

Non-Communicable Diseases Watch

September 2017



衛生防護中心
Centre for Health Protection



衛生署
Department of Health

Be Physically Active to Reduce Dementia Risk

Key Messages

- ※ Dementia is a significant public health concern. Alzheimer's disease is the most common type of dementia in which the brain cells degenerate and die because of a build-up of abnormal (beta-amyloid) proteins in the brain, whereas vascular dementia is the second most common dementia type caused by a reduced blood flow to parts of the brain.
- ※ Globally, around 47 million people have dementia. In Hong Kong, the number of people aged 60 and above with dementia is projected to soar from about 103 400 people in 2009 to over 332 600 people in 2039.
- ※ Risk factor modification remains the cornerstone for dementia prevention. One of the most promising preventive strategies is aerobic physical activity, such as brisk walking, practicing Tai Chi and playing table tennis. Through plausible biological mechanisms, physical activity can enhance neurogenesis and synaptic plasticity or inhibit the accumulation of beta-amyloid in the brain, thereby reducing the risk of dementia.
- ※ For optimal health, adults including elders are urged to engage in at least 150 minutes of moderate-intensity aerobic physical activities, or 75 minutes of vigorous-intensity aerobic physical activity, or equivalent amounts throughout the week, in bouts of at least 10 minutes in duration. For those people who are frail or are living with a chronic disease, they may consult family doctor for a customised exercise prescription.
- ※ In addition to staying physically active, no smoking, eating a balanced diet, refraining from alcohol use, taking part in intellectual and leisure activities, staying socially active, stress management as well as meticulous control of body weight, blood pressure, blood sugar and blood lipids can help maintain a healthy brain and reduce the risk of dementia.



September 2017 is World Alzheimer's Month, and will utilise the theme of '**Remember me**' to highlight the importance of early detection and diagnosis of dementia. For more details, please visit <https://www.alz.co.uk/world-alzheimers-month>.

Be Physically Active to Reduce Dementia Risk

Dementia is a chronic and progressive syndrome that affects how the brain works, particularly the ability to remember, think and reason. The impairment in cognitive function is commonly accompanied by deterioration in emotional control, social behaviour, and ability to perform everyday activities (Figure 1). Dementia is caused by a variety of diseases and injuries that primarily or secondarily affect the brain. For example, Alzheimer's disease is the most common type of dementia in which the brain cells degenerate and die because of a build-up of abnormal (beta-amyloid) proteins in the brain. Vascular dementia is the second most common dementia type caused by a reduced blood flow to parts of the brain, usually due to a series of minor strokes.¹

Extent of the Problem

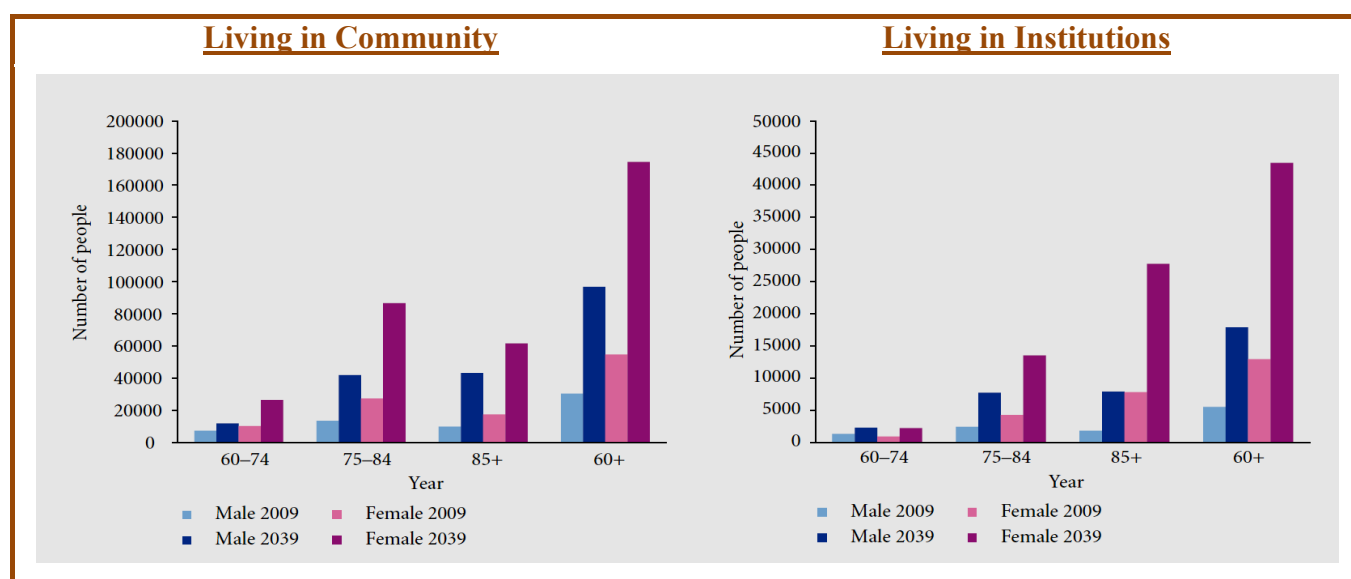
Dementia is a significant public health concern. Globally, the World Health Organization (WHO) estimates that around 47 million people have dementia. Every year, there are 9.9 million new cases of dementia, implying 1 new case every 3 seconds. Among general population aged 60 and above, the prevalence of dementia at a given time is between 5-8%. Largely driven by population ageing, the number of people with dementia worldwide is projected to approach 75 million in 2030 and further up to 132 million by 2050.¹ In Hong Kong, local studies also observed an increasing trend in the percentage of people with dementia. The number of people aged 60 and above with dementia is projected to soar from about 103 400 people in 2009 to over 332 600 people in 2039 (Figure 2).²

