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英国最具影响力的青少年科普读物之一

(英)梅森(Mason,P.) 著
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The Extreme Zone

挑战极限运动

【力和运动】

哈尔滨工业大学出版社
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Raintree Fusion

The Extreme Zone
挑战极限运动

运动员在极限运动中享受到不一样的刺激和满足。你想不想也试一下挑战极限运动的乐趣?

作者简介:
保罗·梅森冬日里在勃朗峰滑雪，夏天在勃朗峰骑车，在他休息的时候,就给青少年写书。

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Contents 目录

有些单词被印刷成粗体，**就像这样**。你可以在第30页中找到它们的意思，还可以在单词第一次出现时，在相关书页下方的方框内发现它们的含义。

Radical force!
力量为本！

Welcome to the Extreme Zone! This is where a crew of kitesurfers, skateboarders, and skydivers get their thrills. Everyone in the Extreme Zone uses **forces** to get their kicks! Forces are pushes and pulls.

This kitesurfer is in motion! She skims across the waves at a high speed. She uses a huge kite and the force of the wind. A strong pull can make the kitesurfer fly up into the air. But only when she hits the right wave!

欢迎来到极限地带！这里是风筝冲浪、滑板和高空跳伞爱好者的冒险乐园。他们能够巧妙地利用**力**做出各种惊险的动作。力就是推和拉的作用。

看！这个风筝冲浪手冲浪了！她凭借巨大的风筝和强大的风力，高速滑过巨浪。强大的拉力可以把她抛向空中。当然，她必须选对浪尖才行。

EXTREME FACT!
极限运动小常识

The record time for a kitesurf jump is 13.2 seconds in the air!

风筝冲浪中腾空跳跃的纪录是在空中停留13.2秒!

force (力)　motion (运动)

▼Kitesurfers use huge kites. Kitesurfers can race along at speeds of over 56 kilometres (35 miles) per hour.

风筝冲浪手利用巨大的风筝，其速度可以超过每小时56公里(35英里)。

The need for speed!
速度为王！

Kitesurfers use pulls to make them move. But skateboarders work with pushes.

Skateboarders can skate along handrails. They can do ollies(jumps). They can even flip their board around in the air.Skateboarders need speed to do these tricks. Where do they get their speed? They need to apply a **force!**

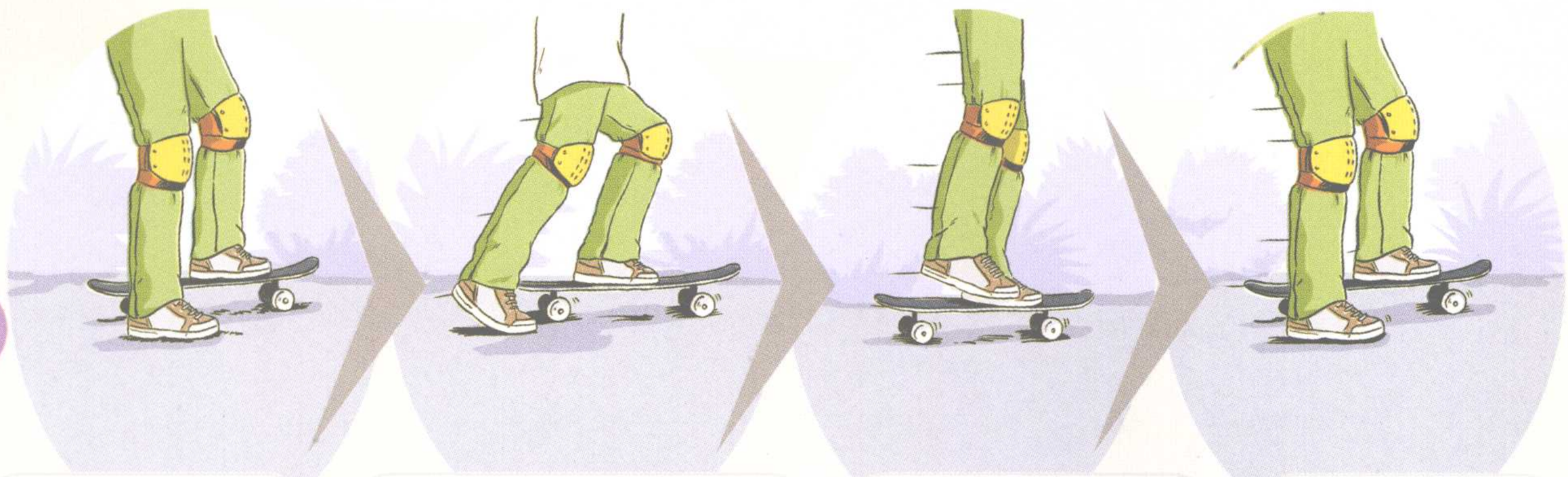
A force is a push or pull. Skaters put their boards in **motion** by putting one foot on the ground. They then push down and back with their leg. With each push, the boar picks up more speed. The more the skater pushes, they faster they can go. Soon they are going fast enough to do tricks.

