Introduction:

Those who deal with older adults on a regular basis may be aware that 90% of older adults die within three years after a fall, consequently those final years of their life are in complete dependence. Beginning in the year 2010, the first baby boomers will reach age 65; consequently a large percentage of the population will begin to retire. As the baby boomer generation continues to age, these individuals will inevitably require increased assistance and medical care. Payment for this massive increase for medical care for older adults will eventually fall on tax payers and a drain will be placed on the economy. Not only will this generation retire at age 65, but they will most likely live longer than past generations due to advances in science, technology, and medical care. The challenge the US faces is to keep medical costs for the current and upcoming senior population to a minimum.

The main approach in which to decrease medical costs for older adults is to increase health and vitality and maintain their current health status. However, after much research, it appears that the true secret in which to decrease geriatric medical costs is to simply find ways in order to increase overall independence, increase balance and stability, and increase the self-efficacy of older adults. The key to give them that independence is to instill within that older individual the confidence required to walk down a hallway, get out of a car, or into a shower.
According to the Center for Disease Control and Prevention, “falls are the leading cause of injury and death among the elderly” (Haskell). It seems as though the fall itself, a fractured hip or wrist, could be easily operated on and not be so much of a drain on the economy. However, it is not the fall itself that drains the funds for medical care; it is the care and therapy for such an extended duration after the fall. Costs related to care after a fall include fees for hospital and nursing home care, doctors and other professional services, rehabilitation, community-based services, use of medical equipment, prescription drugs, changes made to the home, and insurance processing. The average healthcare related costs for an older adult after injury from a fall is $19,440 (Federal Interagency on Aging Statistics).

An older individual who has suffered a fall becomes immobile and due to such a sedentary lifestyle illness and disease occur and are near impossible to fight off with just medical assistance and prescriptions. Therefore, the main way in which to decrease these medical costs is to increase the independence of older adults. The purpose of this white paper is to explore the advantages of older adults engaging in appropriate activities in which to prevent falls which ultimately would reduce or delay the risk of chronic illnesses leading to death of the individual.

Market Drivers:

With the decline in death rates of older adults and the increase in life expectancy, how much should America show concern for the economic impact over the next few decades? As the massive generation of 79 million baby boomers has aged through the years, every phase of human life in America has been transformed, as this generation reaches retirement age, an
economic impact will surely be evident. This tsunami-like age wave is fast approaching with the oldest boomers reaching age 65 in the year 2010. Many are concerned that through the first half of the 21st century, the whole country will stagger under the cost of these baby boomers as they receive medical, retirements, and disability benefits promised to them. As aforementioned, falls are the leading cause of death among people 65 and older; this cost is currently estimated by the Center of Disease Control and Prevention to cost $19.2 billion and projected to increase to $44 billion. Which means, by the year 2030, health care costs for fall related injuries are expected to increase by 131% during the next 30 years as a result of the 79 million baby boomers entering late life (Dychtwald). What will be the bulk of the cost for caring for long-living older adults, and how can this country be proactive and keep costs for the geriatric population to a minimum?

According to spokeswoman, Elizabeth Wilson, for the National Safety Council, “seniors falling is a large, growing, and quite frankly, underreported health issue” (Dychtwald). This cost will increase in the upcoming years as America’s 79 million baby boomers head into their senior years; falls will escalate and there will be an increased essential need for medical care, therapy, and assistance.

If America fails to begin the process of decreasing geriatric medical costs, this country will become dominated by a ‘gerontocracy’, which means older adults will take control of the nation’s social and economic power. The population of older adults in 2030 is estimated to be twice as large compared to the year 2000, booming from 35 million to 72 million (Dychtwald). This generation is anticipated to represent approximately 20% of the total United States population (Gatts). Medical Professional, Ken Dychtwald, believes that as our government and social institutions continue to discover ways in which to increase life expectancy, yet fail to be proactive in supporting this population, our society will ultimately be ill-prepared and the economy will suffer. It is ironic that the very thing America has been striving for, longer, healthier life, is the very thing that is about to engulf this nation.
Problems:

With the many advances in science, technology, and medical care many wonder how a fall is the leading cause of death in America.

A simple surgery should be able to fix a broken hip or fractured wrist. Though older adults heal progressively slower than young and middle aged individuals, recovery after a fall and resuming the lifestyle they enjoyed prior to a fall is no easy task.

A typical fall immobilizes an older adult for an average of 6 months, and often longer. During immobilization after a fall, older adults become extremely susceptible to illness and disease. According to Dr. Laura Barclay, “the majority of older adults die within three years after a fall”.

As falls are the leading perpetuate and ultimate cause of death for older adults in America, the problem of reducing any actual fall becomes imperative.

Many say that stretching and yoga have been proven to make older adults more limber and decrease the likelihood of a fall for an older adult. Older adults who participate in regular yoga classes report increased flexibility in their legs, which one would instinctively think to reduce the probability of a fall. However, as one ages significant changes in the somatosensory and musculoskeletal systems suggest stretching for older adults fails to be the most effective way in which to prevent falls.
The main explanation for a decrease in balance and stability as an individual ages is specifically the change in the musculoskeletal system of an older adult. The decrease in physical activity is the sole cause for a change in neuromuscular connections and the selective loss of Type II muscle fibers. The loss of these fibers is notable because these fibers produce subconscious muscle contraction, like that of a reflex. This reflex-like contraction is necessary for quick response to loss of balance. Consequently, chronic stretching for an older adult may in fact increase the likelihood of a fall.

Stretching induces a relaxation effect on the muscles of the body and decreases neuromuscular and Central Nervous System involvement, thus reflex time is increased. Stretching incorporated in a yoga class for older adults will therefore increases the probability of a fall.

