INTRODUCTION
Stress fractures, overuse injuries to bone, are the most common and debilitating overuse injuries seen in military recruits. In recent years the U.S. Military Services have decreased the incidence of stress fractures in military recruits by making changes to basic training. However, stress fractures still occur in 0.2-5.2% of male recruits and 1.6-21.0% of female recruits. The rates for female recruits are consistently higher than for males. Stress fractures, which occur when bones are repetitively loaded over short periods without sufficient time for repair, cause morbidity ranging from pain to permanent disability for the recruits. In addition, these injuries incur considerable expense for the Military. Stress fractures are also problematic for non-military athletic populations. The highest incidence rates, ranging from 10-31%, are seen in members of track and field teams. (2,3)

METHODS
During approximately 24 months of study recruitment, 14,416 females entered basic training at the Great Lakes Naval Training Center, Great Lakes IL. The recruits were approached during one of the first days of processing and invited to participate in the research project. We enrolled 5201 female recruits who volunteered for study and randomly assigned them to treatment (2000 mg calcium and 800 IU vitamin D/day) or to control (identical placebo). During the eight weeks of training, participants were asked to take four supplement pills/day made available to them. During the eight weeks of training, participants were asked to take four supplement pills/day made available to them. To monitor pill taking, project staff observed the galley food lines, visited recruits in their quarters, and conducted an exit interview. At baseline, participants completed a risk factor questionnaire. Stress fractures were ascertained when recruits reported to the clinic with symptoms. All stress fractures were confirmed with radiography or technetium scan according to the usual Navy protocol. The project was approved by three Institutional Review Boards: Creighton University, Naval Institute for Dental and Biomedical Research, and the U.S. Army Medical research and Materiel Command. All study participants gave written informed consent.

RESULTS
Fisher’s Exact analysis found that the calcium/vitamin D group had a 27% lower incidence of stress fractures than the control group (6.8% vs 8.6% respectively, p=0.02). In the placebo group, those who reported a history of weight-bearing physical activity at least three times every week or most weeks had a significantly lower risk of stress fracture than those who reported less activity (RR 0.6, p=0.003). This effect was not seen in the treatment group.

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REFERENCES

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