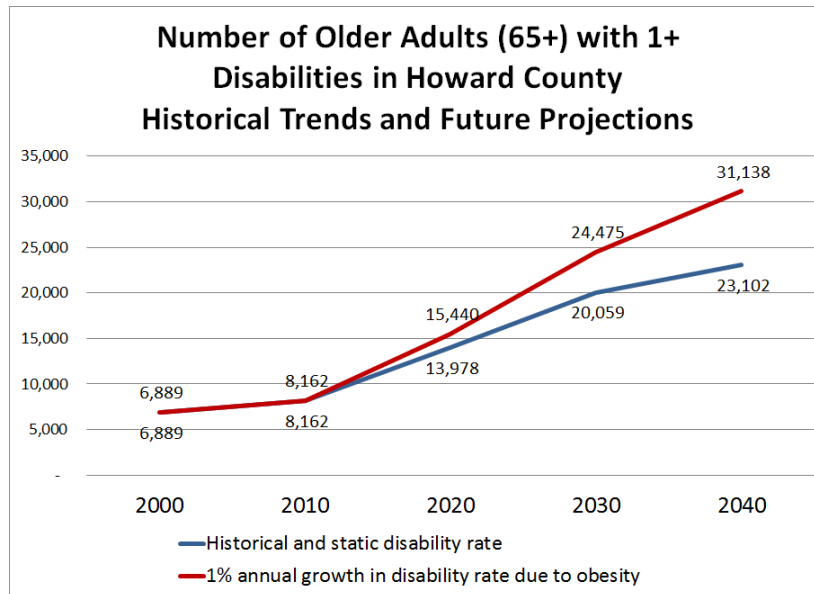


Figure 4 Trends of impact of obesity upon disabilities

What is Meant by Planning

When we speak of the issue of “planning”, it is important to recognize that this topic is not merely restricted to things like advanced directives or living wills. The notion of planning extends to any pro-active step that involves conscious and deliberate attempts to address potential risks, as well as to maximize benefits. As such, the notion of planning extends to the following domains (and others not listed):

- Financial – preparation for retirement (starting as early in one’s work career as possible)
- Financial - estate planning (for spouses and children after you die)
- Health - physical (prevention as well as care needs related to illness/disability)
- Health – socialization (which is highly linked to both cognitive health and quality of life)
- Health – advanced care planning (Advanced Directives, Living Wills, etc.)
- Home – making your home safe and accessible (to enable Aging in Place)
- Home – deciding if, and when to relocate, as well as where (in response to mismatch of needs and capacity in the living environment)

Advantages of Planning

While it may seem self-evident to many that planning for the future is beneficial, the reality is that only a minority of individuals actively plan for the future. Studies have indicated that even among older adults only 15% of people have concrete plans for future care needs. The 2016 Howard County Health Assessment Survey indicates that only 30% of county residents have health care advance directives and a named person (proxy) to act on their behalf to make health care decisions, while 95% have health care coverage. Research indicates that there are two major benefits of planning (i.e., prevention of negative consequences and increasing quality of life). Hence let’s take a moment to see what experts have to say about these benefits:

Planning prevents negative consequences

- “lack of planning may lead to crisis decision-making and increase the risk of inappropriate residential or care arrangements” (Sorensen et al., 2012)
- “seniors who plan have a better chance of receiving the type of care they prefer ... and of incurring less stress for themselves and their relatives when acute care needs arise” (Pinquart & Sorensen, 2002)
- “not preparing for future care needs increases the risk that decisions will be made without one’s input” (Pinquart & Sorensen, 2005)

Planning increases quality of life

- “general planning for the future and marshaling support were shown to be the strongest predictors” (of higher QOL) (Kahana et al., 2012)
- “anticipation of future needs allows older adults to take more effective action” (Kahana et al., 2012)
- “help seeking reflects social resourcefulness and contributes to receipt of both instrumental and affective support” (Kahana et al., 2012)
- “preparing for problems and making decisions in advance of a stressful event is likely to improve perceived control and later coping efforts” (Pinquart & Sorensen, 2005)

Barriers to Planning

Despite all these benefits, nationally only 15% of older adults have concrete plans for future care needs. Hence if we wish to promote planning it is important to understand some of the barriers to planning. Lindquist et al., (2016) identified four major reasons why older adults do not plan for the future:

- **Denial:** “60% of older adults believed that they were unlikely to need long-term services and supports in the future, whereas the evidence suggests that 70% of older adults will need them at some point” (Lindquist et al., 2016)
- **Confusion:** “few older adults or their loved ones know where or how to access information about the options” (Stolee et al., 2014)
- **Feeling overwhelmed:** “beliefs that there were no good choices ... so why bother planning” (Lindquist et al., 2016)
- **Assume adult children will handle things:** “frequently expressed reliance on offspring ... though many stated that they had not discussed their current or future needs with their offspring” (Lindquist et al., 2016)

Methods of Planning

Even if people decide to plan, and manage to avoid barriers to planning, the next issue becomes what are the most effective guidelines of planning. The evidence on this issue falls into two

major recommendations: 1) engage in planning as early as possible, and 2) make concrete plans, not superficial plans. Superficial planning has actually been found to increase stress/distress among older adults (by having them think about potential problems without formulation solutions), while detailed and concrete planning decreases stress.

- **Sooner rather than later:** “overwhelming message from family members ... was to start early ... have the conversation before a crisis” (Stolee et al., 2014)
- **Concrete planning:** “participants who formulated personal goals in concrete terms also profited more from the intervention” (Bode et al., 2007); “psychological well-being is lowest in older adults who merely think about the risk of needing help or care in the future, without developing a solution for the situation” (Pinquart & Sorensen, 2005)

How to Promote Planning

There are a variety of avenues that either promote planning, provide skills for planning, or make it easier. As indicted above, a major barrier to planning stems from denial and ignorance of the benefits. In that regards, outreach efforts can be useful to encourage people to plan (across multiple dimensions of their life). Outreach efforts include, but are not limited to:

- Encouraging professionals to bring up these topics with clients
- Encouraging faith communities to raise the issue
- Promoting planning at senior friendly sites (libraries, 50+ centers, 50+ housing communities, pharmacies)
- Promote family conversations (likely supported by “how to” guides)
- Include information in publications (e.g., The Beacon)
- Promote via ethnic communities for immigrant populations (e.g., Chinese community)
- Establishing a portal where all information is available in a single place (such as a portal for socialization and exercise)

Another avenue is providing educational opportunities, either through face-to-face sessions (individual consultations or formal trainings), webinars, or written publications. These efforts include, but are not limited to:

- Trainings conducted by and through the Commission on Aging and the Office on Aging and Independence
- Webinars
- Written guides/manuals and “cheat sheets”
- And best practice programs such as NCOA’s “Aging Mastery Program”¹

Finally, planning can be advanced by making it a perceived social norm (i.e., public role models) and/or making planning a default activity. When planning is a (social) expectation, rather than something that people have to consciously think about, the likelihood of it occurring increases dramatically. Methods to bring this about would require considerable ingenuity, but could

¹ Important to note that the Aging Mastery Program created by NCOA is not currently an evidenced based program

include such things as creating social expectations, such as a “planning week” at a 50+ center, or in one’s faith congregation, or even around the table at Thanksgiving when families are already together.

Recommendations for Planning

Domains, or areas, in which older adults would benefit from planning include, but are not limited to:

- Home safety and whether it meets current and future functional needs
- Transportation: Being able to get from point A to point B
- Finances: Do you have the resources on which to live now and in the future
- Medical care and end-of-life planning
- Maintaining physical and cognitive health

Socialization: An often unappreciated problem among older adults is isolation, which can lead to loneliness, and some research suggests that it increases the likelihood of cognitive impairment (e.g., dementia). Older adults who are living alone report twice the level of social isolation (24% vs. 12%) with an average rate of 17%. Using that figure, it is estimated that there are approximately 5,700 older adults in Howard County who qualify as socially isolated. While loneliness and isolation are not the same thing, they are linked in that those reporting being isolated are much more likely to report loneliness. Studies indicate that 7% of older adults report being lonely to the point of experience it as emotional pain, with another 31% reporting being sometimes lonely. Again, for Howard county that translates into 2,300 adult adults experiencing emotional pain from loneliness and another 10,400 sometimes lonely seniors. In terms of the consequences of loneliness, social isolation can be as dangerous as smoking and obesity when it comes to health consequences (Greenfield & Russell, 2011). In a study conducted in Finland, loneliness was associated with a 33% greater risk of mortality (Tilvia et al., 2011). And Fratigilioni and colleagues (2000) found that “a poor or limited social network increased the risk of dementia by 60%”. Effective interventions to address loneliness include:

