

## Fruit and vegetable intake during Royal Marine training

T. Davey<sup>1</sup>, N. Lilley<sup>2</sup>, B. Caffrey<sup>2</sup>, E. King<sup>2</sup>, K. Buckley<sup>2</sup>, D. White<sup>2</sup>, A. Payne<sup>2</sup> and J. L. Fallowfield<sup>1</sup>

<sup>1</sup>*Institute of Naval Medicine, Crescent Road, Alverstoke, Gosport, Hants PO12 2DL and* <sup>2</sup>*Dept. of Dietetics, University of Plymouth, Peninsula Allied Health Centre, Derriford Road, Plymouth, PL6 8BH, UK*

Royal Marine (RM) recruit training is widely acknowledged to be one of the most physically arduous military training programmes. Prolonged intense physical exercise suppresses immune function<sup>(1)</sup>, exposing individuals to an increased risk of infection, particularly upper respiratory tract infections (URTI).<sup>(2)</sup> The intake of certain micronutrients is important for maintaining immunity and reducing the risk of URTI.<sup>(3)</sup> However, the intake of whole foods, such as fruit and vegetables, relative to short-term infection risk has not been well studied. The aim of the present study was to assess the intake of fruit and vegetables during RM recruit training, and to evaluate associations with illness and training outcome.

RM recruits commencing training at the Commando Training Centre (CTC), Royal Marines, Lympstone, Devon, UK, were given an initial study brief, after which 545 recruits (aged 16–32 y) consented to participate in the study. Dietary intake was recorded using the *Food Record Card* (FRC)<sup>(4)</sup> over four days (including one weekend day) at the *Start*, *Middle* and *End of Training*. Illness data were collated from the CTC Medical Centre.

The intake of fruit and vegetables is presented in Table 1. The most common type of fruit and vegetable was baked beans, with 49% of recruits consuming baked beans at least once per day (though a maximum of one portion was counted towards the total vegetable intake). Thirteen percent of recruits reached the general population guidelines of at least five portions of fruit and vegetables per day at the *Start of Training*.<sup>(5)</sup> This rose to 19% at the *Middle of Training*, but declined to 7% at the *End of Training*. The median combined intakes of fruit and vegetables during RM training were lower than that reported for the general population (aged 19–64 y) (3.0 portions.day<sup>-1</sup> at the middle of RM training vs. 3.7 portions.day<sup>-1</sup> for the general population).<sup>(6)</sup>

**Table 1.** Portions of fruit and vegetables during RM training: Median (Range)

	Stage of RM Training		
	Start (n = 525)	Mid (n = 292)	End (n = 187)
Fruit	0.3 (0–4.0)	0.0 (0–7.0)	0.0 (0–4.0)
Vegetables	2.3 (0–10.7)	2.7 (0–11.8)	2.0 (0–8.0)
Combined fruit and vegetables	2.6 (0–11.7)	3.0 (0–11.8)	2.0 (0–8.0)
% of recruits consuming 5-a-day	13%	19%	7%

Fruit and vegetable intake was not associated with the risk of suffering an infection during RM training or with training outcome. Recruits should be encouraged to increase fruit and vegetable consumption to improve long-term health in line with general population guidance.

© Crown Copyright (MOD) 2013: Published with the permission of the Controller of HMSO.

- Nieman DC, Johanssen LM, Lee JW, Arabatzis K (1990) *J Sports Med Phys Fitness* **30**, 316–28.
- Walsh NP, Gleeson M, Shephard RJ, Woods JA *et al.* (2011) *Exerc Immunol Rev* **17**, 6–63.
- Gleeson M, Nieman D & Pedersen B (2004). *Journal of Sports Sciences* **22**(1), 115–125.
- Davey T, Delves SK, Allsopp AJ, Lanham-New SA, Kilminster S, Fallowfield JL (2010) *Proc Nutr Soc* **69**(OCE1), E64.
- Change4Life: <http://www.nhs.uk/Change4Life/Pages/five-a-day.aspx>
- National Diet and Nutrition Survey. Headline results from years 1,2 and 3 (combined) of the rolling programme (2008/2009–2010/2011)