



*The American Journal of Clinical Nutrition*  
July 2017 Media Alert

The following articles are being published in the July 2017 issue of *The American Journal of Clinical Nutrition (AJCN)*, a publication of the American Society for Nutrition. Full summaries and analyses are available on the [ASN website](#). Links to the articles are below. Articles published in AJCN are embargoed until the article appears online either as in press (Articles in Press) or as a final version. The embargoes for the following articles have expired.

**Protein consumption patterns related to muscle strength in older individuals**

**Recently published study finds that older individuals who include protein in breakfast and lunch, rather than mostly during the evening meal, most readily maintain their muscle strength.**

Farsijani S, Payette H, Morais JA, Shatenstein B, Gaudreau P, Chevalier S. Even mealtime distribution of protein intake is associated with greater muscle strength, but not with 3-y physical function decline, in free-living older adults: the Quebec longitudinal study on Nutrition as a Determinant of Successful Aging (NuAge study). *American Journal of Clinical Nutrition* 2017;106:113–24.

Phillips SM. Nutrition in the elderly: a recommendation for more (evenly distributed) protein? *American Journal of Clinical Nutrition* 2017;106:12–3.

**Weight loss and weakness, not obesity, predict negative outcomes in the elderly**

**Study concludes that, for older individuals, a combination of weight loss and loss of muscle strength is particularly predictive of death during a 4-year period.**

Hamer M, O'Donovan G. Sarcopenic obesity, weight loss, and mortality: the English Longitudinal study of Ageing. *American Journal of Clinical Nutrition* 2017;106:125–9.

Batsis JA, Cook SB. Is the whole not greater than the sum of its parts? The case of sarcopenic obesity. *American Journal of Clinical Nutrition* 2017;106:14–5.

**Want your child to like vegetables? Eat them while you're breastfeeding.**

**Research team at the Monell Chemical Senses Center in Philadelphia reports their findings that infants learn to like vegetables (in this case, carrots) if their mothers eat them while breastfeeding.**

Mennella JA, Daniels LM, Reiter AR. Learning to like vegetables during breastfeeding: a randomized clinical trial of lactating mothers and infants. *American Journal of Clinical Nutrition* 2017;106:67–76.

**Can increasing protein intake after surgery help with recovery?**

**Practices associated with the Enhanced Recovery After Surgery (ERAS) approach, such as increasing protein consumption during recovery, related to lower infection rate and speedier recovery after colorectal surgery.**

Yeung SE, Hilkewich L, Gillis C, Heine JA, Fenton TR. Protein intakes are associated with reduced length of stay: a comparison between Enhanced Recovery After Surgery (ERAS) and

conventional care after elective colorectal surgery. *American Journal of Clinical Nutrition* 2017;106:44–51.

Soeters PB. The Enhanced Recovery After Surgery (ERAS) program: benefit and concerns. *American Journal of Clinical Nutrition* 2017;106:10–1.

## **Protein consumption patterns related to muscle strength in older individuals**

**Background** Although current recommendations by the Institute of Medicine suggest that protein requirements remain stable as we age, emerging literature suggests this might not be true. More specifically, it appears that the amount of dietary protein needed to sustain muscle mass and strength may be higher in older individuals. In addition, some research suggests that a more even distribution of protein across the day may help older people maintain muscle mass. For instance, including protein with breakfast may be important. Understanding how much protein older individuals need, and the best pattern of daily consumption, is becoming increasingly important as life expectancies continue to increase—largely because loss of muscle mass and muscle strength can lead to frailty, falls, and serious mobility problems. This objective, however, requires rigorous and well-designed scientific investigation. The July 2017 issue of *The American Journal of Clinical Nutrition* contains such a study, which was led by Stéphanie Chevalier (McGill University, Montreal, Canada) and designed to examine whether mealtime distribution of protein intake is related to physical performance in older people.

**Study Design** The study was conducted as part of the Nutrition as a Determinant of Successful Aging (NuAge) study, a project initiated in 2003 and involving a group of generally healthy, older men and women living independently in Quebec, Canada. For the present study, data from 1741 of the participants and spanning a 3-year follow-up period were used. At the beginning of the project and annually, thereafter, muscle strength and physical mobility were assessed via measuring handgrip strength, arm strength, leg strength, and ease of standing and walking. Dietary protein intake was estimated using 24-hour recalls, which also characterized when during the day the protein was consumed.

**Results** The research findings suggest that, as expected, physical performance declined over the 3-year period, with muscle strength declining more than mobility. However, study participants who consumed their protein more evenly throughout the day had higher muscle strength at the beginning and end of the study than those, for example, eating most of their high-protein foods at the evening meal. This was true for both men and women and did not appear to be related to overall protein intake. Mobility did not seem to be affected by protein intake distribution across the day.

