Healthy Posture Monitor (HPM)

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Problem: Surveys carried out in US and UK showed that 80% of population experience back pain at least once in their lives. Other studies showed that neck pain affects 45% of today's workers. Moreover, statistics in UK showed that over 40% of school students suffer from back pain mainly due to the unhealthy carrying of their bags. Bad body posture is one of the main causes of back, neck a0nd shoulders pain. Purpose: This project aims at designing an efficient and affordable wearable device to reduce people's slouching time and to improve users' posture in order to prevent the various consequences of bad posture. It is connected wirelessly to a software control panel to adjust main settings, change working mode (back, neck or bag) and record posture readings. Method: Arduino UNO microcontroller was attached to 3-axis accelerometer sensor, Bluetooth module and small vibration motors. Working on an ArduinoC code, the UNO compares the X axis readings to the healthy slope range. If it's over a user-defined slouching angle for 10 seconds, 3.3V power will be released to the vibration motors to alert the user, and Bluetooth signals will be sent to the HPM control panel. Which is a software developed for mobile phone and pc use, using Microsoft visual studio, based on reading and writing via serial port connection. Conclusion: This device will help people to maintain a healthy body posture with correct spine standing and therefore relaxed muscles. HPM could be adjusted to be used in different positions and settings in the way that serves the user the most; As it can be used in school bags to alarm children of unhealthy posture, around the neck and for the back.

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