

Impact of urban climate on running and jogging

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Many city dwellers utilize the urban spaces: concrete path ways, streets and urban parks for running and jogging. But the urban environment unlike a natural park is dominated by concrete, asphalt, bricks and steel as opposed to bare soil and grass. These materials have a high capacity to store and dissipate heat which makes the urban areas much warmer than the natural environment. This heat will add considerable physiological strain which will adversely affect the runners' performance. In some cases this might even result in excessive fatigue.

In this research we want to address to what extent the runners performance is compromised due to this urban heat. Also we want to explore how to better adapt to this urban condition. This research will involve two "athletic" students who love to run. The students will partake in a series of runs at multiple places in the City (Central Park, East River Pathway, regular streets etc.). The students will be equipped with a Garmin sports band (Fenix 3) that will monitor their heart rate, oxygen intake, lap speed and ground contact time. The sports band, equipped with a GPS system will also monitor the ambient temperature. In addition, ground conditions (surface temperature, relative humidity, atmospheric pressure and wind speed) for every run will be accounted for using handheld weather monitors. The students will then use the data collected to analyze their own performance. GIS and Matlab programming which are part of the HIREES curriculum will be extensively used in this project to evaluate the runners performance at different conditions.