

Prevention of dementia

Physical Activities

Regular and high intensity leisure physical activities (e.g. sport, dancing, walking) seem to reduce dementia risk. In various studies it is shown that physical activity, specially at midlife age and at least twice a week can reduced risk of dementia and AD.

A study in the USA found that incidence rate of dementia was 13 per 1000 person-years for participants who exercised 3+ times/week compared with 19.7 per 1000 person-years for those who exercised fewer than 3 times/week. So more exercise is reducing the chance of dementia more. And also intensity plays a role in reduction rate, high intensity trainings are more effective. Risk reduction associated with exercise was greater in those with lower performance levels/poorer physical functioning at baseline.

Data from the Canadian Study of Health and Aging have associated regular physical activity with a reduced risk of AD. The CAIDE study showed that regular leisure physical activity at midlife may protect against dementia and AD later in life. The risk reduction was 50% for dementia and 60% for AD. Associations between increased activity and decreased risk seem to be more presented among the APOE 4 carriers. Regular physical activity may reduce the risk or delay the onset of dementia and AD, especially among genetically susceptible individuals. Social and mental activities have also been suggested to protect against AD. Generally, an active lifestyle may increase cognitive reserve capacity, reduce stress and thus protect against development or expression of dementia.

Evidence suggests that only a small number of people aged over 65 – fewer than 20% – engage in an adequate level of physical activity, while people who have dementia are even less likely to engage in such activity.

What is the right exercise?

For general physical health, research has shown that three types of exercise should be included in your regular routine:

- sustained aerobic exercise
- strength, weight or resistance training
- flexibility and balance training

Aerobic exercise is defined as exercise performed at a moderate level of intensity over a long period of time. It improves general physical health and increases blood flow to the brain. Such exercise can gradually be increased as fitness improves, but at least 30 minutes of aerobic exercise on most days of the week is recommended. Examples of aerobic exercise include brisk walking, dancing, jogging, bicycling and swimming.

Resistance or weight training involves exercising muscles against an external force that provides resistance to the movement. The benefits of strength training include increased muscle, tendon and ligament strength, bone density, flexibility, tone, metabolic rate and postural support. Resistance training can include squeezing rubber balls, using elastic resistance bands and lifting weights.

Tactile

Flexibility and balance exercises strengthen the spine and supporting muscles and improve coordination and balance. Such exercises can be incorporated into an aerobic exercise program. Exercise such as bending and stretching, tai chi, yoga and pilates can all help with flexibility and balance

Cognitive activity / education

A higher level of education appears to reduce the risk for dementia. More frequent participation in cognitive activity is associated with reduced incidence of dementia. A cognitively inactive person seems to be more likely to develop AD than a cognitively active person. Frequent activities that activate and challenge the mind and memory such as reading book, following news, solving puzzles, playing board games, learning new things,... can remarkably reduce risk of dementia or delay it.

Psychosocial activities

Living alone, having no close social relations, not participating in social and fun activities and never having married seems to increase dementia risk. Recent studies have found that Alzheimer's disease in particular is negatively associated with diversity of activities and intensity of intellectual activities and positively associated with psychosocial inactivity, unproductive working style, living with a dominant spouse and physical inactivity. A potential protective effect of the psychosocial network on dementia can be demonstrated in several studies. Multivariate analyses suggest an independent effect, especially of sports and cultural activities. There seems to be a decreased risk for dementia for high challenge at work, high control possibilities at work, and high social demands at work.

Subjects with high leisure activity seem to have less risk of developing dementia. Reading, visiting friends or relatives, going to movies or restaurants, and walking for pleasure or going for an excursion seem to be most strongly associated with a reduced risk of incident dementia. In the Bronx Aging Study, leisure activities, reading, playing board games, playing musical instruments, and dancing were associated with a reduced risk of dementia.

A population-based study of Swedish twins suggests that greater complexity of work, and particularly complex work with people, may reduce the risk of AD. Several studies of the relationship between the psychosocial network or activity level and dementia have focused only on a short time span before the onset of clinical dementia.

These results point to a possible independent protection against dementia from social relationships and from physical and intellectual activities in midlife, possibly also in later life.

Depression and stress are two other factors that can trigger dementia and increase its prevalence.

