CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
J1016

Project Title
The Posture Genie: "Better Posture, One Buzz at a Time"

Abstract

Objectives/Goals
My objective is to examine whether awareness of incorrect posture, communicated through as reminders, will induce a postural improvement among humans of all ages. Hypotheses:1)Posture Genie device helps users build an awareness of incorrect posture through persistent reminders generated by the device when they slouch. 2) Prolonged use of Posture Genie results in progressive and sustained improvement in overall posture and health.

Methods/Materials
The Posture Genie is a smart programmable device built to track and warn when you deviate from your correct posture. Posture Genie's base circuit is constructed with various chips, such as a Triple Axis Accelerometer and Piezo Vibration Motor. To use the device, attach it your shirt using a magnet. Position yourself in your best posture. By pressing the button, the device will buzz three times confirming calibration of your correct posture. The Posture Genie will gather your data and report your time in minutes per hour spent with good posture vs not. Use Posture Genie for one 12-hour period without vibrations to record your normal posture as a baseline. After, use the device for multiple 12-hour periods until you observe noticeably reduced or zero vibrations over contiguous periods.

Results
Posture Genie experiment was conducted among various users from wide range of age groups. Our experiment included 3 device trials for 12-hour periods excluding the baseline period. Subject A representing an age group of 10-20 years had an average of 56% increase in GPM(Good Posture Minutes) compared to baseline. Subject B, aged between 40 and 50 years had a 54% GPM. Subject C in 30 to 40 years age range had a 59% increase. Subjects E and F represented an older age range of 60-70 years who had a 44% increase. Without vibration reminders from Posture Genie they had an average of only 13 GPM per hour. But using the device in 3 experiments showed a 220% increase in GPM to an average of 28.6 minutes.

Conclusions/Discussion
The results of the experiment confirmed hypothesis #1 that use of The Posture Genie resulted in improving overall posture of users by increased awareness of their incorrect posture through persistent reminders. Results of the extended experiment on all subjects provides strong evidence to prove hypothesis #2 that use of Posture Genie provides progressive improvement and sustenance of good posture by a consistent increase in GPM.

Summary Statement
I used the Posture Genie device to test whether reminder and observation of postural imbalance can induce postural improvement and better health and body conditions.

Help Received
I built the circuit with the help of Shenzhen Ding Hao electronics in providing me with my basic circuit. My got help with the programming of the app. The subjects who volunteered in this project also helped in proving my experiment.