

# Science Summary

## Dairy and Sarcopenia and Osteoporosis



### Overview

Including dairy foods in healthy dietary patterns can help people thrive at every age, including older adulthood. Eating dairy foods, a source of high-quality protein and other essential nutrients, may reduce the risk of age-related conditions such as sarcopenia (loss of muscle mass and strength) and frailty. Consuming dairy foods may also help older adults maintain healthy bones by reducing the risk of bone mineral density loss and lowering

the risk of osteoporosis-related falls and fractures. The 2020-2025 Dietary Guidelines for Americans (DGA) recommends that adults consume 3 servings of low-fat or fat-free dairy foods daily as part of the Healthy U.S.-Style Dietary Pattern.

### Dairy foods help support the nutritional needs of older adults

As the population of older adults in the U.S. continues to grow, the nutrition challenges these adults face will become even more serious public health concerns. Older adults may struggle with healthy eating due to age-related changes and obstacles including socioeconomic factors, depression, changes in taste, physical ability to chew and swallow and body composition, along with reductions in appetite from medications and reduced mobility, among other challenges.<sup>1-5</sup> While men and women 70 years and older consume sufficient calories, on average, they do not consume enough of the nutrients of public health concern for Americans 2 years and older—calcium, vitamin D, fiber and potassium—and tend to exceed recommendations for daily sodium and saturated fat intake.<sup>6</sup> Older adults are also at risk for low intakes of protein and vitamin B12.<sup>6</sup>

Consuming dairy foods as part of healthy dietary patterns can help older adults thrive. Dairy foods like milk, yogurt and cheese are important sources of several shortfall nutrients for older adults, including protein, calcium, potassium, vitamin D and vitamin B12.<sup>7</sup> Dairy foods also provide high-quality nutrition at an affordable price<sup>8</sup> and are available in a variety of textures and flavors that may appeal to older adults experiencing physical challenges with eating. However, Americans 70 years and older consume, on average, less than 1½ servings of dairy foods per day.<sup>9</sup> The 2020 DGA recommends that all Americans 9 years and older consume 3 daily servings of low-fat or fat-free dairy foods in the Healthy U.S.-Style Dietary Pattern.<sup>6</sup> Adding at least one more daily serving of dairy foods to the dietary patterns of older adults can help bring them closer to meeting dairy recommendations.<sup>10,11</sup>

## **Dairy foods are an important source of high-quality protein that can help meet the unique nutrition needs of older adults**

Older adults have low intakes of protein relative to the Estimated Average Requirement (EAR),<sup>7</sup> and the 2020 DGA identifies dairy foods as a source of dietary protein for older adults.<sup>6</sup> Milk, cheese and yogurt are good sources of high-quality protein, which helps support bone health and preserve muscle mass and physical function in older adults as part of healthy dietary patterns.<sup>12</sup> Milk provides 8 grams (g) of high-quality protein per cup, and hard cheeses such as Cheddar and Colby provide 10 g or more of protein per 1½ ounce serving.<sup>13\*</sup> Some styles of yogurt like Greek yogurt can provide more than 20 g of protein per cup.<sup>13\*</sup> A modeling study examining the effect of increasing plant-based foods or dairy foods on protein intake in older adults found that doubling the intake of dairy foods could help older adults meet their protein needs. In contrast, doubling intake of plant-based foods resulted in an approximate 22 percent decline in protein consumption.<sup>14</sup> Because older adults currently do not meet dairy food recommendations, adding one more serving of dairy foods to their current diets would move them closer to both protein intake recommendations and dairy recommendations from the 2020 DGA.<sup>6,10,11</sup>

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## **Eating dairy foods may lessen risk of sarcopenia and frailty among older adults**

Sarcopenia, or the loss of skeletal muscle strength and mass, accelerates with age, contributes to adverse health outcomes in older adults and may lead to substantial healthcare costs.<sup>15,16</sup> Frailty is also a common clinical syndrome in older adults, and it carries increased risks for poor health outcomes including institutionalization, falls, hospitalization and mortality.<sup>17</sup> Nutritional factors such as inadequate protein and energy intake play a role in the development of both sarcopenia and frailty.<sup>14,18-21</sup> Results of systematic reviews and prospective cohort studies indicate that consuming dairy foods like milk, cheese and yogurt in recommended amounts throughout older adulthood may help reduce the risk of sarcopenia and frailty by supporting muscle mass and muscle strength.

Results of two systematic reviews indicate that consuming dairy foods (low-fat milk, cheese and yogurt) may be beneficial for preserving muscle mass and muscle strength in adults 50 years and older, thereby reducing the risk of sarcopenia.<sup>15,22</sup> Two prospective cohort studies also reported similar results. One prospective cohort study found that consuming more than 7 servings per week of low-fat milk and yogurt versus less than 1 serving per week was linked with lower risk of frailty, slow walking speed and weight loss.<sup>23</sup> Another prospective cohort study concluded that consuming more meat and dairy foods was linked with a lower risk of developing physical frailty.<sup>24</sup>

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## **Dairy foods may help support bone health in older adults**

Eating dairy foods may also help older adults maintain healthy bones. Osteoporosis, the condition of porous, brittle and fragile bone, affects approximately 54 million Americans.<sup>25</sup> One out of every two postmenopausal women will experience an osteoporosis-related fracture at some point in her lifetime.<sup>26</sup> While some factors that affect peak bone mass are not modifiable (gender, ethnicity, genetics), others such as nutritional status, physical activity and body composition are modifiable. Unfortunately, older adults tend to fall short of meeting recommendations for nutrition needs associated with bone health like adequate calcium, vitamin D and potassium intake.<sup>7</sup>

\*FDC IDs: Cheddar: 1098009; Colby: 173416; Greek Yogurt: 1097564

Results of meta-analyses, a systematic review and longitudinal cohort studies indicate that eating dairy foods may be beneficial for bone health in older adults. Meta-analyses and systematic reviews as well as a prospective cohort study provide evidence that dairy foods can increase bone mineral density and reduce the risk of hip fracture.<sup>27-33</sup> A large systematic review with data from 91 publications concluded that moderate evidence indicates that daily intake of low-fat or fat-free dairy foods as part of a healthy dietary pattern may be associated with improved bone mineral density and fewer fractures in adults 50 years and older.<sup>32</sup> In two U.S. cohorts of approximately 43,000 men and 80,000 postmenopausal women aged 50 years and followed for up to 32 years, each 1 cup daily serving of milk was associated with an 8 percent lower risk of hip fracture.<sup>33</sup> Total dairy intake, about half of which was milk, was associated with a 6 percent lower risk of hip fracture per daily serving.<sup>33</sup> Some research reports that consuming dairy foods may not have an impact on certain indicators of bone health in older adults, such as bone mineral density, risk of falling and osteoporotic fractures.<sup>34-37</sup> These results indicate a need for continued research to further explain the links between dairy food intake and bone health in older adults.

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