Air resistance

Air is made up from tiny particles called atoms and molecules. They move freely and push on any surface that they touch. When an object moves through the air the particles push against it. This pushing force is called air resistance. It slows down moving objects in the same way that friction does.

**Feeling air resistance**

If you keep your body low when you quickly pedal on a bicycle, you will begin to speed up. If you then sit up you will feel the push of air resistance on your face and body and you will begin to slow down.

**The effect of streamlining**

Air resistance can be reduced by making the shape of the moving object streamlined. A streamlined shape has curved surfaces over which the air particles can pass without pushing strongly. Cars are often designed with a streamlined shape. This means they are low at the front and high at the back, like a wedge. This wedge-shape cuts through the air more easily than the block-shape of a truck.

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**Diving through the sky**

When sky divers jump out of an aeroplane, the pull of the Earth’s gravity acts on their bodies all the way to the ground. At first this pull causes the sky diver’s body to accelerate and they fall faster and faster to Earth, but as they fall, air resistance on their body increases and stops them accelerating. When this happens, the sky diver falls at a steady speed called the terminal velocity.

**Making a safe landing**

If a sky diver hit the ground at 60 metres per second it would be the same as if they were travelling in a very fast racing car and hit a wall at 396 kilometres per hour. They would be killed instantly. Sky divers make sure that this does not happen by opening their parachutes when they are still far above the Earth. The parachute canopy has a very large surface, open to the air particles through which it rushes. The particles push up on the canopy and slow it down so that the diver can land without breaking a bone or spraining a joint.

Some animals which live in the rainforests of South East Asia have built-in parachutes. The flying squirrel has folds of skin along its sides which are also connected to its legs. When the squirrel jumps between trees, it stretches out its legs and the folds form a parachute.

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**This cyclist has reduced air resistance by crouching low, and by wearing a streamlined helmet and tight clothes to give her body a smooth surface.**

**When these parachutes were opened, the increase in air resistance slowed down the falling sky divers.**