- Reciprocal support (i.e., “both giving and receiving support demonstrated more encouraging results, suggesting that merely receiving support may not be as potent as mutual exchanges of support” (Hogan et al., 2001)
- Volunteer “befriending” models have demonstrated success in building linkages, increasing sense of efficacy, and decreasing loneliness. There “befriending” models are interventions where people explicitly are asked to link up with other people to provide assistance and support (i.e., older adult may benefit from providing assistance to others in addition to being the recipient/target of services) (Charleswoth et al., 2007)
- “formal participation in social activities (church, social center for elderly people, group membership, park) has protective effects against cognitive decline.” (Zunzunegui et al, 2003)
- “religious attendance is associated with higher levels of social integration and ... lower levels of loneliness ... results persist with controls for health and personality selection and a range of relevant covariates” (Rote et al, 2012)

- “group interventions that encouraged expressions of emotions for those experiencing stress not only demonstrated a significant reduction in social isolation ... but demonstrated increasing gains at one and two year follow-ups” (Cornell Institute for Translational Research, 2007)
- Volunteer engagement, in addition to providing benefits to others, is associated with better mental and physical health among volunteers. Hypotheses are that volunteering exerts its beneficial impact by means of: 1) social interaction with other individuals, and 2) increases sense of utility/worth and helps fill a void created by role loss that many older adults feel upon retirement. There appears to be a threshold or dosage effect associated with volunteerism (i.e., “highest well-being scores were evident among those who engaged in at least 100 hr of volunteer activity per year but fewer than 800 hr” (Windsor et al., 2008). While volunteering is almost universally accepted as a social good (i.e., “pro-social behavior”) less than 25% of all older adults actually engage in any volunteer behavior, and more than 50% of those that do volunteer engage in fewer than 90 hours of volunteer activity per year (which would be below the theoretical dosage effect for personal benefit from volunteering). Traditional methods of volunteer recruitment in the USA are based upon making opportunities available to people and waiting for people to respond. This approach, which is sometimes critiqued as passive recruitment, has not proven to be particularly effective (as noted by the prevalence of volunteering in contrast to people’s self-reported willingness to volunteer). Alternative models are now being proposed to increase volunteer engagement include: 1) the “personal ask” and 2) giving volunteers more autonomy and establishing volunteer teams, which are given objectives and allowed the freedom to find ways (with supervision) to achieve those objectives in a group fashion. Program that want to increase volunteerism among older adults might do well to heed the message that “the most effective recruitment method is the ‘personal ask’ ... those who are asked to volunteer do so at rates five times higher than those who are not asked” (Morrow-Howell, 2010 p. 466)

Get Your Sleep

Sleep occupies about a third of our lives and is essential to our health and well-being. Without enough of it, we think and move as if we’re in a swamp. For older people, these symptoms can lead to serious complications. Sleep problems are among the most common health-related complaints of the elderly; yet, remarkably, often go unrecognized or are treated inappropriately. It has been estimated that insomnia affects almost a third of the adult population (Roth, 2007) and over 50% of older people have disturbed sleep (Foley, et al., 1995). The inability to have restful sleep at night results in excessive daytime sleepiness, attention and memory problems, depressed mood, falls, and a lowered quality of life.

The old cliché that poor sleep is a natural part of aging has been disproved. Data collected over the last two decades indicate that, in the elderly, age by itself does not predict complaints of insomnia, even in the presence of lowered sleep efficiency and a decreased proportion of deep

sleep (called Slow Wave Sleep). These changes begin in mid-life, as do many of the diseases associated with aging. Rather, the prevalence of insomnia and other sleep disorders is high in the population because of the growing number of elderly and the associated medical conditions, such as arthritis, heart disease, incontinence, common in late life that affect sleep. Changes in environment, or concurrent age-related processes also may contribute to problems of sleep.

It is becoming clear that not only can disease cause abnormal sleep, but also abnormal sleep can cause disease. Sleep disorders, such as sleep apnea, are increasingly linked to cardiovascular diseases, including hypertension and stroke (Durgan & Bryan, 2012).