Figure 1: Symptoms of dementia



(Source: World Health Organization)

Figure 2: Estimated and projected numbers of people living in community and institutions with dementia in Hong Kong, by age group and sex, 2009 and 2039



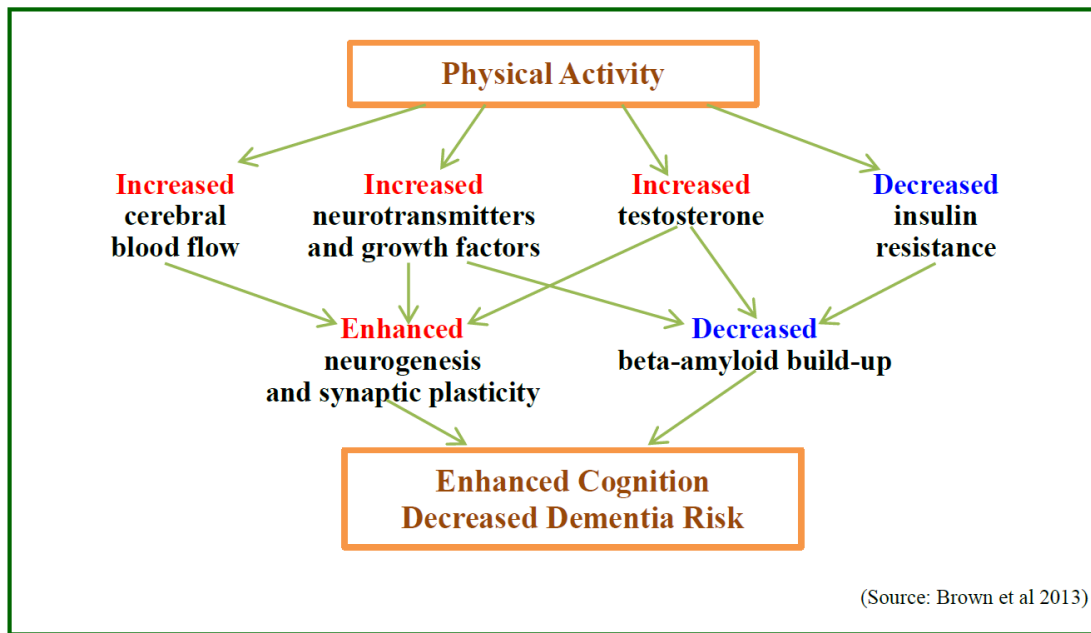
Source: Yu et al 2012.

Physical Activity and Dementia Prevention

Since a cure for dementia is not yet available, risk factor modification remains the cornerstone for preventing it.³ It was estimated that around a third of Alzheimer's disease cases worldwide might be attributable to potentially modifiable risk factors. In the U.S. Europe and the U.K., the largest proportion of Alzheimer's disease cases were attributable to physical inactivity.⁴

