# SUCCESSFUL AGING

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Frailty is a noun frequently used by health care professional to describe patients whom they perceive as frail. It is often difficult to find a precise definition of frailty.

It has been described as:

- a condition in individuals lacking strength who are delicately constituted or fragile.
- a state
  - that puts persons at risk of adverse outcomes
  - that is inherently vulnerable to challenges from the environment
  - that is unable to integrate responses in the face of stress
- diminished ability to carry out the important practical and social activities of daily living.

An operational definition of frailty is useful as it may help elucidate precursor states that place an older person at risk of functional decline. It will also be helpful in developing interventional programs to prevent or treat frailty.

Buchner and Wagner in their paper on preventing frail health[1] defined frailty as a state of reduced physiological reserves associated with an increased susceptibility to disability. For purposes of prevention, the authors suggest that restriction be made to include only those losses of physiological reserves that increase the risk of disabilities.

In this paper, an even broader definition of frailty is considered, encompassing the 'body' and 'spirit'. Ways of preventing this state and possible intervention programs are discussed. The goal is optimal or successful aging. In essence, that is to continue to function at the highest level possible in the context of the inevitable limitations that growing old places upon an individual. It is getting the best out of what is possible for as long as possible – physically, cognitively, psychologically and socially.

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## OPTIMAL PHYSICAL AGING

This is achievable through healthy lifestyles that include regular exercise, good nutrition, vaccinations, avoidance of smoking, early detection of sensory impairments and good control of medical co-morbidities.

### Exercise

One of the most studied ways to prevent physiological loss in later years is the adoption of a regular exercise program[2]. The benefits of exercise include:

a. Preservation of /improvement in functional ability as well as decrease in the rate of development of disability. It has been shown that sedentary lifestyles, especially bed rest, have detrimental effects on an elderly person's aerobic capacity (1% loss per day of bed rest) as well as muscle mass and strength
b. Prevention of osteoporosis. Bone mineral density has been shown to increase in those who exercise around the perimenopausal period as well as later life. It decreases the risk of hip and vertebral fractures
c. Maintenance of a healthy weight, which in turn decreases the likelihood of obesity and its complications (hypertension, hyperlipidaemia and increase of Type 2 diabetes and insulin resistance)

d. Decreased blood pressure in those with hypertension, as well as increased HDL cholesterol levels. This decreases the risk of stroke and cognitive decline
e. Alleviating symptoms associated with mild to moderate depression
f. Physical fitness has been associated with reductions in all – cause mortality in both men and women.

Successful exercise programs must be regular and at least moderately taxing. It should include some degree of supervision and concerted efforts to monitor and enhance compliance. As exercise must be sustained for long-term physiological benefits, program elements associated with continual involvement in exercise are important.

### Nutrition

Data from community studies show that 2-16 % of elderly are undernourished and that 20% are obese. Undernourished elderly have higher morbidity and mortality. Undernutrition is associated with neck of femur fractures, pressure sores and impaired immune response.[3] Obesity is associated with hypertension, cardiovascular disease, Type 2 diabetes mellitus, degenerative joint disease, gait and balance problems.[4]

Therefore, it is important for the elderly to have a nutritious diet. Educational programs targeted at the elderly and their caregivers are necessary. Nutritional assessment for those at risk should also be conducted by trained personnel.

### Vaccination

Influenza and pneumococcal infections continue to be important causes of preventable morbidity and mortality in the elderly. Effective and safe vaccines have been developed for both diseases but they are not widely used. The efficacy of both influenza and pneumococcal vaccination has been demonstrated in randomized controlled trials.[5]

Influenza and pneumococcal vaccinations are recommended for all elderly persons, not just those with chronic medical conditions. For the elderly to be successfully immunized, they have to be willing to receive vaccinations from physicians who are willing to offer them. Studies have shown that if physicians and other health care providers recommend vaccinations to their patients, a high proportion will accept vaccination. Thus, the key to effective vaccination practice is to ensure that all elderly who should be immunized be offered vaccines. Hence, there is a need for educational programs, administrative and organizational changes (clinical practices and public policies), incentives and disincentives that will bring about vaccine delivery.

