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ECE 387 A - Embedded Systems Design

13 March 2019

Development of Multifunctional Wearable Device

The goal of our project is to create a wearable device that tracks heart rate to ensure the user stays within a certain fitness mode (i.e. fat burn, cardio, peak). This will then speed up the treadmill to maintain the desired heart rate level. The wearable device will also sense if the user is having a heart attack and call 911.

The features of the wearable device will include a heart rate monitor, control of treadmill, sense heart attacks and the ability to call 911.

The preliminary plan is to have the heart rate monitor to control a rotor motor based on various heart rate settings. A Liquid Crystal Display (LCD) screen and buttons will be used for the user to interface with the device to set the desired fitness mode. After testing of preliminary features. The development of the heart attack monitor and dialing feature will be added.

The work will be split between our group members: Ruoyu Xu and Morgan Harmon. Morgan Harmon will work on the user interface involving the LCD display and the buttons. Ruoyu Xu will work on determining the acceleration of the treadmill in correlation to the desired heart rate. The additional feature will be split into the dialing feature and the heart attack monitor. Morgan Harmon will work on the heart attack monitor. Ruoyu Xu will work on the having the wearable device call 911.

To define the heart rate to a specific fitness mode, the following chart will be used,

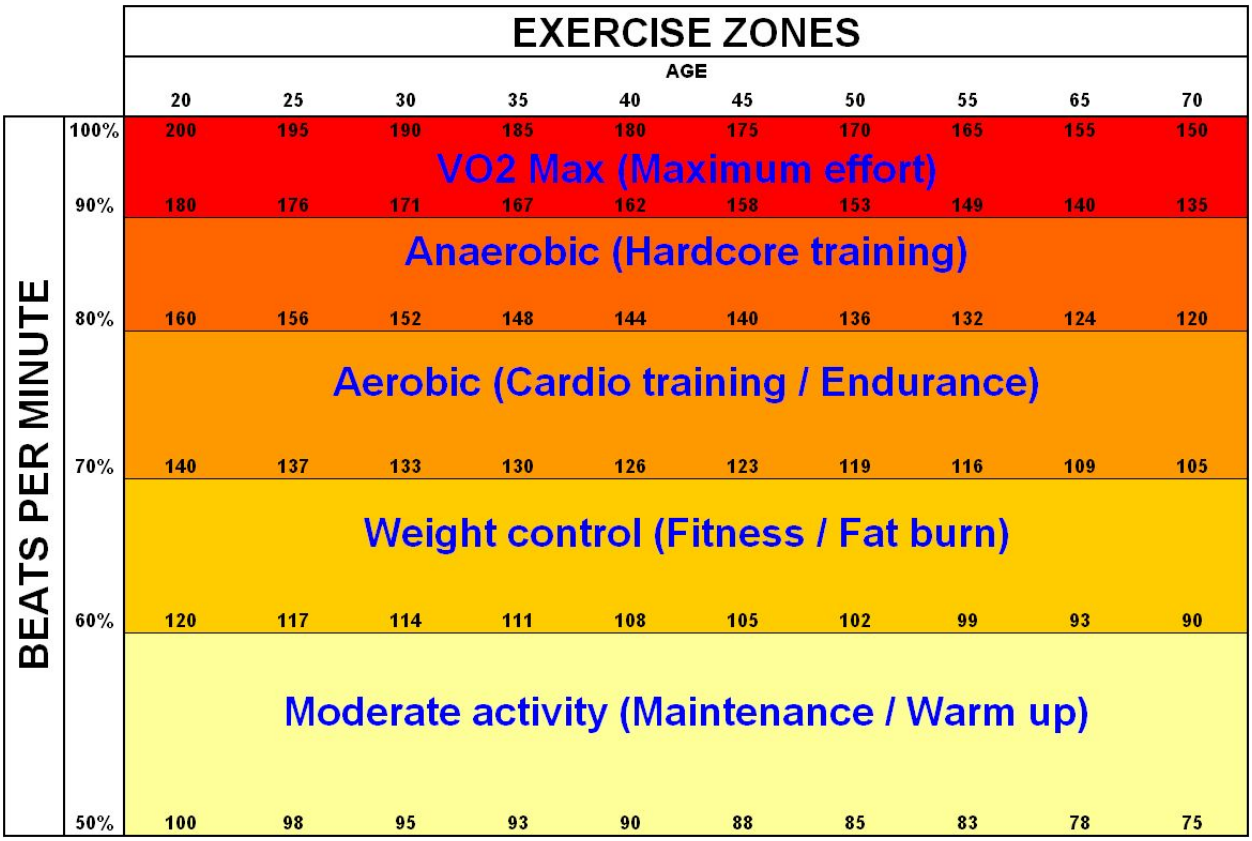

Figure 1. The five exercise zones based on heart rate.