Abstract

Muscle mass maintenance: protein and physcial activity

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A period of muscle disuse due to sickness or injury can lead to substantial loss of skeletal muscle mass and strength in otherwise healthy individuals. The resulting health consequences, such as impaired functional capacity, decreased muscle strength, peripheral insulin resistance, and a decline in basal metabolic rate, are of particular concern to older individuals, who are already functionally and/or metabolically compromised. Even a few days of disuse can already result in substantial loss of muscle mass and strength. These findings are of particular clinical relevance because hospitalization of (older) individuals with acute illness generally results in a mean hospital stay of 5–7 days. Such short successive periods of muscle disuse occurring throughout the lifespan may be instrumental in the progressive loss of muscle mass with aging. Loss of skeletal muscle mass due to disuse must be attributed to an imbalance between muscle protein synthesis and breakdown rates. A decline in basal (post-absorptive) muscle protein synthesis rates has been reported following both bed rest as well as limb immobilization. Furthermore, more recent work has shown that the muscle protein synthetic response to protein or amino acid administration becomes blunted following a period of disuse. Though declines in both post-absorptive and postprandial muscle protein synthesis rates seem to play the biggest causal role in the loss of muscle mass during a period of disuse, there is also some indirect evidence that increases in muscle protein breakdown rates occur during the first few days of muscle disuse.

European Milk Forum

Abstract

Dairy matrix effects on type 2 diabetes and cardiometabolic health?

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Evidence from large observational studies and meta-analyses indicates an inverse association between dairy and body weight, body fat mass, type 2 diabetes and cardiovascular disease. The findings are supported by randomised controlled trails (RCT). However, though several of the reported RCT's show beneficial effects of dairy for cardio-metabolic effects the mechanisms by which dairy influences metabolic health are not entirely clear.

There are several reasons for that:

1. The re-assessment of role of saturated fat for cardio-metabolic diseases have clearly shown that overall total intake of saturated fat is not associated with type 2 diabetes or cardiovascular disease.
2. The saturated fatty acid effects is heavily depending on its chain length, and the saturated fatty acids in dairy seem to exert a neutral to slight positive effect on type 2 diabetes and cardiovascular disease.
3. Dairy cannot be viewed as one entity, and particular positive health effects are exerted by the fermented dairy e.g. yoghurts and cheese.
4. Most importantly, the dairy matrix i.e. the total interaction by different fatty acids, minerals like calcium, proteins and bioactive peptides produce unpredictable biological effects, which have turned out to generally to exert important health effects. Therefore, research needs to distinguish between different dairy products and health effect.
5. Recent evidence show that whether low-fat or high-fat diary are preferred for health effects entirely depends on the glycemic status of the individual e.g. normoglycemic individuals may achieve best weight control by the normal to low fat dairy whereas type 2 diabetics may benefit more from the higher fat dairy.

In conclusion, a high intake dairy is a natural part of a nutrient dense diet that provides benefits for weight control, and the prevention of type 2 diabetes and cardiovascular disease. Future research and recommendations for the public needs to observe differential health impacts of different dairy products due to the matrix effect, and personalized nutrition will be key to selecting low or high fat dairy.