

# 23. Dementia

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## Summary

Dementia is a serious health concern among the elderly and as yet there are few interventions that have proven to be able to prevent development of dementia. Recent research suggests that activity in general and physical activity in particular can be beneficial in this context. The relation with the amount and type of physical activity has, however, not been established. Advice regarding activities for people with dementia should be the same as for the population as a whole. People with established dementia have the same need for physical activity as healthy people, but are often unable to carry it out on their own. Individually tailored physical activity for persons with dementia requires carefully selected environmental conditions and activities.

## Introduction

Physical activity has a known disease-preventing effect and is important in preventing physical disability in people with chronic diseases. Large numbers of the population are, however, less physically active than what is likely required to maintain good physical function into old age. In the context of dementia, physical activity is important for preventing dementia and secondarily to prevent disability in people who have already developed dementia.

## *What is dementia and how does it express itself?*

Dementia is a collective term to describe a number of pathological conditions in the brain characterised by decline in mental function, emotional problems, and difficulty managing practical tasks in daily life (1). Dementia mainly affects people over the age of 65 years (95% of cases) and is then called senile dementia. However, even younger people can develop dementia.

In Sweden, there are currently approximately 140,000 people with some form of dementia disease. The prevalence of dementia increases with age, from about 1 per cent at 65 years to over 50 per cent at 90 years of age (2). Because of the increasing number of elderly in the population, we can expect that the number of people with dementia will rise considerably in years to come.

Dementia is characterised by decreased mental functions that begin insidiously and develop over time. Common symptoms are impaired short-term memory, impaired linguistic ability, and difficulty writing, counting, recognising people and things, orienting oneself and carrying out practical tasks such as getting dressed and meal situations. Social function and personality also change, which can be seen in that the person becomes isolated and passive. Emotional problems, and loss of inhibitions and judgement occurs, as does aggression. The diagnosis of dementia requires that the symptoms are serious enough, that they impact the daily way of life and have lasted more than 6 months. In certain dementia states, an impairment of motor ability can be an early sign and, in later stages, difficulty walking, a tendency toward falling, difficulty feeding oneself and incontinence can occur. In the majority of the cases, the dementia exhibits a progressive course and leads to a reduced life expectancy.

There are a number of diseases that can lead to dementia. Alzheimer's disease is the most common dementia disease and is responsible for over 50 per cent of cases, but poor blood circulation in parts of the brain is also a common cause. The risk of developing dementia is greatest for the oldest in the population, and for people with dementia in the family, people with high blood pressure, high cholesterol, people who smoke, or in cases where diabetes is part of the disease picture. It has also been shown that people with a sedentary lifestyle have an increased risk in relation to those with active lifestyles, socially and mentally.

Investigation of dementia should comprise a general medical examination by a physician, including blood samples and a CT or MRI scan of the brain. This is complemented by establishing the patient's mental status and overall level of function through clinical examination and a battery of tests, in addition to interviews with the next of kin or other care providers.

The treatment of dementia involves different measures that should preferably be carried out parallel to one another and can be aimed at both the patient and next of kin. Many elderly persons benefit greatly from regular follow-up through home care services, possibly in combination with day centres. The next of kin of people with dementia often carry a great burden and need both education and guidance, as well as the opportunity to take part in dementia support groups. Getting relief at day centres or short-term stays at

nursing homes can be needed and later the disease requires constant supervision of the patient.

The goal should be to give people with dementia optimal treatment for any other existing diseases since we often observe that mental function deteriorates if the patient is also physically ill, for example, with pain, urinary tract infection or constipation. Some people with dementia become depressed and acquire behaviour problems that can lead to a need for medication. Many are sensitive to drug side-effects and a review of total drug intake is therefore important. In recent years, drugs have been developed that delay the disease's progression and in the odd case even improve the condition. These drugs are used primarily for patients with Alzheimer's disease, but can also be effective in certain other dementia conditions.

### *The importance of physical activity in preventing development of dementia*

Several studies conducted in recent years suggest that regular physical activity has a protective effect against the risk of developing senile dementia (3–5). Findings have shown that people who are generally active run a smaller risk of developing dementia than those who take part in fewer activities. Whether the activity is energy-intensive or not plays a smaller part in this context (6). Even in the oldest subjects (over 85 years), there are indications that regular physical activity protects against the development of dementia (7).

Physical activity is often performed together with social and mental activities, and being involved in a number of different activities likely stimulate one's ability to organise things and remember, which can be one of the reasons that physical activity appears to have a protective effect. Physical activity can also reflect a sound lifestyle, something that in itself protects against exposure to factors that can have a negative impact on cognitive function.

Even genetic differences play a role in whether physical activity protects against dementia. It has been found, for example, that physical activity protects against the development of dementia in non-carriers of a particular gene, the apolipo-protein E (APOE genotype), while the relationship is small in those who carry the gene (6).

### *The importance of physical activity in people with dementia*

Older, acutely ill persons may be at risk for developing dementia due to physical and mental effects of the condition (8). Preventing inactivity resulting from illness can therefore be a factor in preventing a decrease in function in general, and mental function in particular. There is insufficient evidence to be able to say whether or not physical activity programs are beneficial for mental function in people with dementia. However, older people with dementia have the same need for physical activity as other older persons (23).

### *The importance of the activity in physical, social and emotional function*

There are studies that have shown that structured exercise training leads to an increase in physical fitness and function in daily life in people with dementia (9). For older people still living at home, an exercise programme along with training for the next of kin regarding how to handle the person's behaviour has been reported to improve walking capacity and self-reported health at the same time as reducing depression (10). Other studies have not shown as obvious effects from exercise (11). The difference in conclusions can be due to the fact that different studies have investigated different criteria and measured effects in different ways. A general feature of the studies conducted is that only persons with a mild or moderate degree of dementia were included.

Most people who stay at a nursing home/care facility have mild cognitive decline or dementia. Studies from USA and Europe show that structured physical exercise for older people in nursing homes (70+) with multiple diagnoses yields positive effects on muscle strength and mobility. There is documentation that supports to a reasonable extent the effect on mobility, and contradictory results when it comes to walking function, activities of daily life (ADL), balance and endurance. Although low mental function was not a criterion for inclusion in the study, there is reason to believe that many of the participants had mild cognitive decline and that the findings can only be transferred to people with milder dementia (12).

It has also been reported that tailored physical activity affects the intellectual functions in older people with dementia, especially aspects such as attention, memory, the ability to communicate and to perform practical tasks, as well as overall mental function (13, 14).

Physical activity combined with techniques to reduce negative behaviours have been shown to improve physical health and reduce depression in people with Alzheimer's disease (15). The findings suggest that involvement is an important success factor when it comes to achieving gains in physical function.

Together these studies indicate that older persons with different degrees of declining mental health, both those still living at home and those in some kind of institution, can benefit from exercise training. The exercise has several physical and psychological effects, and helps to preserve health, mental functions, the ability to communicate, as well as function in daily life as the most important goal.

### *Preventing falls*

Due to impaired motor and mental function, people with dementia are at increased risk of falling, and those who do fall run the risk of further injuries. While physical exercise that focuses on muscle strength and balance has been shown to be effective in preventing falls in general in elderly still living in their homes, the same benefits are not seen in people with dementia (11, 16). This can indicate that factors other than balance and muscle strength, and here probably factors that can be linked to cognitive decline, are important risk factors for people with dementia. Yet, there are few studies to confirm this, meaning that we must be careful when interpreting the conclusions.

## Recommendations

### *Physical activity to prevent dementia*

Studies have been unable to show the exact amount of activity that has a beneficial preventive effect on the development of dementia, other than that repetition is more important than high intensity (17). Neither has the type of activity that is beneficial been established. Recommendations regarding physical activity should therefore follow general guidelines that generally apply for achieving positive health effects in the population.

### *Physical activity to prevent decline in function in people with dementia*

People can live up to 20 years with progressive dementia. The goal of physical activity should be to prevent a decline in function and help to maintain function in daily life. Taking part in activities can also be an angle of approach to communication and general stimulation. The need for physical activity in patients with dementia is often the same as that in other patients, but adaptation and design of the activity must be done differently. Being physically active in itself creates a sense of well-being, but many people with dementia need help getting started, help to adjust, and supervised follow-up in order to maintain a good activity level.

Some people may have a reduced ability to take initiative and therefore easily become inactive. These people may feel that their mobility is rapidly worsening, not only as a result of the dementia condition, but also as a result of the inactivity, and thus find themselves in danger of losing certain basic functions, for example, the ability to walk. Measures to prevent this type of decline in function are therefore important.

Another group of patients may be restless and prone to wandering. Others are described as demonstrating negative behaviour, which can be linked not only to the dementia condition, but more to the person's lack of ability to understand his or her surroundings (1). It is therefore possible that activities tailored for and better coordinated to the immediate environment may serve these people well.

### **Amount and type of physical activity**

Physical activity in people with dementia can yield both physiological, and psychological and emotional effects. There is no basis for assuming that the dose and intensity of exercise components, such as muscle strength, flexibility and balance, should be any different than in people without dementia. When it comes to the impact of activities on cognition and emotion, there is little documented knowledge regarding the amount and type of activity. Knowledge from the field of motor learning (18) indicates that the total amount performed and that the task is perceived as meaningful and motivating are the most important factors for learning.

When it comes to the type of activity, it seems that different physical activities can have a positive impact. Many studies are based on a general mobility programs, with a focus on walking ability. Everything from chair exercises, aerobics, strength training using weights,

exercise programs on the exercise bike, to training of other skill-based functions have been reported (9). In order to prevent loss of function in patients with multi-functional decline, exercise that affects several components of fitness is recommended, for example, strength, endurance, balance and mobility, as well as specific training of skills required in daily life (19).

For people with complex conditions, it appears that physical training combined with techniques to influence their condition is especially beneficial (10).

### **Adapted physical activity**

Dementia affects a person's level of function and leads to a gradual reduction of intellectual ability and affects one's memory and the ability to perform everyday activities. The memory affects performance of activities such that the person may forget what he or she is doing. Problems with orientation, impaired judgement, and failing motivation and emotional control can make activities even more difficult. The physical activity must therefore be adapted to the particular individual, according to mental and physical status (20).

Communication can be a big problem in this context (21). Factors that make communication more difficult can include a patient's difficulties in localising the source of sounds, understanding what is said, impaired memory and slow response, as well as difficulty expressing oneself clearly. Many older people have impaired hearing, which is especially important to check in patients with dementia as many of them refuse to use a hearing aid. In such cases, a speech amplifier may help to improve verbal communication. Repeating what is said is also important, as is using words that are familiar to the patient. Furthermore, it is easier to understand positive instructions than negative ones. For example, it is better to say "stand there" instead of "don't sit down". Goal-related tasks are simpler than using pure movement instructions, which can be illustrated by the following: If you want a patient who is sitting down to get up, it can be easier to ask the person to fetch a tea cup on the table a little ways from the chair.

### **Some key points for good verbal communication**

- Give the person time to respond.
- Express yourself clearly and simply – one instruction or piece of information at a time.
- Use words and expressions that the patient is very familiar with.
- Repeat things often, and paraphrase if the patient does not understand.
- Avoid giving instruction for movements, have the patient solve the tasks instead.

Non-verbal communication is an important complement to speech but must occur in a way that does not confuse the patient. Examples of methods that can be used are gestures, physical contact, visual reinforcement, audio amplification, or demonstrating the activity.

Certain activities may frighten some people with dementia, for example, due to spatial perception problems. Patients may feel unsafe when getting up from a chair or bed, or walking down steps. In situations such as these, it is important to "block" perceived threats, for example, by placing the back of the chair in front of the person getting up or walking backwards in front of the person down the steps.

For patients with severe dementia, it can be difficult to function in a “moving” environment (people who are moving about, varying light conditions, different sounds, floors with different colours and sharp contrasts) or if the usual environment suddenly changes. During training, it is therefore important to reduce all interfering information in the environment or consciously select which challenges are need to make the training realistic.

Using activities that the person is already familiar with facilitates involvement better than new activities, and it is therefore necessary to identify and adapt such activities.

## *Applicable tests*

In people suspected of cognitive impairments, a screening test such as the Mini Mental Status (MMS) (22) can be used to investigate which aspects of mental function are impaired. Physical function can be mapped with tests specifically designed for the elderly, to evaluate functions relevant to the requirements of everyday life with respect to muscle strength, balance, mobility and endurance. A well-tailored testing situation and simple instructions are, however, decisive in obtaining correct test results.

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