### Smoking Cessation

The benefits of cigarette smoking cessation[6] in older adults include:

a. Reduced risk of death compared with current smokers within 1-2 years of stopping. Overall risk of death approaches those who had never smoked after 15-20 years
b. The risk of coronary events and cardiac deaths decreases after a year of quitting
c. Risks of dying from smoking-related cancers are reduced. The benefits are apparent within 5-10 years of quitting
d. Risk of COPD mortality decreases after 10-15 years of abstinence in males and 5-10 years in females. It also may improve tolerance for exercise

e. Continued smoking in late life is associated with the development and progression of several major conditions, loss of mobility, and poorer physical function.

Physicians and others should therefore encourage older adults to stop smoking. Smoking cessation programs should be made available to everyone who desires to quit.

### Sensory Impairment

The prevalence rates of hearing impairment range from 30-60% among community dwelling men over the age of 65 years and from 15-45% among older women. Prevalence of significantly impaired vision, including blindness, among men and woman range from 10 % at 64-74 of age to 27% over age 85. Impairment of both these sensory systems are associated with significant limitations in performing ADL and IADL, limitations in individual's ability to communicate with others as well as with depression and cognitive difficulties.[7]

Early detection and therapeutic intervention may reverse or delay visual loss due to diabetic retinopathy and glaucoma. The task of reducing disability due to sensory loss in old age is largely focused on restoring the lost sense as in surgical treatment of the cataract or prosthetic treatment in presbyacusis. Cataract surgery with lens implantation has been shown to improve physical function as well as vision. Hearing aids and voice amplifying rehabilitation, if used effectively, can reverse physical and psychosocial disability associated with hearing loss.

Screening programmes to detect hearing and visual impairment should be conducted on a regular basis, either by the local doctor or by professional groups.

### Medical Co-morbidities

The elderly often have medical co-morbid states. The importance of good control of these medical conditions cannot be over-emphasied. A good example is the treatment of hypertension, where it has been shown that good blood pressure control decreases cardiovascular morbidity and mortality. Good control of medical co-morbidities helps in secondary prevention either by delaying progression or preventing the onset of complications and disabilities.

## OPTIMAL COGNITIVE AGING

The data on cognitive changes in normal aging has often been contradictory. These conflicts are partly due to the inconsistency of research methodology and to the failure of investigators to screen adequately for and to control confounding bias. Although there are many elderly whose performance on a number of cognitive measures would be indistinguishable from that of a younger person, there are some decrements associated with aging:

– Psychomotor slowing
– Decreased attentional capacity
– Deficiencies in encoding and retrieval of information for short term recall.[8]

It is in these areas that strategies and programs can be targeted.

Cognitive training programs (memory exercises and mental gymnastics) have not been fully evaluated. It is in general difficult to evaluate these programs as there is such a great variability among individuals. Also, benefits should not be measured only in terms of scores but in terms of the impact on individuals in their everyday life. Individuals can be advised to keep mentally active by

continuing to learn new skills and take extra effort to remember things that they tend to forget (e.g. where they park their car at the car park, people's names). Individuals can also maximize their mental abilities by:

a. Anticipating and rehearsing solutions to spatial problems
b. Setting aside plenty of time for complicated tasks. Avoid rushing as haste triggers anxiety which can disrupt attention
c. Augmenting working memory by working hard, taking plenty of practice tests and working with others
d. Avoiding doing 2 things at once.

The other strategy is that of selective optimization with compensation.[9] This involves the three mechanisms of selection, optimization and compensation.

First, the mechanism of selection refers to an increasing restriction of one's life to fewer domains of functioning. Concentrating our energies on things that are more important to us and giving up on things that are less central.

The second element, optimization, reflects the view that people can engage in behaviours to enrich and augment their general reserves and maximize their chosen life courses with regard to both quality and quantity (i.e. allocating energies to the maintenance of activities that have been selected). In this, society is asked to provide the elderly with development enhancing environments and opportunities.

The third element, compensation, becomes operative when specific behavioural activities are lost or reduced below the level of adequate functioning. The element of compensation involves both the mind and technology. The use of mneumonic strategies (including external memory aids) is an example of psychological compensation while the use of hearing aid is an example of compensation by technology.

Education programmes in the form of courses/ seminars conducted can be means of educating the elderly in the above aspects of optimizing cognitive function.

