Vitamin K status and physical decline

There has been wide interest in vitamin and mineral research, but have you ever heard about vitamin K? It's a fat-soluble vitamin K and is present in green leafy vegetables, algae, plant oils and also in meat, eggs, and fermented dairy products. To some extent it can also be formed by bacteria in the gut. The primary function of vitamin K is for blood coagulation, but vitamin K also plays a role as in vascular and skeletal health. Vitamin K is needed for the activation of certain proteins and the inactive amount of these proteins are an indicator of vitamin K status.

In this study, we investigated the relationship between vitamin K status and several tests of physical functioning such as handgrip strength, calf circumference, functional limitations and functional performance (3 m walk, turn 180° and walk back 3 m, chair stand, and put on and take of a cardigan). All participants gave blood to determine vitamin K status. The research consisted of a blood sample and 5 follow-up exams spaced 3 years apart with in total 13 years follow-up. The research was conducted among 633 adults (aged 55-65 years) from 3 regions in the Netherlands.

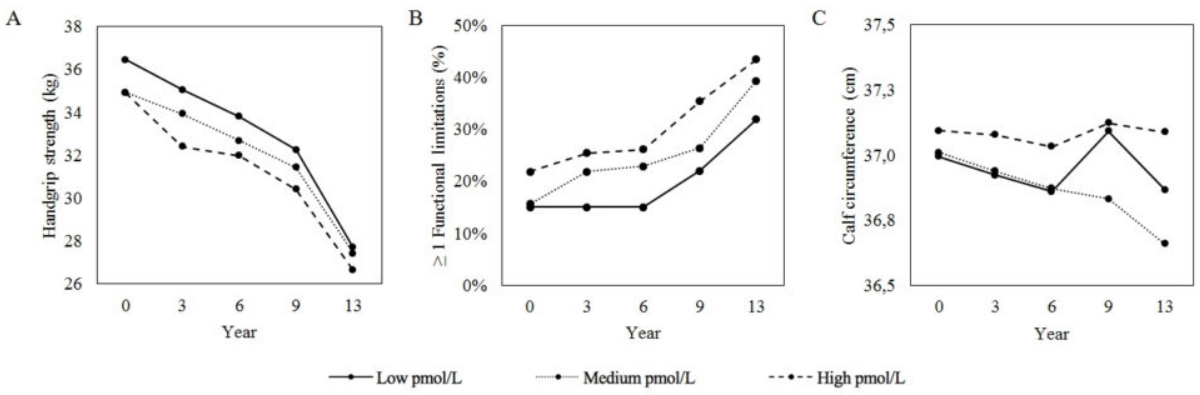

Fig. 1.

As expected all groups declined in handgrip strength over time, but participants with high vitamin K status had the greatest handgrip strength and largest calf circumference. A similar trend was visible for vitamin K status and functional limitation. A gradual increase in the percentage of ?1 functional limitations was observed, however, the relationship disappeared when correcting for age and sex. This indicates that a better vitamin K status might be related to better physical functioning, but no faster decline could be detected over time.

The relationship between vitamin K status and physical performance was different for men and women. Both men and women, decreased in physical performance over time, which is part of natural aging. For women, low vitamin K status was related to a lower physical performance

scores. This remained over the years, but no faster decline could be observed. Among men, vitamin K did not influence physical performance. Overall, our results suggest that optimal vitamin K concentrations are an important determinant for physical functioning in old age.

It is plausible that a high vitamin K status reflects a healthy diet and lifestyle, as the primary source of vitamin K are characteristics of a healthy diet. A sufficient vitamin K status can be obtained with a balanced diet, which includes vitamin K rich foods such as green leafy vegetables, animal and fermented dairy products such as meat, eggs, yoghurt and cheese and is recommended for everybody. Future studies are needed to determine whether vitamin K rich foods or vitamin K supplementation could improve physical functioning in those with a lack of vitamin K and clarify underlying mechanisms.

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