Biofeedback for the States of Anxiety and Stress Through Automated Detection Processes

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The purpose of this research is to design, implement and apply biofeedback techniques in order to reduce anxiety and stress states, through automatic detection procedures using different technologies constituted by a system formed by a prototype based on a set of "Arduino" microcontrollers. Its first stage monitors anxiety and stress levels by measuring variable temperatures and the galvanic response of the skin. This is controlled using the Android operating system, which interprets the data obtained, analyzing the data sent from an "Arduino Uno" plate and displaying them through an application, using the App Inventor platform. It then receives the signals of anxiety and stress levels using radiofrequency waves through Bluetooth technology, so that users can self-regulate their levels of anxiety and stress through their mobile devices. We experimented with a group of 50 students who were given a standardized anxiety test and our prototype. Both measurements made it possible to identify high levels of anxiety and stress, the same group applied the different techniques of biofeedback implemented: One module - "Dance Anti stress Pad Revolution" to provide anti stress body dynamics, as well as the application of chromotherapy through an artificial Neural Network, using the Multilayer Perceptron algorithm and the App implemented with various resources. The results obtained were satisfactory, since the levels of anxiety and stress were considerably reduced using the biofeedback techniques application.