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Are meal replacements an effective strategy for treating obesity in adults with features of metabolic syndrome?

M Noakes, PR Foster, JB Keogh, PM Clifton
CSIRO, Health Sciences and Nutrition, Adelaide, SA, 5000

Background - Meal replacements as a weight loss strategy are widely used, however their effectiveness outside controlled clinical trial environments is unknown.

Objective - To compare meal replacements with a structured weight reduction diet in overweight/obese Australians with raised triglycerides.

Design - In a randomised parallel design, 2 groups [Meal Replacement (MR) and Control (C)] of 66 matched subjects underwent a 6000kj intervention for 3 months (stage 1) and a further 3 months (stage 2). Groups were provided oral and written information. C was supplied shopping vouchers and followed a low fat/energy diet. MR was supplied Slimfast™ product for two meals (1800kj) and consumed a low fat evening meal. Clients were weighed every 2-wk, received structured supervision without professional dietary input, with compliance assessed by 3d-weighed food records. Blood biomarkers assessed fruit/vegetable intake and questionnaire assessed attitudes to treatment.

Outcomes - Fifty-five subjects completed stage 1 and 42 stage 2. Mean weight loss was comparable in both groups at 3 months (6.0±4.2 kg ± sem MR, 6.6±3.4 kg C) and at 6 months (9.0±6.9 kg MR, 9.2±5.1 kg C). Serum folate and plasma β-carotene were higher in MR, and plasma homocysteine fell in both groups. Diets were nutritionally adequate in both groups, but some nutrient intakes were higher in MR than C. The MR program was viewed by subjects remaining in the study as acceptable and convenient, thereby aiding compliance.

Conclusions - A meal replacement program is equally effective for losing weight compared to a conventional but structured weight loss diet. Meal replacements offer a convenient and potentially nutritionally beneficial weight loss alternative than conventionally structured weight loss diets.

Determining the energy requirements of army recruits

CH Forbes-Ewan, BJ Skiller, CK Booth, RA Coad
Defence Nutrition, Defence Science and Technology Organisation, Scottsdale TAS 7260

Background – The Australian Army's recruit training course was reduced recently from 12 weeks to 45 days, leading to a substantial intensification in training tempo. On most days recruits are active from 0600 to 2200 h. The course is both physically and psychologically demanding. Anecdotal reports of excessive fatigue among recruits led senior staff at the Army's Recruit Training Centre to question the adequacy of the food provided to recruits.

Objective – To determine whether or not the quantity and nutritional quality of food available to recruits is sufficient to meet their energy requirements.

Design – Total energy expenditure (TEE) was estimated by the factorial method. This involved making detailed observations of the timing and nature of physical activities, assigning values obtained from the scientific literature¹ for their energy cost, and then summing to estimate daily TEE. Several days' activities were observed, including days of relatively low-intensity, moderate-intensity and high-intensity physical activity.

Outcomes – On average, male recruits were found to expend ~17 MJ and female recruits ~13 MJ per day. The gender-weighted mean TEE, based on the ratio of females to males (15:85), was calculated to be 16.5 MJ/day. The current Army entitlement to food provides ~17 MJ per person per day. Using this figure, and an estimated value for food wastage, it is estimated that the recruits mess provides between 15 MJ and 16 MJ of energy intake per recruit per day. However, during their training, recruits also have access to several other food sources.

Conclusions – Taking all food sources into account, it is concluded that the total food available to recruits provides sufficient energy to sustain them through the Army's 45-day recruit training course.

1. Ainsworth BE, Haskell WL, Whitt MC, et al. Compendium of Physical Activities: an update of activity codes and MET intensities. *Med Sci Sports Exerc* 2000;32(9):S498-S516.