**Executive Summary**

Rapid industrial growth world-wide has increased the demand for energy production. The strong dependency on fossil fuels is an unsustainable, short term solution. Therefore, the objective of this report is to examine a new source of renewable energy which is the human power to generate electricity.

The main methodology followed for this project was secondary research, which included document searching and studying up to date research material such as journal articles that are related to renewable energy and green gymnasiums. Primary research was also implemented in the form of interviews with specialists in thermoelectric semiconductors and thermodynamics field.

There are three main problems related to current renewable energy sources. First, high cost needed to implement renewable energy technologies. Second, the low efficiency, as a lot of effort is needed to recover a small amount of electricity. Third, many of the inventions that aim to capture human energy interfere with a person's movement and comfort.

With regard to each problem mentioned above, our team proposed two solutions in order to capture human energy in gymnasiums. First, optimizing cardio equipment to enable it to capture kinetic energy generated by people. Second, capturing lost heat within the equipment due to friction, and radiation and converting it to electricity.

The report recommends that the government should take a role in the development of thermoelectric semiconductor devices, funding new efficient thermoelectric materials and inspiring university students to develop these devices. Also, the report recommends that future efforts should be made to encourage the development of renewable energy systems that are cheaper to implement.

The major limitation in this report is the lack of journal articles that explain the technical components of the implemented systems in gymnasiums. A further limitation is the lack of adequate time to work on the multidisciplinary project.