

# Physiological changes of aging biology essay



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Aging does not give a good feeling to most human beings because of the diseases and problems associated with it. History has it that most individuals have always tried to stave off aging and death. The affluent often seek lamb cell injection in medical centers in search of youthfulness. Many people take mega doses of vitamin E all in the hope of attaining the fountain of youth. Aging is the continuous and irreversible decline in the efficiency of several physiological processes. It is considered to occur once the reproductive phase of life has passed (Lata, 2007). In actual fact, aging starts as a developmental process starts at conception. In recent times, aging has become a deeply rooted social issue with anti-aging therapies taking the center stage in the magazines, newspapers and the general media. The etiology of aging is important to be understood but it is more crucial to differentiate the normal physiological changes from the changes brought about by diseases. Individuals experience the physiological changes differently.

## **Main Body**

Physiological changes arise with aging in all the human organ system. Progressive functional decline and the gradual deterioration of the physiological with increase in age include a decrease in productiveness and loss of viability. The aging person becomes vulnerable to diseases and become susceptible

## **Cardio-vascular system**

The heart muscles especially on the left ventricle become weak. The heart valves degenerate and are calcificated. The artery walls cease to be elastic. This loss of elasticity is also known as arteriosclerosis. The cardiac output

and baroreceptor sensitivity significantly decrease. The decrease in blood flow leads to reduction in stamina. The hepatic and renal functions are also decreased. The nourishment of the cells gradually becomes less. The blood pressure response to volume depletion, standing and heart blocks becomes impaired (Boss, 1981).

## **Respiratory system**

The lung tissue and the airways become less elastic and the cilia activity is reduced. The uptake and exchange of oxygen is decreased. The muscles of the rib cage wear out thus reducing the ability of the person to breath deeply expel carbon dioxide or even cough. The perfusion/ventilation mismatch is a common occurrence and it results in reduced stamina with fatigue and shortness in breathing.

## **Oral cavity**

Most aging individuals experience loss in bones and tissues around the mouth may be infected with diseases. As a result of infections, more than 50 percent of people who are above 60 years of age loose their teeth especially those who are not keen on the health of their mouth. These lead the individual to be choosy about the food they consume. The choice of food that is easy to chew lead to reduction in consumption of fruits and vegetables that are high in dietary fiber.

## **Musculo-skeletal system**

There is generalized wear of all the muscles in the body accompanied by replacement of the muscle tissue by fat deposits. This has the effect of loss of some muscle strength and tone. More specific implication of this is

significant reduction in the ability to breathe deeply. The gastro-intestinal activity is reduced and can lead to bladder incontinence or constipation. Calcium is lost and bones generally become less dense. This may result to osteoporosis and reduction in ability to bear weight. As a consequence, the chances of spontaneous fractures are increased. The vertebrae can calcify resulting in postural changes. Body joints also experience change. The degenerative inflammation of the joints, also know as arthritis, is a common persistent condition among the elderly.

## **Gastrointestinal system**

As age increases, the stomach cells' ability to secrete digestive juice is reduced. The secretion of hydrochloric acid, saliva and digestive enzymes decreases. This has the effect of interference with digestion of protein. There is decrease of secretion of intrinsic factor which is crucial for absorption of vitamin B12. The changes may lead to impaired swallowing, gastrointestinal distress and one may experience delayed emptying of the stomach. The small intestine becomes less able to absorb some nutrients. There have been cases where the elderly suffer from cramps and even diarrhea after consuming dairy products containing lactose. This may be as a result of lack of lactase. Constipation may be experienced as a result of distorted gastrointestinal spontaneous movements, inactivity and weak muscle (webdietitian. com, 2010).

## **Sexuality**

Sexual performance and desire may be a reality even with aging. However, the frequency may diminish. Changes that are experienced by women as they age include atrophy of the ovarian, uterine vaginal tissues with a

significant decrease in vaginal fluid production resulting in dry vaginal mucosa. Women also experience menopause with diverse hormonal changes. Physiological changes in men include reduction in production of sperms and the prostate increase in size. The sperm count is reduced and the viability is reduced. There is decreased libido and ejaculation is delayed. For both men and women, more stimulation becomes a requirement for them to become aroused and even more time to achieve an orgasm. Menopause is one of the main indications of aging. It is among the changes that are apparent in relation to age-related changes. It occurs due to the disappearance of oocytes from the ovary. Most women after menopause experience hot flashes or vasomotor instability.

