A COMPARISON OF POLYGRAPHIC AND ACTIGRAPHIC MONITORING OF SLEEP USING A 5-CHANNEL PROGRAMMABLE-SENSITIVITY ACTIGRAF

ANNUAL REPORT

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1. MIPR No.: 91MM1505
2. Report date: 26 Nov 91
3. Reporting period: 15 Nov 90 to 14 Nov 91
4. P.I.: Timothy F. Elsmore
5. Telephone No.: (619) 532-6174
6. Agency: Naval Health Research Center
7. Project title: A comparison of polygraphic and actigraphic monitoring of sleep using a 5-channel programmable-sensitivity actigraph
8. Current Staff, with percent effort:
   Timothy F. Elsmore (25%)
   Paul Naitoh (5%)
9. Approximate expenditures to date:
   Personnel 0K
   Supplies 0.5k
   Travel 1.5K
   Other 0K
   Equipment 30K
   Contracts 15K (student)
10. Comments on administrative and logistical matters: All necessary equipment for this study has been ordered and delivered. However, Precision Control Designs, the company that manufacture the model AMA-32 actigraph, has indicated that the units shipped are not fully functional. They will not as yet permit programmed changes in amplifier settings, and must be programmed off-line to record activity data using a single set of parameters. They have indicated that our units will be upgraded to a fully functional state as soon as possible. As of the end of the fiscal year, no upgrades have been announced.
11. Scientific progress: Initial studies with the AMA-32 actigraph have begun. Continuous recordings have been made in a sleep deprivation study in which subjects are allowed to nap for one hour after approximately 40 hours of continuous wakefulness. In these studies, the actigraphs' sensitivity was set to mimic the older AMA-16 actigraph. Comparisons of activity measurements and polygraph sleep records during the naps is beginning. A program permitting graphical output of the activity records, as well as a crude filter for discriminating sleep from non-sleep based on the activity data has been developed. Additional software development for analysis of the AMA-32 actigraph records is in progress. Progress on this project has been slowed due to both to a lack of subjects and to requirements to devote the resources of the sleep lab to other ongoing studies in which actigraphs may not be used.
12. Plans for the next quarter: Actigraph recording will be expanded to full-night recording at each of several different
levels of sensitivity by using multiple actigraphs on each subject. A range of algorithms for correlating the activity records with polygraph records will be explored. This will permit evaluation of the AMA-32's utility in evaluation of sleep quantity and quality.