Poor sleep may play a significant role in the metabolic syndrome, defined as a clustering of three or more of the following measurements: abdominal obesity, elevated triglycerides, low level of high density lipoprotein cholesterol, high blood pressure and high serum glucose (Kobayashi, et al., 2011). Disturbance in sleep are implicated in changes in other body systems, especially the production of appropriate levels of hormones. Emerging data show sleep apnea as a risk factor also for hallmarks of diabetes such as insulin resistance and impaired glucose tolerance.

Research has shown that sleep is a window on a person's overall health. It is such an important factor in healthy aging that geriatricians are pursuing clinical and longitudinal studies of sleep and aging, making sure to include the parameters of biomarkers of aging in various organ systems, gender, quality of life, and race and culture. Improving the sleep of those with chronic and age-related diseases may improve their medical outcomes. A full night's sleep ought to be a priority. At any age, most of us need an average of seven to eight hours of sleep each night. Don't skimp.

Eat Properly

Data from the Centers for Disease Control (CDC) indicate that among U.S. adults aged 20-74, 32.7 % are overweight (defined as having a body mass index, or BMI, of 25-29), and 37.9 % are clinically obese (BMI of 30 or above), and 7.7% are extremely obese (BMI of 40 or greater) (Fryer, et al., 2016). In 2016, it was estimated that in Howard County 38% of the population was overweight, an increase of 5% from 2014, and 22% obese, a decrease of 1% from 2014, according to the 2016 Howard County Health Assessment Survey. Overweight and obesity are associated with an array of health problems, including heart disease, stroke, osteoarthritis, type II diabetes and certain types of cancer. The U.S. faced its first drop in life expectancy in the modern era in 2015; life expectancy at birth for the total population decreased 0.1 years to 78.8 years from 78.09 years in 2014. For males there was a change of 0.2 years to 76.3 years, and for females a change of 0.1 years to 81.5. There was no corresponding drop in life expectancy at age 65, being 19.4 years for both sexes, 18.0 years for males and 20.6 years for females (Xu, et al. 2016). Over the next few decades, life expectancy for the average American could continue to decline unless aggressive efforts are made to slow rising rates of obesity.

Although behavioral and environmental factors are the primary contributors to overweight and obesity, heredity plays a significant role. It has been estimated that about 25% of human longevity may be due to genetic factors (Passarino, et al., 2016). Individual susceptibility to these conditions and your genes influence how the body burns calories for energy and stores fat.

While genetics may play a part for some of us who have weight problems, weight control can be accomplished through paying close attention to maintaining a proper diet and exercise regime. Some of us may have to work harder at it than others, but we are all capable of achieving the right weight for our systems.

Oxidative stress, or cellular damage, caused by reactive oxygen molecules released during normal energy metabolism, has been linked in many studies with damage to brain cells and age-related cognitive decline. It both originates in, and is particularly dangerous to, the mitochondria, or the cells' energy centers. Consumption of antioxidants, particularly in the form of fruits, such as blueberries and strawberries, and vegetables, may combat oxidative damage in the brain. Since the berries are low calorie foods, they confer a double blessing. Researchers have demonstrated that dietary supplements with extracts of fruits or vegetables that are high in antioxidants can forestall or even reverse age-related cognitive decline (Corbi, et al., 2016). However, controlled clinical trials have shown that many of the over-the-counter preparations are not effective, and that the eating of natural foods is best.

Keep Cogitating

Alzheimer's disease (AD), and especially its late-onset form (which accounts for 90% of AD), is a progressive disease that afflicts millions worldwide. Late-onset (65 years and older) AD is a neurodegenerative disorder of unknown origin that accounts for two-thirds of all dementia in the U.S. elderly. The origin of an early-onset form of AD (which accounts for less than 10% of the disease) involves known genetic mutations. In the U.S. alone those 65 and older account for approximately 13% of the population – some 35 million individuals. It has been estimated that in the year 2015 there were 5.3 million people over age 65 in the US suffering with AD (Hebert, et al., 2013; Alzheimer's Association, 2015). Because the number and the proportion of elders compared to younger individuals are increasing, and the elder population in this country is projected to double by the year 2030, AD will become a public health problem with staggering impact—with some 8.4 million people affected by the disease. Alzheimer's and its associated diseases seem to know no boundaries of race or gender.

