

Treadmill



Location

Ground floor, Move it exhibition

In a nutshell

Try out our giant 'Hamster wheel' style treadmill and see what happens.

What to do

Only one person is to use the treadmill at a time. The handles are to be held whilst the treadmill is being used. If you look to your right you should notice where your energy is being transferred to. It is actually moving the buckets of water, transporting water from the bottom to the top tank so it can run over the water wheel.

Time Required

KS3 & KS4 2 minutes per student.

What's happening?

If you watch someone using the treadmill you can see the transfer of their kinetic (movement) energy to the water buckets. The water buckets lift the water to the top tank; this is transferring kinetic (movement) energy of the buckets to gravitational potential energy of the water. When the water flows over the water wheel the energy is transferred back to kinetic (movement) and sound energy.

Curriculum links

| Curriculum links | |
|------------------|---|
| KS3 | <p>Science - Energy changes & transfers</p> <ul style="list-style-type: none"> - other processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels <p>Science - Changes in systems</p> <ul style="list-style-type: none"> - using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes <p>Science - Forces</p> <ul style="list-style-type: none"> - forces as pushes or pulls, arising from the interaction between two objects - moment as the turning effect of a force <p>Science - Balanced forces</p> <ul style="list-style-type: none"> - forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only) - change depending on direction of force and its size |
| KS4 | <p>Science - Energy</p> <ul style="list-style-type: none"> - describe all the changes involved in the way energy is stored when a system changes, for common situations: appropriate examples might be an object projected upwards or up a slope, a moving object hitting an obstacle, an object being accelerated by a constant force, a vehicle slowing down, bringing water to a boil in an electric kettle <p>Science - Conservation, dissipation and national and global energy sources</p> <ul style="list-style-type: none"> - describe with examples where there are energy transfers in a system, that there is no net change to the total energy of a closed system (qualitative only) - describe, with examples, how in all system changes, energy is dissipated, so that it is stored in less useful ways <p>Science - Moments, levers and gears (Single)</p> <ul style="list-style-type: none"> - describe examples in which forces cause rotation; define and calculate the moment of the force in such examples - explain how levers and gears transmit the rotational effects of forces <p>Design and technology</p> <ul style="list-style-type: none"> - the functions of mechanical devices, to produce different sorts of movement, changing the magnitude and direction of forces |

Relates to:

| Workshops & Theme Days | Shows | Trails | Other exhibits |
|--|--|--------|---|
| <ul style="list-style-type: none"> • Innoventions (KS3) • Engineering Solutions (KS3 & KS4) • Take off! Day (KS3 & KS4) | <ul style="list-style-type: none"> • Launch it! (KS3) | | <ul style="list-style-type: none"> • Impeller • Waterwheel • Launch it |