风筝冲浪手靠拉力运动，而滑板手靠推力运动。

滑板手可以沿着栏杆的扶手滑行，也可以进行翱骊（音译，也称豚跳），甚至可以在空中翻板。而完成这些动作必须要有很高的速度。那么，速度从何而来呢？加**力**！

力就是推或拉的作用。滑板手单脚蹬地，使滑板**动**起来。随着腿的不断运动，每向后蹬一下，滑板的速度都会增加。然后，他们就可以做各种动作了。

Building up speed 提速



1 Put one foot on the floor.
单脚蹬地。

2 Start by pushing down and back. This force makes the board move forwards.
着地脚向后蹬，滑板向前运动。

3 Lift your leg up and forwards.
收脚向前。

4 Now do it all again!
重复前面的动作。

This is a stair jump. The ▶ skater needs a lot of speed to do this!

完成这个跳跃台阶的动作也需要很高的速度。

EXTREME FACT!
极限运动小常识

The world record for the highest-ever ollie is 113 centimetres (45 inches)!

滑板翱骊的世界纪录是113厘米(45英寸)高!

What goes up...

纵身一跃……

Most people think jumping out of an aeroplane is a silly thing to do. But skydivers do it for fun!

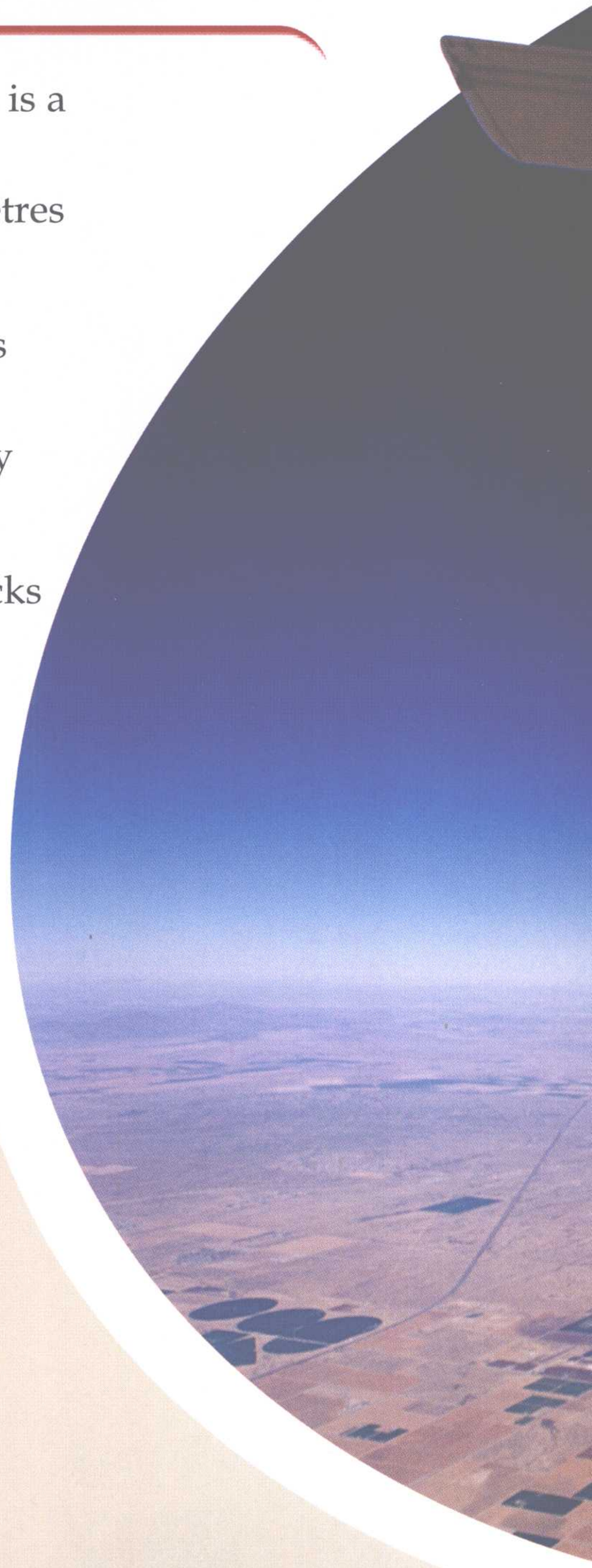
Skydivers jump from a height of about 4600 metres (15000 feet) above the ground. Once skydivers jump, the **force** of **gravity** pulls them down. Gravity is the force that pulls all things towards Earth.