Physical activity is one of the most promising preventive strategies against cognitive impairment and dementia.³ Apart from modulating the vascular risk factors (such as hypertension, dyslipidaemia and obesity), physical activity can increase cerebral blood flow, increase levels of neurotransmitters and growth factors (in particular the brain-derived neurotrophic factor and the insulin-like growth factor), increase circulating testosterone levels, and decrease insulin resistance. As shown in Figure 3,

these biological mechanisms can enhance neurogenesis and synaptic plasticity in the hippocampus (which is crucial for forming, organising and storing memory) or inhibit the accumulation of beta-amyloid in the cerebral cortex (which plays an important key role in modulating thought, perception, emotion and behaviour), thereby reducing the risk of dementia.^{5, 6} Compared with people with lower levels of physical activity, those engaged in higher levels of physical activity were observed to have 14% reduced risk of dementia.⁷ Neuroimaging studies also found that the volume of prefrontal and hippocampal brain areas were larger in individuals who had engaged in more physical activity earlier in life;⁸ physical activity could reduce age-related hippocampal atrophy in older adults and people at genetic risk for Alzheimer's disease.^{9, 10}

Figure 3: Plausible biological mechanisms of physical activity on dementia prevention

One excellent brain booster is brisk walking. Research showed that older people taking a 40-minute brisk walk three times a week over the course of a year could increase the size of the hippocampus. Although the brain's memory hub increased in size by only 2%, that was enough to offset the expected steady age-related brain shrinkage over the same period.¹¹ Tai Chi integrates gentle body movements according to visual imagery with coordinated breathing, mind concentration and sustained attention to maintenance of posture. Practice Tai Chi also shows substantial potential in enhancing cognitive vitality in older adults.¹² Studies found that regular Tai Chi practitioners had larger brain volume, better functional connectivity between brain areas and better memory performance.^{13, 14} As a fast-moving activity which involves physical exercise, sustained attention, visuo-spatial skills and hand-eye coordination, playing table tennis simultaneously activates various areas of the brain. A Japanese study which evaluated the effect of table tennis practice on mental ability among people aged 50 and above observed that table tennis players in general preserved far better mental ability compared with non-players.¹⁵

Act Now to Reduce the Risk of Dementia

At present, it remains unclear about the best possible type and amount of physical activity that help prevent dementia in older adults.^{5, 16} For optimal health, WHO recommends adults (including elders) to engage in at least 150 minutes of moderate-intensity aerobic physical activities, or 75 minutes of vigorous-intensity aerobic physical activity, or equivalent amounts throughout the week, in bouts of at least 10 minutes in duration.¹⁷ A meta-analysis of 5 prospective cohort studies reported that elders who had adhered to international physical activity guidelines during the previous 5 or more years would have a 40% reduced risk of developing Alzheimer's Disease compared with their physically inactive peers.¹⁸ A local study also observed that daily participation in aerobic exercise or mind-body exercise (e.g. Tai Chi) might protect community-living Chinese older adults from developing dementia.¹⁶ To boost brain health, individuals can choose one or more kinds of aerobic physical activities that suit their preference, skills, physical status or lifestyle. For those people who are frail or are living with a chronic disease, they may consult family doctor for a customised exercise prescription.

In addition to staying physically active, no smoking, eating a balanced diet, refraining from alcohol use, taking part in intellectual and leisure activities, stress management, as well as staying socially active can help enhance cognitive reserve and reduce the risk of dementia. Meticulous control of body weight, blood pressure, blood sugar and blood lipids are also essential in maintaining a healthy brain. Remember, dementia is not part of the normal ageing process; leading a healthy lifestyle can reduce the risk of getting dementia. To know more about healthy ageing, please visit the website Elderly Health Service of Department of Health at <http://www.info.gov.hk/elderly>.

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World Mental Health Day 10 October 2017

World Mental Health Day is observed on 10 October every year, with the overall objective of raising awareness of mental health issues around the world and mobilising efforts in support of mental health. Each year, a theme would be chosen to highlight a global public health concern. For 2017, the theme is **‘Mental Health in the Work Place’**. Mental health issues have been shown to increase employee absenteeism, lower rates of productivity and increase costs. To know more about World Mental Health Day and related activities, please visit <https://www.wfmh.global/wmhd-2017/>.



Mental health is the fundamental of keeping personal health as well as maintaining the function of society. To promote mental health, the Department of Health launched the **Joyful@HK** campaign which advocates adding three elements ‘SME’ — Sharing, Mind and Enjoyment — into life as to make it healthier, happier and more meaningful. To know more about the Joyful@HK campaign and tips promoting mental health, please visit <http://www.joyfulathk.hk/en/index/asp>.



Non-Communicable Diseases (NCD) WATCH is dedicated to promote public's awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to so_dp3@dh.gov.hk.

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