

Fruit and vegetable intake in Royal Naval Personnel: Effects of deployment at sea and associations with body composition and net endogenous acid production

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Fruit and vegetable (F&V) consumption is associated with reduced risk of chronic disease and decreased diet acidity.^(1,2) Research into F&V intake in the UK Armed Forces is limited.

Food diaries (4-day) were completed by (*n* 57) volunteers pre and during an operational sea deployment on two Royal Navy (RN) Type 45 ships (*HMS Dauntless*, *HMS Daring*). F&V intakes were assessed from the food diaries using the National Diet and Nutrition Survey methods that included composite foods.⁽³⁾ Net endogenous acid production (NEAP) was calculated from protein and potassium intakes using a NEAP equation.⁽⁴⁾ Body mass, height, BMI, skinfolds, handgrip and static lift strength were also measured pre deployment.

Fruit intake including juice ($P < 0.01$) and total fruit intake excluding juice ($P < 0.01$), but not vegetable intake, were lower during deployment compared with pre deployment. This difference was due to a decrease in the intake of fresh and canned fruit ($P < 0.01$) (Table 1). This finding was explored in terms of age. Younger (aged 16–29 years) volunteers had a lower intake of fresh and canned fruit pre and during deployment in comparison with older (30–45 years) volunteers ($P < 0.01$). Furthermore, the fresh and canned fruit intakes of younger volunteers decreased between pre (68 g.d⁻¹) and during (32.7 g.d⁻¹) deployment ($P < 0.01$), but were maintained in older volunteers (pre: 118.8 g.d⁻¹; during: 98.2 g.d⁻¹, NS). Estimated NEAP was inversely associated with total fruit and vegetable intakes pre deployment ($r = -0.338$, $P < 0.01$), but not during ($r = -0.226$, $P = 0.09$). There was no difference in fruit and vegetable consumption between males (*n* 46) and females (*n* 11).

Table 1. Differences in Total Fruit and Vegetables Intakes Between Pre and During Deployment in Royal Navy Volunteers

| Deployment Time | Total fruit and vegetables including juice (g.d ⁻¹) | | Total fruit including juice (g.d ⁻¹) | | Fresh and canned fruit (g.d ⁻¹) | |
|-----------------|---|-------|--|-------|---|------|
| | Mean | SD | Mean | SD | Mean | SD |
| Pre | 294 | 152.3 | 120.9 | 112.7 | 88.6 | 82.5 |
| During | 255 | 171.7 | 85.6 | 99.4 | 59 | 80.7 |

Fruit intakes decreased during deployment in younger – but not older – volunteers. This would suggest that it was not a lack of provision *per se*, but perhaps reflected the food choices made by younger volunteers that limited their fruit intakes. Initiatives to promote fruit and vegetable intake in younger personnel – especially whilst deployed – should highlight the important link between diet and physical (military) capability.

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2. Welch AA *et al.* (2008) *British Journal of Nutrition* **99**, 1335–1343.

3. Lennox A *et al.* (2012) National Diet and Nutrition Survey. <https://www.wp.dh.gov.uk/transparency/files/2012/07/Appendix-A-Dietary-data-collection-and-editing.pdf> (accessed: 25/02/2013)

4. Frassetto LA *et al.* (1998) *American Journal of Clinical Nutrition* **68**, 576–583.