Gravity makes skydivers build up speed as they fall. They accelerate. Skydivers can sometimes **accelerate** to speeds of over 160 kilometres(100 miles) per hour. The best skydivers even do tricks and flips in the air!

大多数人都会认为从飞机上往外跳是愚蠢透顶的，可高空跳伞选手却乐此不疲。

跳伞选手要从大约4600米(15000英尺)的高空往下跳。一旦跳出机舱，**重力**就会把他们向下拉。重力就是把物体向地面拉的力量。

重力使跳伞选手在降落过程中不断**加速**，其速度有时可达每小时160公里(100英里)。有的选手还可以在空中表演各种花样，甚至翻腾！



accelerate (加速)　gravity (重力)

GRAVITY PULLS THIS WAY!

重力向下！

◀ This skydiver will get faster and faster until he reaches a speed of about 160 kilometres (100 miles) per hour.

跳伞选手越降越快，其速度达到了每小时160公里(100英里)。

EXTREME FACT!
极限运动小常识

In some competitions, the skydiver tries to land on a target that is just 5 centimetres (2 inches) across!

在比赛中，有时跳伞选手要降落在仅有5厘米(2英寸)大的目标区里！

AIR RESISTANCE

空气阻力

AIR RESISTANCE

空气阻力

The skydiver uses these strings to steer the parachute.

跳伞选手用绳子操纵降落伞。

GRAVITY

重力

Braking your fall
快停吧

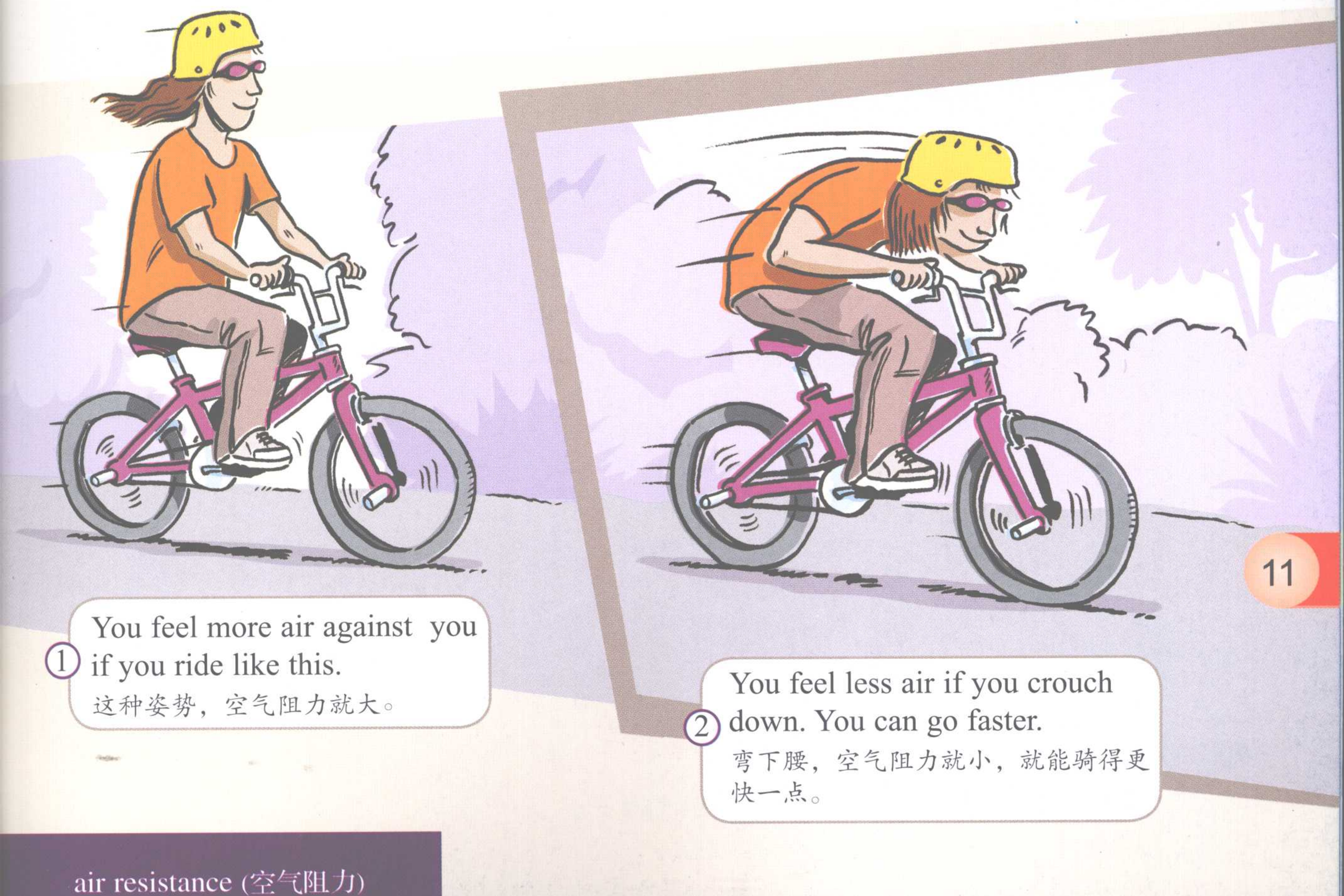
A skydiver doesn't want to hit the ground at 160 kilometres (100 miles) per hour! He or she needs to use another force to slow down.