There is evidence that AD risk may be linked to dietary intake of fats and fatty acids. A diet high in unsaturated, unhydrogenated fats may afford some protection. The same may be said of weekly consumption of fish, vegetable oils, and nuts, typically known as a Mediterranean diet (Pelletier, et al., 2015; Staubo, et al., 2016).

Hypertension or high blood pressure is a major public health problem in the United States. According to the National Center for Health Statistics, almost 30% of the US adult population has the condition (Gillespie & Hurvitz, 2013). If left untreated, hypertension can lead to increased risk of stroke, heart attack, heart failure, and kidney failure. In addition, uncontrolled hypertension in midlife is associated with impaired cognition in late life. Epidemiologic studies have suggested a protective effect of long-term use of antihypertensive medications in preserving cognitive function in older adults (Tadic, et al., 2016). What's good for the heart is good for the brain.

The concept of a reserve against central nervous system problems, such as stroke or AD, stems from the repeated observation that the relationship between the degree of neuropathology or damage does not always appear to be directly related to the clinical manifestation of the damage. Over the years, the concept has been further amplified to include definitions of both brain and cognitive reserve (Stern, 2012). Brain reserve has been referred to as the amount of damage that can be sustained before a threshold is reached for clinical expression, reflecting the physical properties of the brain such as brain size, synapse count, dendritic complexity and other factors. In complementary fashion, the term cognitive reserve has been proposed as describing the ability to sustain disruption and operate effectively, perhaps through the use of alternate brain networks or different cognitive strategies. Individual variability in cognitive reserve may stem from innate or genetic differences or from life experiences, including education, occupational experience or leisure activities.

Education, socialization, and other activities that stimulate cognitive function may make the brain more adaptable and flexible, perhaps by building in redundancies among systems, establishing stronger connections in pathways that underlie cognitive function, thereby making the brain more resistant to deterioration by age and disease. Reserve and compensation may not be simply the adaptation of alternate brain networks, but possibly the regeneration of underlying brain circuitry. This has led to the by-now conventional advice to keep stimulating your brain by challenging it to learn new things and confront new problems. Use it or lose it appears to apply to the brain as well as the muscles. Nothing about the brain is considered inevitable anymore.

Exercise Regularly

Successful aging requires maintaining brain health throughout life, particularly from middle age onwards, when the brain faces a number of challenges including mental decline and neurodegenerative disorders. Human studies suggest that a mentally and physically active life gives some protection for brain and nerve function (Colcombe, et al., 2003). Studies using mice demonstrate that physical activity, learning activity, or exposure to an enriched environment causes an increase in the generation of new neurons in the hippocampus, a brain area important for learning and memory, along with an improvement in behavioral performance. The generation of new neurons, termed neurogenesis, is low in aged animals compared to young ones, but can be increased in aged mice by exposure to an enriched environment (van Praag, et al., 2005).

Increased physical and mental activity, even when started in middle age, can enhance hippocampal neurogenesis and decrease signs of neuronal aging in mice (Nokia, et al., 2016). This suggests that neurogenesis might be one factor underlying the beneficial effects of an active lifestyle on brain integrity and cognitive function as suggested for humans. The finding that the adult hippocampus maintains the potential for cellular plasticity, which can be sustained by experience and activity, might be exploited in the development of new prevention and treatment regimens for chronic neurodegenerative disorders, as well as for normal functional changes with aging. Exercise appears to recruit brain plasticity processes that contribute to cognitive functioning, and to activate cellular machineries that protect the brain from damage and promote its repair. You are never too old to start exercising.

Exercise not only prevents disease, but also helps maintain the muscles and bones. The stiffness and aches associated with ‘normal’ aging are ameliorated by a daily routine of movement. Remember the theory of inertia? A body at rest tends to stay at rest; a body in motion tends to stay in motion. Modern life, with its many conveniences and distractions, beckons us to stay at rest and let work and entertainments come to us. It’s a habit worth breaking.

Conclusion

Start planning for the future before it is too late. Plan while you are able to do so rationally and without the stress of upcoming deadlines and pressures. Plan as early as possible, especially for your financial needs after retirement, and for establishing health behaviors that are maintained through later life.

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