

# *Physiological Changes of Aging*

## Defining Generic Key Terms and Concepts

- **Senescence:** is a term used to more precisely describe the process of aging and refers to the progressive deterioration of many bodily functions over a period of time.
- **Universal Changes in the following systems:**
  - **Heart** – as we age the heart muscle thickens, maximum oxygen consumption during exercise decreases approximately 10% in men and 7.5% in women due to diminution of the heart's maximum pumping rate and the body has less ability to extract oxygen from the blood.
  - **Arteries** – arteries become stiff and more resistant to blood being pushed through blood vessels by the heart. In turn, the heart must work harder to propel the blood. This results in higher systolic blood pressure, increased load on the heart, and enlargement of the left ventricle
  - **Lungs** - approximately 40% of lung function is lost between the ages of 20 and 80 and is attributed to rigidity in the chest wall, decreased respiratory muscle strength, loss of elasticity in the lung tissue, and loss of gas exchange surface area. It may decrease more if smoking or disease is present.
  - **Brain** - some of the axons, the connecting links between nerve cells, are lost with age. The function and amount of nerve cells themselves may also decrease with age. It is believed the system is capable of producing new neurons, but the conditions under which this may happen are unknown.
  - **Kidneys** – the kidneys become less proficient in removing wastes from the circulating blood, especially significant in the excretion of by products of medication breakdown. If these by products are not removed satisfactorily they build up in the body, leading to accentuated actions and adverse reactions or possible kidney damage.
  - **Bladder** – the capacity of the bladder declines with age. Urinary incontinence may occur with atrophy of tissues. This is problematic in women, but exercise and behavioural techniques may be helpful in managing it.

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**Body Fat** – the typical pattern is for body fat to increase gradually until middle age, stabilize and then decline in old age as weight decreases. Muscle loss accompanies this weight and fat decrease. As we age, the fat distribution in our bodies changes by migrating from just under the skin to deposits around the deeper organs. Men usually have a lower percentage of body fat than women, with distribution in the abdomen as opposed to fat on the hips and thighs of women. This distribution may be a factor in women being less susceptible to heart disease and other conditions.

- **Muscles** - there is a 22% decline in muscle mass in non-exercising women and a 23% decline in non-exercising men between the ages of 30 and 70. Exercise can slow the rate of muscle mass loss.
- **Bones** – throughout early life, bone mineral is lost and replaced in balanced amounts, but beginning around age 35 there is more loss than replacement of bone cells. This loss is accelerated in women at the time of menopause, leading to the possibility of osteoporosis and fractures. Bone loss can be decreased by regular weight bearing exercise such as walking, running, and strength training.
- **Vision** – there is noticeable change in close up vision in the mid 40's. Increased susceptibility to glare becomes apparent in the 50's, including decreased vision with low light levels and more difficulty detecting moving objects. By the 70's there may be decline in the ability to distinguish fine details.
- **Hearing** – the ability to hear high frequencies decreases with age. There may be some difficulty understanding speech, especially when background noise is present. Men notice a decline more than women.

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- **What are some guidelines for communicating with hearing-impaired seniors?**
  - ***Rephrase a sentence if misunderstood instead of repeating it.*** If the words were not understood the first time, they may not be the second time around either. By rephrasing you can select a different set of words that may be understood better.
  - ***Select a place away from noisy areas such as kitchens, entries and passage areas when in a social gathering or restaurant with a hearing impaired client***
  - ***Avoid using patronizing behaviour with a client with hearing limitations.*** Include the person in the conversations rather than speaking over him or about him to others in your party.
  - ***Face the listener so that they have the opportunity to read your lips.***

- **What are some guidelines for communicating with visually-impaired seniors?**

Provide adequate lighting in your office setting. Lighting must be bright but not glaring. Watch for glare from the floors, walls, lights and windows.

Have gradual luminescence changes in your office suite to give eyes time to adjust to light variations. Lighting should be lower in the entry than in the office area at night; reverse it in the daytime .

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## Notes

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