The skydiver opens a parachute to catch the air. The force of the air hitting the parachute is called **air resistance**. This force pushes against **gravity.** It slows the skydiver down.

跳伞选手才不想以每小时160公里(100英里)的速度撞到地面上呢！他们必须减速。

跳伞选手打开降落伞,收拢空气，空气对降落伞的阻碍作用称为**空气阻力**，它的方向与**重力**相反，可减慢跳伞选手的降落速度。

You can feel air resistance when riding a bike:
骑自行车时，就能感觉到空气阻力：



① You feel more air against you if you ride like this.
这种姿势，空气阻力就大。

② You feel less air if you crouch down. You can go faster.
弯下腰，空气阻力就小，就能骑得更快一点。

air resistance (空气阻力)

This is a plan of the Cresta Run.
这是克里斯泰赛道示意图。

Start 起点

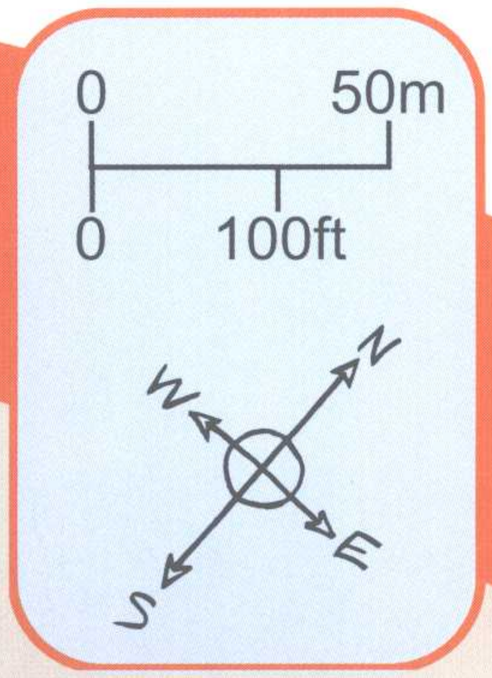
Gravity starts to pull racers down the Run.
重力使选手沿着赛道加速。

Rise corner
上升弯道

Curzon corner
克塞弯道

Shuttlecock corner
羽毛球弯道

Racers have already reached a speed of about 32 kilometres per hour (20 miles per hour).
这里的速度约为每小时32公里(20英里)。