**Historical Approach:**

According to physician Peter Hamer, one century ago the average adult spent “only 1% of his/her life in a morbid or ill state”. Furthermore, Dr. Barclay has documented that advances in science and medicine have increased the life expectancy by over 29 years, and “today’s average adult will spend over 10% of his/her life immobile and sick”. Older adults are living longer, yet America has failed to educate the public on how to make those added years enjoyable.
The progression of knowledge and the science of the human body can be summarized in a brief history of America’s research over the past century. Within the last 100 years, America has become more aware of the need for physical activity required in order to live a long and healthy life. Beginning approximately in the year 1850, those seeking knowledge about the health of the human body found that scientific knowledge regarding health and nutrition was greatly in its infancy. According to physician William McArdle, “the lack of knowledge and factual information in the 1800’s spawned a new generation of ‘healers’.”

As further research was conducted and longitudinal studies were completed, researchers documented the many significant benefits of exercise for the human body. Part of these results conveyed increased mobility, range of motion, balance, and stability for the person participating in exercise activities. In response to these consistent results of the benefits of exercise in regard to the geriatric population, senior centers realized a need for available and accessible exercise opportunities for the older adults in their centers.

With the benefits of exercise in mind, senior centers began to offer yoga and stretching classes as a way to get seniors moving with a low impact activity in which they would not be intimidated to participate. Offering yoga classes was indeed a step in the right direction, however as further studies are conducted with specifically the geriatric population in mind, results show that yoga and stretching are in fact risk factors for older adults.
Unfortunately, due to a lack of knowledge in this area, an outdated approach of encouraging our elders to stretch and take yoga classes in order to prevent falls is still widely in practice today. The public have yet to be educated on the relaxation effect stretching has on the body and how this can be a detriment to the population of older adults.

**Generic Solution:**

The ultimate goal of these senior centers offering exercise classes to prevent a fall is right on target! However, fitness directors and the general public must become educated in regard to the appropriate exercises for older adults. In order to improve quality of life for older adults and make their final years enjoyable, older adults must engage in appropriate physical activity. The activity must be dynamic and muscle tightening, with exercises tailored for each individual fitness level.

If an older adult participates in a dynamic exercise on a regular basis, muscles will be activated, neuromuscular involvement will be increased, reaction time will be decreased, and consequently there will be a reduced the risk for a fall. As opposed to the relaxation effect of stretching and decreasing Central Nervous System involvement, when older adults begin participating in dynamic exercise activities, their muscles will ‘turn on’, tighten, and be able to respond to a
sudden slip. The older adult will then have the confidence to move and get around more quickly and efficiently.

**Specific Solution:**

Now that scientific knowledge supports the argument that dynamic activities decrease in the likelihood of a fall, fitness instructors must become educated on what specific activities are optimal for the geriatric population. Fitness instructors must be aware of many key areas of health while instructing the class in order to ensure the safety of the participants. The main activity the instructor should provide is a slow moving dynamic exercise that would warm up and activate muscles.

Tai chi is a Chinese martial art that is centuries old, and in Chinese medicine this martial art is shown to have an array of health benefits. In China, it is believed that tai chi can, “delay aging and prolong life, increase flexibility and strengthen muscles and tendons, and aid in the treatment of heart disease, high blood pressure, arthritis, digestive disorders, skin diseases, depression, cancer, and many other illnesses” (Tai Chi Health Benefits). Tai Chi involves a series of slow, meditative body movements, which incorporate shifts of body weight from one leg to the other in coordination with upper body movements, sometimes even with one leg in the air. These movements challenge and overall improve balance.

Tai Chi is the optimal, balance-enhancing type of fitness activity that meets every need of the geriatric population. According to researcher Strawberry Gatts, after a three week Tai Chi training program for older adults, there was a significant reduction of tripping, improved ability to tolerate unsteadiness, and overall increased the confidence of the participants to move and function in their daily lives.

These same results were found in many medical and collegiate studies to date. According to researcher William McArdle, “a growing number of randomized trials from at least four continents have demonstrated the potential of Tai Chi to reduce fall rate in older adults”.
Furthermore, according to Dr. Barclay, Tai Chi simply provides the opportunity for older adults to get up on their feet, tighten their muscles, and slowly practice dynamic weight transitions between double and single-stance postures. Barclay also supports that the interchange of roles between stabilizers and movers and the coordination between lower and upper body movements provides the optimal physical activity movement in which to decrease the probability of a fall.

**Call to Action:**

As the baby boom generation is the fastest growing demographic in the US, and because there will be more than 70 million adults age 65 and older by 2030, fall prevention must become a public health priority (Gatts). With current trends and the lack of education to the general public and fitness facilities, the financial burden of treating fall-related injuries is expected to exceed $44 billion per year by the year 2020 (Harmer); America must be proactive and educate the public by making Tai Chi and other dynamic exercise classes available and accessible for the geriatric population.

If America fails to take the necessary steps to combat fall prevention, severe injuries, immobilization, loss of independence, and increased risk of premature death will be the dominating economic cost in the close upcoming years. It is imperative that this nation develop and circulate efficient interventions in order to reduce the number of falls, and fall-related injuries for older adults.
Tai Chi is the answer. This unique art form is emerging as a safe, effective, and economical method for reducing the risk of falling for older adults. As the percentage of falls is reduced, older adults will experience a better quality of life and will ultimately be able to enjoy the later years of their life.

America has managed to prolong life, yet this nation has done far too little to promote healthy aging. Now is the time to make these important life changes; we must get on our feet, and engage in dynamic activities like Tai Chi. In the end, this will save the economy from a catastrophic downfall and ultimately lead to great quality of life in our later years. Tai Chi will ultimately allow older adults to enjoy their final years of life!

What would you do to enjoy life?

Start with Tai Chi.
Works Cited:


