

1. Title: Navy Boot Camp: changes in test scores following 2 hr increase in sleep time
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3. Introduction: Colleges and high schools have been starting classes earlier than in past generations for numerous reasons, such as providing an earlier start for extracurricular activities. The cost of this trend is that it forces students to get up earlier, thereby reduce the total number of hours in bed. Educational institutions within the military are no exception. At Recruit Training Command (RTC), the boot camp for the Navy, reveille sounded at 5:30am for many decades until being moved back to 4:00am during the past generation. However, in early 2002, after several briefings by Navy sleep researchers to leaders of RTC on the sleep needs of young people joining the Navy, RTC extended sleep for a reveille at 6:00am, effectively delaying the start time of daily exercises and courses by two full hours. Recruits now are allotted eight hours for sleep time. This project is a subsample of a large scale retrospective analysis on how recruits are affected by this two hour extension of sleep.
4. Methods: We examined standardized tests scores at RTC during the last two years when only six hours of sleep was allowed and compared to the first full year where recruits were allowed eight hours of sleep. Specifically, we collapsed the first eight months of test scores from year 2000 and 2001 and compared with the first eight months of 2003. The year 2002 was not examined due to a transition period of the new rest schedule. Additionally, we controlled for recruit ASVAB scores (standardized entry test scores) in case there were differences in quality of recruits over the past three years.
5. Results: Overall test scores for the eight hour sleep group were significantly higher than the two separate years for the six hour groups ($p < .001$). There were no significant score changes between years 2000 and 2001, the years where recruits slept no more than six hours. We also found no significant differences in ASVAB scores across all three years.
6. Conclusions: This is the first retrospective analysis of the dramatic sleep time changes that occurred at Recruit Training Command, Great Lakes. Our data indicates that recruits are performing at a higher level now that they are given eight full hours for sleep versus six. This is based on the significant improvement on test scores during the calendar year 2003 as compared to both year 2000 and 2001. Based on ASVAB scores, there have been no changes in scholastic ability in recruits during the same period. Since the literature indicates that young people who typify the new naval recruit (age 18-20) require at least 9+ hours of sleep, we conclude that this performance gain is based on the changes at RTC regarding the two full hour extension of sleep time during the past year.