**Conclusions** The researchers concluded, “an even distribution of daily protein intake across meals is independently associated with greater muscle strength in older adults.” However, they remind us that this sort of observational study should not be considered the final say in terms of research findings. Long-term, well-controlled dietary intervention studies will be needed to rigorously test whether altering protein intake consumption patterns can help us maintain muscle strength as we age.



### **References**

Farsijani S, Payette H, Morais JA, Shatenstein B, Gaudreau P, Chevalier S. Even mealtime distribution of protein intake is associated with greater muscle strength, but not with 3-y physical function decline, in free-living older adults: the Quebec longitudinal study on

Nutrition as a Determinant of Successful Aging (NuAge study). *American Journal of Clinical Nutrition* 2017;106:113–24.

Phillips SM. Nutrition in the elderly: a recommendation for more (evenly distributed) protein? *American Journal of Clinical Nutrition* 2017;106:12–3.

**For more information**

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## **Weight loss and weakness, not obesity, predict negative outcomes in the elderly**

**Background** Unintentional weight loss among the elderly is associated with increased risk of illness and death, particularly when the weight loss is accompanied by reduced muscle mass and strength, a condition referred to as age-related “sarcopenia.” Sarcopenia has long been recognized as a somewhat common, progressive consequence of aging. However, recent trends related to increasing prevalence of obesity have resulted in a somewhat new phenomenon: sarcopenic obesity, characterized by loss of muscle and/or muscle strength coincident with obesity. Some studies have suggested that older individuals with the double burden of sarcopenia and obesity are at especially high risk of death in a given period of time. However, data are inconsistent in this regard. In fact, some studies suggest that obesity might protect older people from the negative effects of sarcopenia. To help shed light on this increasingly important topic, researchers at Loughborough University (Loughborough, United Kingdom) investigated whether obesity, handgrip strength, and mortality are somehow associated in 6863 relatively healthy older individuals. You can read more about this study in the July 2017 issue of *The American Journal of Clinical Nutrition*.

**Study Design** This study was conducted as part of the English Longitudinal Study of Ageing and included both men and women who were, on average, 66 years old at the beginning of the study. Between 2004 and 2005, baseline information was collected regarding handgrip strength, body weight, and height. Similar measurements were obtained 4 years later. During the 8-year follow-up, participant deaths were recorded using the national health registry. The researchers, Mark Hamer and Gary O’Donovan, then used statistical techniques to investigate whether baseline measures of muscle strength and obesity predicted risk of death during the study.

**Results** During the course of the study, 906 of the participants died. When body weight (adjusted for height) was considered by itself, being either excessively thin or obese was found to be related to increased risk of death. Handgrip strength was negatively correlated with risk of death. In other words, the strongest people were the least likely to die—regardless of their body weight. What turned out to be quite important, however, was the combination of weight and/or muscular strength loss. People who lost weight during the study were also the most likely to die; this was especially true for individuals who also lost handgrip strength.

**Conclusions** The researchers concluded that being obese did not seem to increase risk of death in individuals with sarcopenia. However, weight loss did. The scientists urge additional studies to identify effective ways to increase muscle strength in the elderly, both by dietary modification and physical activity strategies.



### **References**

- Hamer M, O’Donovan G. Sarcopenic obesity, weight loss, and mortality: the English Longitudinal study of Ageing. *American Journal of Clinical Nutrition* 2017;106:125–9.
- Batsis JA, Cook SB. Is the whole not greater than the sum of its parts? The case of sarcopenic obesity. *American Journal of Clinical Nutrition* 2017;106:14–5.

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## **Want your child to like vegetables? Eat them while you're breastfeeding.**

**Background** Vegetables are great sources of essential nutrients, and experts urge us to consume several servings of them each day. Nonetheless, vegetable consumption is quite low, and when we do eat them, we tend to eat just a handful of types—for instance, green beans, corn, and broccoli. These food habits are hard to break, in part because many adults simply don't like the taste of many vegetables. When parents don't like the taste of a food, they often don't serve it to their children. One way researchers have found of potentially breaking this intergenerational cycle is encouraging children to try a wide array of vegetables in their formative years. Indeed, many studies have shown that children who are repeatedly offered a variety of vegetables learn to like them. In an article published in the July 2017 issue of *The American Journal of Clinical Nutrition*, researcher Julie Mennella and colleagues at the Monell Chemical Senses Center in Philadelphia took this idea one step further: they asked whether infants' acceptance of vegetables could be primed during the period of breastfeeding via encouraging mothers to increase their own vegetable consumption. This potential effect was thought possible because many of the taste-promoting compounds in vegetables find their way into breastmilk when they are consumed by breastfeeding women.

