I calculate my kinetic energy,
I calculate my gravitational potential energy,
I calculate the energy I offer an object

- Many times we ask the students how many joules of kinetic energy we have when we walk or run. The answers vary i.e. 5J, 100J, 1000J …….. and they also find it very difficult to measure our kinetic and gravitational potential energy.

- The purpose of this activity is for the students to measure the kinetic and gravitational potential energy as well as the energy that they offer to an object when lifting it. And finally, to understand the order of magnitude of the kinetic and potential energy they can have.

During the activity, simple instruments like a stopwatch and a measuring tape are being used
The activity takes place at the school court yard

Necessary requirement for the activity, is the students to have already been taught:

- The average arithmetic velocity: v= total distance / total time = S/t
- The kinetic energy: $K = 1 / 2 . m . v^2$
- The gravitational potential energy U = m.g.h
- The center of mass of an object

1st activity:
The students

- Measure and delimit 20m with the use of a measuring tape

- Measure the time needed to walk through the distance first and afterwards run through it

- Calculate the average arithmetic velocity (repeating the measurements several times to find the average value of velocity, if there is time).

- Calculate their kinetic energy (they have already measured their mass)

2nd activity:
The students:

- Measure the height of the center of mass of their body from the level of zero gravitational energy (the ground)

- Calculate their gravitational potential energy

3rd activity:
The students:

- Hold dumbbells at a certain position and measure the height from the ground (see figure on the worksheet)
- Lift the dumbbells to higher position and measure again the distance from the ground (see figure on the worksheet)
- Calculate the initial and final gravitational potential energy of the dumbbells and the energy they offered them
- Calculate the energy per time unit they offered the dumbbells