



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

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Project Title Effects of Exercise on Human Circadian Rhythm and Biological Clock	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The most important thing to a teenager is sleep. We want to get as much of it as possible. On school nights, we are frequently up past midnight with schoolwork, sports and extra-curriculars. On weekends, we would like to rise past noon, but some of us seem to possess a biological clock that wakes us up at around the exact same time every day. This project looks at how many people have biological clocks and whether exercise affects their biological clock and sleep cycle.</p> <p>Methods/Materials To gain this information, we had teenage participants record the time they slept, the time they woke, the days they used an alarm clock (if at all), and the amount of weekly exercise they did over the period of 31 days, January 1st to 31th.</p> <p>Results At the end of the month, we collected this data and determined that sophomores who exercised 4-7 hours a week possessed more constant sleep cycles than those who did exercised more or less. However, the presence of a biological clock was seemingly random among the participants and exhibited no correlation to the amount of exercise one gets.</p> <p>Conclusions/Discussion After completing this experiment we concluded that increasing the amount of weekly exercise does not necessarily make one's sleep cycle more constant. Rather, exercising between the interval of 4 to 7 hours per week proved to result in a more balanced schedule for the subjects of our experiment. In this way they had very stable sleep cycles over the course of the experimental month compared to those who exercised less or more. Since there was no correlation between the weekly hours of exercise and a subject's biological clock, we concluded that exercise did not show any trends for the biological clock data set.</p>	
Summary Statement We experimented to see if increasing amount of weekly exercise made a human's biological clock and sleep cycle more constant. .	
Help Received Ms. Kuei (teacher) gave us feedback. Parents provided materials such as board.	