Another important area in the prevention of cognitive decline is by minimizing the risk factors that lead to cerebrovascular disease. These include controlling risk factors like hypertension, heart disease, diabetes, obesity, cigarette smoking and alcohol consumption through medical interventions or lifestyle changes. (Most of these have been alluded to in optimal physical aging earlier.) The general principles underlying cognitive impairment with age is to maximize brain reserve and minimize brain damage.

## OPTIMAL PSYCHOLOGICAL AGING

Depression is common in the elderly. It is present in about 11.5 % of medically ill patients, 12% in long-term care settings and about 0.8% in the community, among the non-institutionalized elderly.[10] Psychological health is important as it impacts on function, cognition as well as quality of life.

Retirement marks a major transitional point in the life of an elderly. Freshly retired older couples may develop problems with each other due to a change in their roles. The husband may be intruding on the wife's domain in the house. The retired individual may become bored as well as lose their sense of self-esteem as they have to give up positions of leadership and responsibility.

Programmes that prepare the elderly for retirement will be beneficial in helping them to

transit into another phase of their lives. The retiree can find pleasure in activities that he finds enjoyable in the past. He can also involve himself in something new, either in voluntary work or starting on a new career.

Diversity of experiences has been shown to improve the psychological and mental state of the elderly. This can be achieved through:

a. Enrichment courses. These may be academic courses, or activity-oriented, such as dance, cooking, language, arts etc. Many such activities can challenge and stimulate the elderly
b. Avocational activities that expand horizons like travel to other countries or states
c. Volunteer work.

As depression is prevalent in the elderly, a number of prevention strategies can be considered

a. Individuals who undergo conjugal bereavement should receive supportive counseling if they are still experiencing marked distress 1-2 months after the loss
b. Caregivers of chronic sick elderly (usually the spouse) are at risk of developing depression. Family therapy, education of the family about resources, support groups to help caregivers bear the burden and express negative emotions have proven to be of help.

In general, it has been found that perceived adequacy of social support may protect the elderly from depression and hasten the recovery if depression occurs.

## OPTIMAL SOCIAL AGING

The social network usual grows smaller as one grows older. Friends and loves ones pass on or move away. Children grow up and have their own families. A number of potential strategies are available:

a. Begin early to reweave social networks. That is to seek out and make new friends as old ones depart
b. Seek virtual friends. The computer has the potential to open doors to an array of social contacts unimaginable a decade ago
c. Choose quality over quantity. Having a few close friends is more beneficial than many acquaintances
d. Avoid leaned dependency. Avoid giving up governance of their lives in order to prevent premature loss of control that may be reinforced by others.

Educational programs are again vital here to transmit these principles to the elderly. In addition, courses to educate the elderly to use the computer and internet will be most helpful as they can learn to communicate with others through email, play games and visit many places that they may not be able to get to physically.

Isolation (lack of social ties) is a risk factor for poor health.[11] Social support, both emotional (expressions of affection, respect and the like) and instrumental (direct assistance such as giving physical help, doing chores, providing transportation) can have positive health-relevant effects. People do not feel as lonely even if they live by themselves when they have the security of knowing that they are connected to others who care about them. Therefore, it is important to educate families of the need to care for their elderly by providing adequate emotional support as well as for adequate social services to support the elderly.

## CONCLUSION

There are many examples of older people aging successfully. Helen Klein is a 72-year-old grandmother who holds 6 dozen US and world records in ultra endurance events such as 100-mile or 24-hour runs. Picasso remained prolific as a painter until he died in his nineties (from March to October at the age of 84, he created 347 engravings). Verdi composed his opera Flastaff at age 80; Benjamin Franklin achieved heroic stature internationally as a diplomat in his seventies. Eubie Blake, the outstanding talented pianist, composer of ragtime music and show tunes continued to be in great demand as a performer well into his nineties, giving his last concert one week before his ninety-ninth birthday.[12] Hence, it is not an impossible task to age successfully.

The populations of most developed countries in the world are greying as the percentage of elderly in the population grows. Gerontology is thus broadening its perspective from a prior preoccupation with disease and disability to a more robust view that includes successful aging.[11]

This paper has considered ways to promote optimal aging in the physical, cognitive, psychological and social dimensions. There is need for health care decision makers to recognize and promote health aging by implementing relevant programs as suggested above. Health care professionals also need to be aware of these concepts and programmes so that they can serve as a link to the elderly in the community by referring them to appropriate interventions.

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