The cost of Dementia

the total costs of informal care in Europe is 33 billion € (27 billion € in EU25) (table 13), with a range from 2,202 to 5,148 € per case and year, depending of region.

Table 13. Estimate of the costs of informal care (base case) in 2008

	Prevalence (x1000)	Costs € 2008 (billions)	Per case
Eastern Europe	2751	6.1	2202
Northern Europe	1307	6.7	5148
Southern Europe	1991	8.0	3995
Western Europe	2544	12.1	4756
Europe	8592	32.8	3822
EU25	6074	27.1	4468

However, as seen in table 14, both the quantification and costing of informal care has a great impact of how the costs of informal care are estimated, illustrating how complicated this issue is and how crucial it is that the calculations are transparent.

Table 15. Summary of total societal costs of dementia care (base cases, in 2008).

Major areas/regions	Prevalence (x1000)	Direct costs (billions €)	Informal care (billions €)	Total costs (billions €)	Total costs per demented (€)
Eastern Europe	2751	12.6	6.1	18.7	6796
Northern Europe	1307	14.3	6.7	21.0	16077
Southern Europe	1991	16.8	8.0	24.7	12418
Western Europe	2544	26.8	12.1	38.9	15280
Europe	8592	70.5	32.8	103.3	12022
EU25	6074	58.6	27.1	85.8	14119

This project has received funding from the Active and Assisted Living (AAL) programme funds projects in public-private partnership in the field of information and communication technology (ICT) for active and healthy ageing. The programme is co-financed by the European Commission – under the Horizon 2020 umbrella – and 19 countries until 2020.

The costs per demented in single European countries in the DWCD model are seen in table 16). The costing approach for regions are dependent on the GDP per person and do not take into account different traditions of care, family patterns etc . Some countries with high GDP figures per citizen, as e.g. Luxembourg and Norway, can, as a consequence of the model, be regarded as outliers.

Table 16. Costs of dementia (€PPPs) in Europe in 2008

	Direct	Informal	Total	
	costs	care	costs	Costs
Country	x1000000	x1000000	x1000000	per case
Eastern Europe				
Belarus	318,0	134,5	452,5	4800
Bulgaria	304,3	124,9	429,3	5053
Czech republic	906,0	383,5	1289,5	12206
Hungary	719,7	370,8	1090,5	10348
Poland	1565,0	987,4	2552,4	7477
Republic of Moldavia	33,8	2,7	36,5	1286
Romania	528,5	254,1	782,7	4033
Russian federation	6132,5	2494,2	8626,7	6924
Slovakia	290,0	122,6	412,7	9128
Ukraine	1838,2	1181,2	3019,3	5974
Northern Europe				
Denmark	832,0	639,5	1471,5	20915

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Tactile

Estonia	83,2	40,1	123,3	9716
Finland	732,0	183,6	915,6	13382
Iceland	41,7	15,3	57,0	19495
Ireland	545,6	182,9	728,6	20374
Latvia	125,6	48,8	174,4	7644
Lithuania	224,4	88,2	312,6	8535
Norway	1004,9	415,2	1420,1	21593
Sweden	1461,9	560,6	2022,5	13703
UK	9235,3	4556,3	13791,5	16334
Southern Europe				
Albania	27,5	12,9	40,5	2844
Bosnia and Herzegovina	69,0	98,9	167,9	5610
Croatia	208,8	170,9	379,7	8322
Greece	1275,9	591,4	1867,3	11967
Italy	8898,5	4179,4	13078,0	14330
Malta	26,3	15,8	42,1	11323
Portugal	837,5	215,8	1053,2	8735
Serbia and Montenegro	212,4	123,1	335,5	3680
Slovenia	157,8	92,2	250,0	12117

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Tactile

Spain	5011,4	2433,1	7444,5	12798
TFYR Macedonia	41,4	18,8	60,2	4222
Cyprus	65,2	41,2	106,4	12659
Western Europe				
Austria	1165,4	549,6	1715,0	17020
Belgium	1461,9	732,5	2194,4	15549
France	8879,1	2890,6	11769,7	13842
Germany	12041,7	6220,1	18261,8	15847
Luxembourg	117,0	25,3	142,3	29179
The Netherlands	2031,3	1026,6	3057,9	15821
Switzerland	1072,8	653,3	1726,2	17103