

1.	<b>Can be tricky to get the extra nutrients required with the lower energy requirements of aging, certainly they need good dietary advice to achieve this- good way to promote the need for a sports dietitian</b>
	<p>Answer: Total energy expenditure (TEE) is determined by the combined energy costs of resting energy expenditure (REE), thermic effect of food (TE) energy costs of physical activity. Population level research suggests that there is an age-related decrease in each of these components. However, are these declines related to ageing per se or age-related reductions in activity levels and lean mass. Few studies have examined each component of TEE in masters athletes. However, <a href="#">Sullo and others (2004)</a> suggest that REE is higher in masters athletes with higher VO<sub>2</sub>max compared to those with lower VO<sub>2</sub>max and that REE was correlated with VO<sub>2</sub>max. This is consistent with increases in REE being observed in older men, and both younger men and women after a resistance training program. Regardless, VO<sub>2</sub>max even in well-trained masters endurance athletes does decline with age, suggesting REE also declines. TE also declines with age although the data is equivocal. Sullo and others (2004) reported higher TE in masters runners with higher VO<sub>2</sub>max values but these were not statistically different to the values observed in runners with lower VO<sub>2</sub>max values. The third component of TEE is the energy cost of exercise and activity. While one of my masters students observed no age-related differences in weekly cycle training in veteran cyclists (Macgregor, ACSM, 2013), research would suggest that the absolute intensity of this training and thus the energy costs would be lower than younger athletes as a result of the well-observed age-related decrease in VO<sub>2</sub>max. Thus, while TE may decline in older athletes, the decline will depend greatly on the type of training (endurance vs resistance), intensity (vigorous vs moderate), frequency and duration of training. Bottom line is work individually with each athlete and ensure high quality, nutrient dense foods that meet the evidence-based athlete guidelines.</p>
2.	<b>Can you recommend a good multi vitamin/mineral for masters athletes or general athletes?</b>
	<p>Answer: Re a brand, no. I always look for the cheapest or ones on sale. I also eat a healthy and (hopefully!) well-balanced diet so simply 'cover my butt' by using a multi-vitamin/multi-mineral capsule once a day when in serious training. Emphasis on the water solubles (B and C) and antioxidant vitamins A, C and E, especially in masters endurance athletes given age-related decreases in the immune system and the demands of endurance training.</p>
3.	<b>My understanding (at the moment) is that the capacity to produce maximal muscle protein synthetic responses in older individuals appears similar to younger individuals. However, they seem to require greater relative protein intakes to elicit this response. Given that older athletes (broadly speaking) will eat less protein – do you see a greater role ahead for the use of protein supplements in older athletes?</b>
	<p>Answer: Great question. Anabolic resistance appears an issue in older adults. Thus, <a href="#">research</a> suggests that the stimulation of net protein balance following exercise and protein intake is blunted compared to younger adults. Furthermore, <a href="#">research</a> suggests there is also greater retention of amino acids (AA) in younger vs older adults at lower levels of AA ingestion. However, when larger amounts of essential AA are used, the blunting of response is not seen in older adults (<a href="#">Symons et al., 2007</a>). So in answer to your question, yes, it might be argued that protein supplements (NB whey protein which has higher leucine content) might be more beneficial in older athletes, particularly those undertaking higher intensity training such as resistance and sprint or interval training. Is a cheaper option to use dairy products more in</p>

	these older athletes, as long as they don't have CVD issues.
<b>4.</b>	<b>Do you recommend protein powders for the whey protein benefit and higher protein needs or go more just for foods?</b>
	Answer: As above, whey protein and its associated higher leucine content has been shown to have greater benefit in stimulating muscle protein synthesis following resistance exercise in older non-athletes. Moreover, whey is absorbed faster than casein protein. Critically, Stu Phillips lab at McMaster Uni in Canada has shown, that older adults get enhanced muscle protein synthesis with 40g vs 20g of whey protein. This contrasts with younger adults who appear to plateau in protein synthesis at 20g of whey. As above, cheaper options may be dairy products except for those masters athletes who have CVD or lactose intolerance issues.
<b>5.</b>	<b>Thanks for the great talk Peter. I wondered why the 5-10min post-training window is pushed with masters athletes, and whether it'd be worth promoting a well-balanced pre-training meal instead, so that peak absorption rates/insulin release might be reached more immediately post-exercise?</b>
	Answer: Same reason as with CHO intake. Larger boluses of protein maximises AA absorption and thus AA plasma concentrations. This is suggested to be more important in older athletes who are suggested to be more anabolic resistant than younger athletes.
<b>6.</b>	<b>Can I ask if there is one multivitamin brand that you recommend?</b>
	Answer: Re a brand, no. I always look for the cheapest or ones on sale. I also eat a healthy and (hopefully!) well-balanced diet so simply 'cover my butt' by using a multi-vitamin/multi-mineral capsule once a day when in serious training. Emphasis on the water solubles (B and C) and antioxidant vitamins A, C and E, especially in masters endurance athletes given age-related decreases in the immune system and the aerobic demands of long duration and/or intense endurance training.
<b>7.</b>	<b>Do you have any advice for those female athletes who are going through menopause - especially as their hormonal levels change and fat metabolism is altered? Body comp maintenance is always something that these athletes often struggle with...</b>
	Answer: Given the menopause-related decrease in oestrogen there is obviously a decrease in BMD. This highlights the need to maintain Ca (> 1200 mg/day) and Vit D (> 800 IU/day) intakes/sun exposure PLUS weight-bearing (as opposed to swimming and cycling that both have been shown to be non-osteogenic). Ca supplementation appears to have a greater effect on cortical bone loss than trabecular bone loss and to be far more effective 5 years post-menopause. Interestingly, calcium citrate malate supplementation appears to be better absorbed than calcium carbonate in post-menopausal women with low Ca intakes. A note of caution, there is some evidence to suggest that increased Ca intake can result in a negative zinc balance and negatively impact on dietary iron absorption. Thus, in menopausal and post-menopausal endurance athletes supplementation of these minerals might be suggested. Two reviews that might help more are <a href="#">here</a> and <a href="#">here</a> .
<b>8.</b>	<b>Can you recommend a good multi vitamin/mineral for masters athletes or general athletes?</b>
	Answer: See question 2.