



Dietary supplements:

Can I protect myself against bone fractures with vitamin D?

! Very little benefit: Additional vitamin D – beyond what you'd normally get from your diet – cannot prevent bone fractures in older people. It can only marginally help when combined with additional calcium.

	without additional vitamin D	with additional vitamin D	with additional vitamin D and calcium
People aged 57 to 85 years	per 100	per 100	per 100
Fractures after 1 to 4 years	6–14	8–14	7–12
Femoral neck fractures after 1 to 4 years	1–8	2–9	1–4

✓ Explanations and sources

! Side effects: Vitamin D as a dietary supplement taken in combination with calcium can lead to more gastrointestinal disorders.

100

People without additional vitamin D and calcium

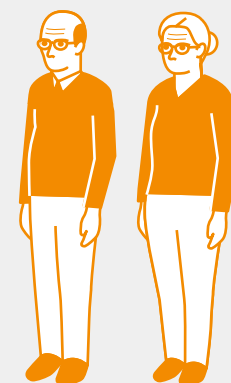
Gastrointestinal symptoms

18

100

People with additional vitamin D and calcium

19



✓ Explanations and sources

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The figures in the table show that of every 100 people aged on average 57 to 85, approx. 6 to 14 people suffered a fracture within a period of one to four years. 1 to 8 of these were femoral neck fractures. This was the same in a group who had systematically taken vitamin D in the form of vitamins D2, D3 or 25(OH)D. The deviations in the figures in the middle column are likely coincidental.

However, of every 100 people who systematically took vitamin D and calcium together as dietary supplements, only 7 to 12 had one or more fractures. 1 in 4 of these cases was a femoral neck fracture. Vitamin D taken in combination with calcium can thus prevent bone fractures in older people to a limited extent. However, it hasn't yet been clarified whether the benefits of this dietary supplement are restricted to those living in retirement homes and care facilities. Nor has it been clarified whether the benefits are restricted to those that haven't had osteoporosis fractures before. Studies excluding members of retirement homes and care facilities and studies exclusively looking at patients who already had osteoporosis fractures, cannot show the impact reliably. The data are rounded.

Sources: Avenell et al. (2014). [Cochrane Database of Systematic Reviews, Fourth edition, Art. No.: CD000227](#). The full set of data on all fractures are based on nine vitamin D + calcium studies and ten vitamin D studies, with partly overlapping populations, each considered separately, with observation periods of 12, 24, 36 and 48 months and with approx. 13,700 and 22,100 members of a community, respectively.

The data on femoral neck fractures are based on eight vitamin D + calcium studies and nine vitamin D studies, with partly overlapping populations, each considered separately, with observation periods of 12, 24, 36 and 48 months and with approx. 13,600 and 21,700 members of a community, respectively.

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100

People without additional vitamin D and calcium

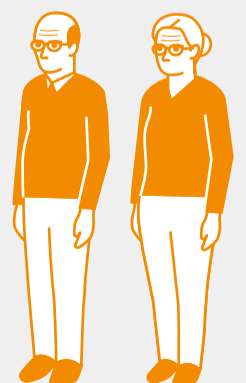
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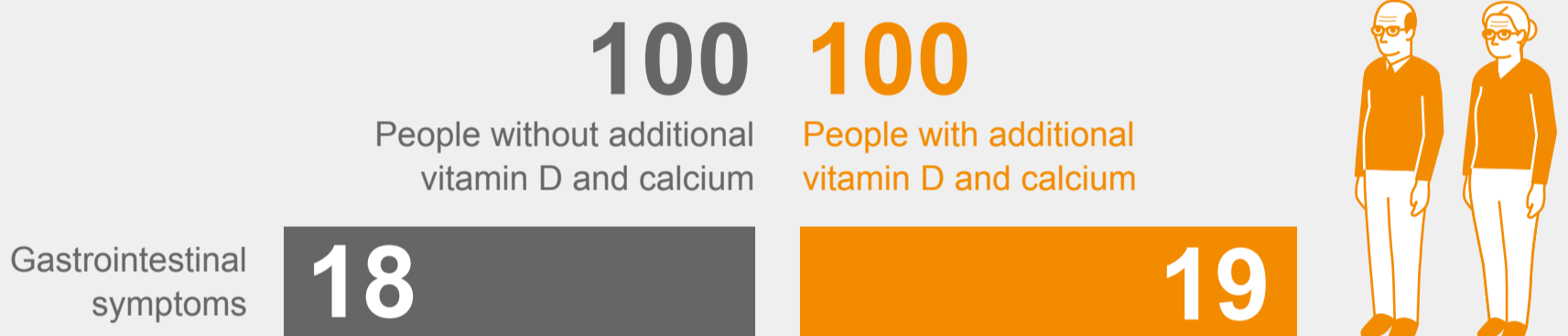
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In combination with calcium, taking vitamin D carries a slight risk of gastrointestinal symptoms, kidney stones and renal impairment. The figures in the diagram indicate that out of every 100 people, 18 showed gastrointestinal symptoms. However, after taking a combination of vitamin D and calcium over a period of two to seven years, 19 out of every 100 showed gastrointestinal symptoms.

In two separate studies, which took place exclusively with women, less than 2 in 100 had kidney disease. However, in a group taking both vitamin D and calcium over a period of two to seven years, the number rose to more than 2 in 100. In other studies, 1 out of every 100 people who took neither vitamin D nor calcium as a dietary supplement showed a steep rise in calcium concentration in their blood (hypercalcaemia), compared to 2 in 100 people who took both vitamin D and calcium over a period of two to four years. The data are rounded.

Sources: Avenell et al. (2014). [Cochrane Database of Systematic Reviews, Fourth edition, Art. No.: CD000227](#). The data on gastrointestinal symptoms are based on four studies with approx. 40,000 participants; the data on kidney diseases are based on two studies with approx. 40,000 participants. The data on hypercalcaemia are based on nine studies with approx. 6,900 participants.

Scientific development: Prof. Dr. med. A. Altiner, Director at the Institute for General Medical Science at the Rostock University School of Medicine.

The AOK, the federal association of health insurance funds, is developing its fact boxes together with Prof. Dr. Gerd Gigerenzer, director of the Harding Centre for Risk Literacy at the Max Planck Institute for Human Development in Berlin.

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