## **Sensory changes**

In order to gather information, synthesis and internalize, senses play a central role. The ability to take part in social interactions is affected by the senses. With age, there occur changes in vision. At about forty to fifty years, the pupil starts to decrease in size. The response to light is decreased. As a result, the amount of illumination required by the aging person is increased as compared to a younger person. Focusing for such a person takes longer and there are significantly higher chances of nearsightedness. There occurs loss of accommodation which makes it hard to read. Reading from a close distance may become difficult, a condition also known as presbyopia. It can be corrected by putting on glasses with convex lenses. The lens of the eye may start thickening and yellowing. Once this happens, light is diffracted, the depth perception is decreased, sensitivity to glare is increased and it becomes hard to distinguish pastel colors. Change in hearing ability also

occurs with age. The sensitivity to high frequency tones decrease. The ability to differentiate similar pitches decrease due to changes in the cochlear hair cells and bones of the inner ear. The other significant sensory change is in smell and taste. It is imperative to note that the two are interrelated and equally important. They are both crucial for eating and checking for hazards in the environment. They are useful for detecting spoiled food, fumes and smoke. After the age of eighty, the reduction in the number of taste buds leads to a decline in the ability to taste. Some elderly people experience a drastic decline in their ability to smell. This usually results from disease or blockage of the olfactory receptors in the upper sinus.

After the age of twenty five every human being loses nerve cells. With time, this results in reduction in efficiency of nerve transmission which impacts on coordination and response time. However, research has shown that these physiological and anatomical changes limitedly impair the actual intellectual functioning related to the process of aging (Lata, 2007). Intelligence is associated with a wide range of abilities that gives one the avenue to make sense of experiences. They include the ability to think conceptually, comprehend new information, and make rational decisions and verbal fluency amongst others. Some abilities such as the ability to think abstractly are biologically determined and are known as Fluid Intelligence. There are those intellectual abilities that reflect the skills and knowledge an individual has gained through life experiences. These abilities are known as Crystallized intelligence. Tests on intelligence have shown somewhat poorer performance on by older persons on fluid intelligence. There are indications that there is little or no difference on tests of crystallized intelligence.

Reduced efficiency of nerve transmission in the brain result in poor processing of information and loss of information during the transmission may be blamed for the poor performance in tests on older people (Magalhaes, 2008).

## **Personality changes**

The best aspect of change that has been documented in regard to personality change due to aging is increased preoccupation with one's inner self. These include greater attention to individual feelings and attention to personal feelings and experiences and reduction in extraversion. Another aspect that has been observed is gender role identity. Men tend to be more nurturing, affiliation seeking and expressive as they advance in age. Women tend to be more achievement-oriented and instrumental.

## **Conclusion**

Many of the interlinked physiological changes are as complex as the biological processes of the body. Even though there has been a progressively monumental research in aging but the middle ground on the theory of aging on one specific aspect is yet to be established. Physiological changes do not occur uniformly for all individuals but are jointly affected by genetic and environmental factors. This fact further heightens the difficulty of finding a universal theory regarding aging. Universal in this case means what the human race is involved in terms of the global-aging phenomenon. The temptation to regard many of the age-related so-called diseases as the end of normal physiological changes is high for most people.

The distinction between the erosion in function of pathological and normal aging states should be unmistakably delineated. The diseases that arise in the elderly should be well separated from the signs of aging in order to give the right attention to the two different phenomena. Deep understanding of the normal physiological changes and those changes caused by diseases make it easy for the clinicians to diagnose and manage the elderly. The failure of a clinician to recognize the differences may lead to unnecessary clinical testing, misdiagnosis of the aging person and eventual mismanagement. The problems that are associated with ageing can be managed through use of glasses, intake of adequate vitamins, and consumption of green vegetables rich in antioxidants among other ways. Some people may have dramatic and rapid levels of decline yet others may have much less significant changes. Although aging is a genetically determined process, environmental factors often have an impact on the aging process. Some environments may accelerate aging while others may not interfere with the aging process.