(serum vitamin B_{12}, C, and folate concentrations) and dietary intake of these nutrients in these two ethnicities. The mean age of the participants was 74.1 years. 32% of the Hispanics took daily multivitamin supplements compared to 48% of NHW. Using multivariate logistic regression adjusting for use of vitamin supplements, age, gender, household income, and dietary intakes of these vitamins, Hispanics had lower serum concentrations of B_{12} ($p<.05$), C, and folate ($p<.001$) mentation had lower B_{12} and folate concentrations than those not on H_2 blockers for each ethnic gender group, but none of these differences were statistically significant. Conclusions: Unsupplemented Hispanics and males had lower serum concentrations of B_{12}, C, and folate, and were less likely to take vitamin supplements than were NHW and females, respectively.

Abstract 60

EFFECT OF LONG-TERM VITAMIN-MINERAL SUPPLEMENTS ON IMMUNE RESPONSE IN OLDER HEALTHY ADULTS.

Spiller G, Whittam J, Bruce B, Morse S, Chernoff M, Jensen C. Health Research and Studies Center, Los Altos, CA USA; Shaklee Technica, San Francisco, CA USA.

Infection-related illness (IRL) in healthy elderly adults has been shown to be lower when a vitamin-mineral supplement (VM) is compared to a very low dose calcium-magnesium supplement (Chandra, Lancet 340:1124, 1992). We compared for 1 year in 39 healthy men and women over 60 years old the effect of a VM with 1400 mg of calcium and 400 IU of vitamin D (Group 1) to controls taking only 1400 mg of calcium and 400 IU of vitamin D (Group 2).

	Subjects	First semester days ill	Second semester days ill	All year days ill
Group 1	19	4.05	5.26	9.31
Group 2	20	8.25	17.95	26.20
p value		0.109	0.030	0.013

IRL was significantly lower for Group 1 than Group 2 for the entire year. While IRL were lower for the first semester, the difference between groups was not statistically significant. Serum folate (+9.04 ng/mL, $p<0.01$) and serum vitamin A (+16.35 μg/dl, $p<0.01$) were higher for Group 1 after 1 year. Folate (−0.47 ng/mL) and zinc (−0.37 μg/L) correlated negatively with days of illness ($p<0.05$): the higher the level of folate and zinc, the fewer days of illness. T-cells percent at the end of 1 year was positively correlated with days of illness ($p<0.0045$), as were the levels of helper-inducer T-cells ($p<0.06$) and suppressor-cytotoxic T-cells ($p<0.06$). Long-term VM supplementation with all known essential nutrients seems to protect older adults against IRL.

Abstract 61

ABRUPT CESSATION OF NUTRITIONAL SUPPLEMENTATION INCREASES RISK OF UPPER RESPIRATORY TRACT INFECTION AND MUSCULAR-SKELETAL INJURY.

Arsenault J, Keyton C, Kennedy J. U.S. Army Research Institute of Environmental Medicine, Natick, MA USA; Rowe Training Facility, Troop Medical Clinic, Ft. Bragg, NC USA.

The purpose of this study was to determine if there was an association between the use of 'over-the-counter' nutritional supplements prior to an arduous US Army Special Forces training course and upper respiratory tract infections (URTI) and muscular-skeletal injuries (MSkI) during the course where supplementation is not allowed. A survey was administered to 1237 males ($\bar{x}$=26 years, range=19 to 45 years) consisting of questions on demographics, health habits, and use of supplemental vitamins, minerals, pro-performance powders or amino acids. Medical records of health clinic visits during the course were reviewed by two separate medical reviewers to identify URTI and MSkI. Only those soldiers who completed the entire course were included in the analysis of risk (n=596). Risk ratios were calculated for URTI with associated nutrients, and it was found that those who had taken vitamin C (RR=1.5) and zinc (RR=1.7) had significantly higher risk of URTI than non-users ($p<0.01$). Similar analyses were conducted with MSkI, and soldiers who had taken pro-performance (RR=1.3), amino acid mixes (RR=1.4), and creatine (RR=1.3) had significantly higher risk than non-users ($p<0.05$). Logistic regression analysis revealed that frequent use of vitamin C (1–7 times/week) was significantly associated with URTI ($p=0.01$), controlling for smoking, rank, alcohol use and time of year. These findings demonstrate that there are health risks associated with abrupt cessation of supplements in young, healthy US military personnel. Research needs to be conducted to assess whether there are additional risks associated with consuming 'over-the-counter' nutritional supplements.