

# Brain Ageing: A Crucial Sign of Being Old

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## ABSTRACT

Ageing can be defined as progressive physiological changes in the organisms that lead to reduce the biological functions. The current study focus on the changes occurs in the brain during ageing. These changes includes physiological changes, Cellular, Structural, Chemical, Cognitive changes. The brain shrinks with increasing age and there are changes at all levels from molecules to morphology. Incidence of stroke, white matter lesions, and dementia also rise with age, as does level of memory impairment and there are changes in levels of neurotransmitters and hormones. Among these mentioned changes each change plays a key role in highlighting the ageing process at brain level. There are some neurological diseases such as Alzheimer's Disease, dementia, Parkinson's, depression and may more are associated with brain ageing.

**Keywords:** Ageing; Brain; Disease; Dementia; Biological functions; Diet

## INTRODUCTION

Ageing can be defined as progressive physiological changes in the organisms that lead to reduce the biological functions [1]. The human bodies change in noticeable ways like change in hair color, wrinkles on skin, loss of elasticity and difficulties in the movement etc. as they become older [2]. As the person becomes old, the cellular and metabolic changes also occur along with physiological changes in an individual. As you age, different areas of the brain shrink, particularly those involved in learning and other higher-level tasks. The connections between your neurons, or nerve cells, degrade, leading to slower processing of information. And the overall flow of blood in the brain may decrease, too.

### Cellular changes

Among these changes the cellular changes in the tissue plays important role. All vital organs begin to lose some function with increase in the age during adulthood [3]. The scientific knowledge reports that the brain is the vital organ of an individual show a big impact on the function of all body system. Ageing of the brain involves structural, chemical and function changes. The brain of a normal aged person shows some significant changes such as overall reduction in the brain volume and weight, brain ventricle enlargement, reduction in the blood flow, lower the hormone and neurotransmitter level, inflammation, neuronal loss [4]. The changes in the brain may affect mental functioning of an individual [2].

### Structural changes

The structural changes of brain with increasing age include shrinking of cerebellum, hippocampus and prefrontal cortex along with wrinkling of outer layer of brain containing neuron cell bodies [2].

### Chemical changes

The chemical changes in brain include reduction in the synthesis of dopamine and serotonin, deregulation of metabolic pathways, dysfunction of mitochondria, and production of free radicals. With the increase in the age the brain may liberate monoamine oxidase, free radicals from reactions that exceed the inherent antioxidant reserves [5]. The change in hormonal level such as sex hormones shows the significant effect during adult wood, reduction of estrogen levels is responsible for menopause in woman's.

### Cognitive changes

Brain controls most aspects of thinking like recalling, remembering, decision making, and planning called cognitive abilities. With the increase in the age some leading positive or negative changes occurred in the cognitive abilities. The negative cognitive changes includes difficulties in recalling the things, problem with multitasking, decrease attention paying while the positive cognitive changes includes creation of new memories, learning new skills [2].

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**Received:** August 22, 2020, **Accepted:** August 31, 2020, **Published:** September 07, 2020

**Citation:** Kashetti S (2020) Brain Ageing: A Crucial Sign of Being Old. J Gerontol Geriatr. Res 9:518. doi: 10.35248/2167-7182.20.9.518.

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## Pathological changes

The elderly develops some neurodegenerative pathologies such as Mild Cognitive Impairment (MCI), dementia and Alzheimer's Disease (AD), Parkinson's disease due to aggregation of toxic proteins. The toxic proteins such as amyloid  $\beta$ -protein aggregation are takes place in the Alzheimer's disease while  $\alpha$ -synuclein associated with Parkinson's disease [5].

There is no any known cure for the changes occurred in the brain during ageing but many of the scientist, geriatrician; neuropsychologist are using the following treatment for older adults.

1. **Exercise:** It is known as a unique cure for every problem of a body. Goodman B reported that the exercise helps to reduce the level of toxic proteins with increase in blood flow towards the brain [6,7].
2. **Building of supportive social network:** It helps to reduce the stress level. Sharing the aging process with other people who are experiencing the same changes and joys of entering into the latter years of life [8].
3. **Healthy diet:** The increased consumption of foods with rich sources of nootropic agents may be protective against ageing-related memory decline [9,10].

## CONCLUSION

Every brain changes with age and mental function changes along with it. Mental decline is common, and it's one of the most feared consequences of aging. But cognitive impairment is not inevitable.

Now-a-days, medical science became more advance and trying to find the solutions on the challenges faced by aged peoples with advanced use of medicines, psychiatric treatment, gene therapy in order to live their life with full of happiness, joy to some extent.

## REFERENCES

1. <https://www.britannica.com/science/aging-life-process>
2. <https://www.brainfacts.org/thinking-sensing-and-behaving/aging/2019/how-the-brain-changes-with-age-083019>
3. <https://medlineplus.gov/ency/article/004012.htm#:~:text=As%20aging%20continues%2C%20waste%20products,vessels%2C%20and%20airways%20more%20rigid.>
4. Anderton B. Ageing of the brain. *Mech Age and Dev.* 2002; 123(7): 811-817.
5. NIA Alzheimer's and related Dementias Education and Referral (ADEAR) Center. How the aging brain affects thinking. NIH, USA. 2017.
6. Peters R. Ageing and brain. *Postgrad Med J.* 2006; 82(964): 84-88.
7. <https://www.webmd.com/alzheimers/news/20150807/alzheimers-aging-brain-exercise>
8. Yankner B, Lu T, Loerch P. The aging brain. *Ann Rev Pathol: Mech Dis.* 2008; 3:41-66.
9. Memory and ageing centre. Healthy Aging. University of California San Francisco, USA.
10. Onaolapo A, Obelawo A, Onaolapo O. Brain ageing, cognition and diet: A review of the emerging roles of food-based nootropics in mitigating age-related memory decline. *Curr Aging Sci.* 2019;12(1):2-14.