**Study Design** Their study utilized the gold standard of nutrition research: a randomized dietary intervention trial. Ninety-seven mothers were assigned randomly to consume either water (control group) or carrot, beet, vegetable, and celery juices from 2 to 14 weeks postpartum or just for 4 weeks during this interval of time. After the infants were weaned (when they were around 8 months old), their acceptance of plain, carrot-flavored, and broccoli-flavored infant cereals was characterized. Note that in this scenario, the broccoli flavor was considered novel because the mothers had not been consuming broccoli juice as part of the study. The researchers evaluated whether the addition and timing of the vegetable juices in the mothers' diets had influenced the children's vegetable preferences. Mennella and her team also measured how the mothers' liking of the taste of the vegetable juices changed over time.

**Results** Infants whose mothers consumed the study juices from 2 to 6 weeks postpartum were the most accepting of the carrot-flavored cereal, and regardless of when the exposure occurred, infants whose mothers had consumed the various juices were less likely to display facial expressions of distaste initially when offered the carrot cereal. This didn't translate to acceptance of the novel broccoli-flavored cereal, however. The mothers grew to like the taste of the vegetables as well, but their vegetable intake did not increase over time.

**Conclusions** The researchers concluded that early life is an especially optimal time for infants to learn to like the taste of healthy foods such as vegetables. The real test, however, is whether this translates to greater and more-varied intake of vegetables during childhood and beyond.



### **Reference**

Mennella JA, Daniels LM, Reiter AR. Learning to like vegetables during breastfeeding: a randomized clinical trial of lactating mothers and infants. *American Journal of Clinical Nutrition* 2017;106:67–76.

### **For more information**

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### **Can increasing protein intake after surgery help with recovery?**

**Background** Consuming sufficient protein is always important, but there are times when not getting enough has even more profound impacts. For instance, protein deficiency during early life can depress the immune system, increase disease risk, and lead to permanent growth stunting. Protein is also particularly important during the healing process, for instance after undergoing surgery when the body's tissues are rebuilding and repairing. For decades, however, standard-of-care following surgery has been to provide only minimal nutrition, especially protein and particularly after intestinal surgery. This was largely because of the belief that the intestine is not ready to digest and absorb much food after a traumatic event like surgery. In addition, post-surgical patients often have diminished appetites. This approach, however, has changed recently with implementation of the "Enhanced Recovery After Surgery" (ERAS) program, which encourages earlier and more substantial feeding after surgery. In an article published in the July 2017 issue of *The American Journal of Clinical Nutrition*, a research team led by dietitians Sophia Yeung and Leslee Hilkewich (Alberta Health Services, Calgary, Canada) reports the results of a study they conducted to determine if there are benefits of this newer approach on outcomes such as length of hospital stay.

**Study Design** Their study was conducted at 2 hospitals in Calgary (Canada). While one of the hospitals continued to use more traditional postoperative care, the other followed practices of the ERAS program. A total of 46 and 69 patients undergoing in-patient elective colorectal surgery were in each of the hospitals. Food and nutrient intakes were carefully recorded, as were other important factors such as length of hospital stay, readmissions, nausea, vomiting, first postoperative flatulence, bowel movements, and complications.

**Results** The research team found that, although oral food intake did not differ between the groups, total protein intakes were higher in the participants being cared for using the ERAS approach. This was because ERAS guidelines encourage patients to consume nutrition drinks after surgery. The ERAS group also had shorter hospital stays after surgery and fewer infections. Higher consumption of protein (at least 60% of estimated requirements) in the first 3 days after surgery was associated with a 4-day shorter hospital stay.

**Conclusions** The researchers concluded that protein intake by many patients after bowel surgery is inadequate and that consuming more protein during this time might offer substantial benefits. However, they also point out that their study focused on only 2 hospitals—each with slightly different procedures, which might have confounded the study's results. Future studies assessing the nutritional benefits (or lack thereof) of ERAS should either try to randomly assign patients within a single hospital or randomize several hospitals to use ERAS or more traditional standards of postoperative care.



## References

Yeung SE, Hilkewich L, Gillis C, Heine JA, Fenton TR. Protein intakes are associated with reduced length of stay: a comparison between Enhanced Recovery After Surgery (ERAS) and conventional care after elective colorectal surgery. *American Journal of Clinical Nutrition* 2017;106:44–51.

Soeters PB. The Enhanced Recovery After Surgery (ERAS) program: benefit and concerns. *American Journal of Clinical Nutrition* 2017;106:10–1.

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