EXTREME FACT!
极限运动小常识

The fastest time for the Cresta Run is 50.09 seconds.
克里斯泰赛道的纪录是50.09秒。

Maximum speed

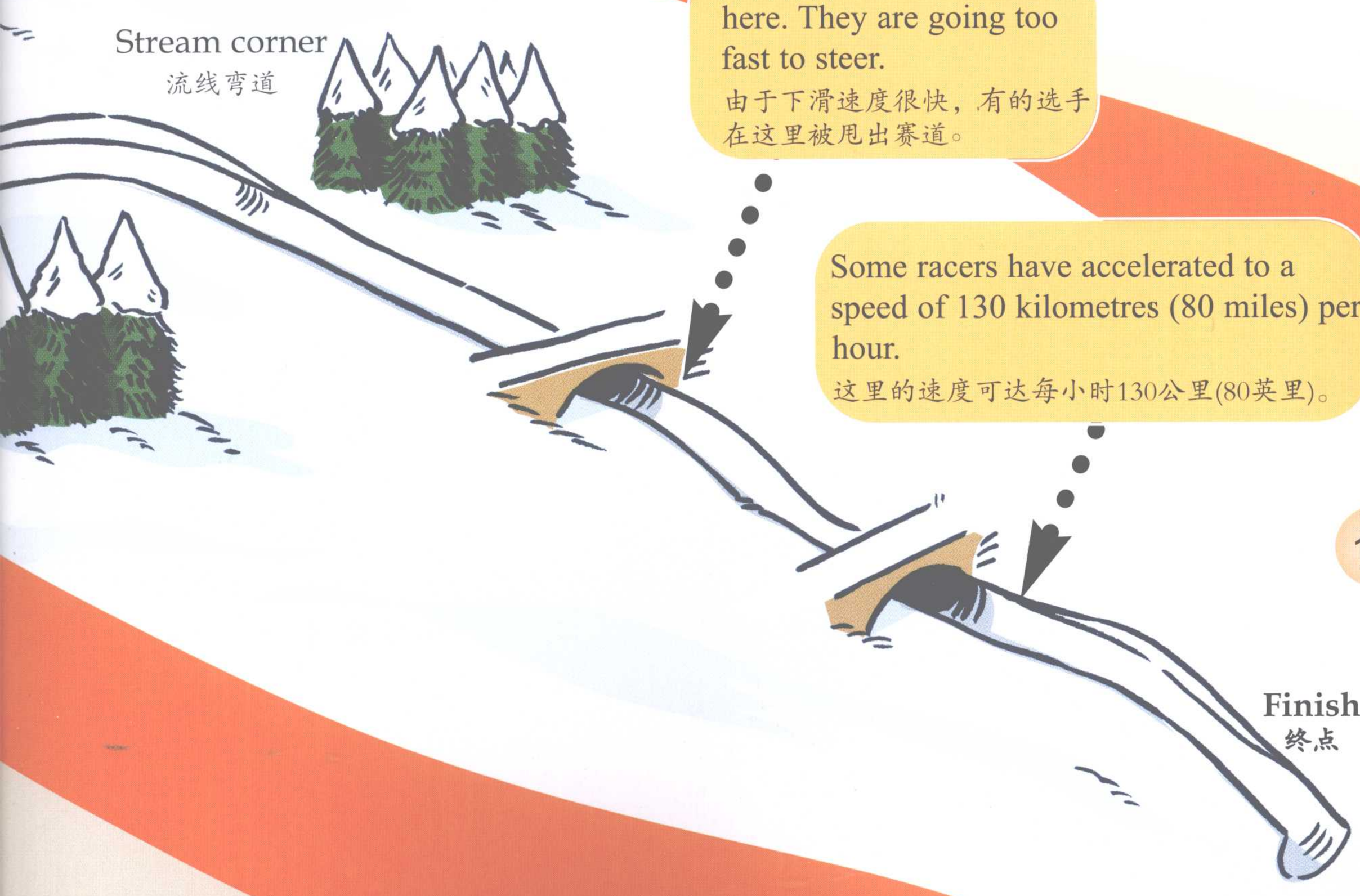
最高速度

The Cresta Run is a toboggan course in Switzerland. Every winter, racers come to try their luck at the Run. Like skydivers, these racers love to go down fast. The fastest racers take just over 50 seconds to get down the 1212-metre (4000-feet) course!

How do they get that speed? The course is downhill. The **force** of **gravity** pulls them down. The steeper the hill, the more strongly gravity pulls. This makes the racers go faster. Gravity acts on the racers all the way down the hill. This also makes them **accelerate**, or get faster and faster.

克里斯泰赛道是瑞士的一个无舵雪橇赛道。一到冬天，选手们就会在这里试试运气。像高空跳伞一样，这项运动追求的也是速度。最快的选手用50秒多一点的时间就能滑下1212米(4000英尺)的赛道！

他们是如何获得这么高速度的？赛道建在山坡上，**重力**使选手们下滑。山坡越陡，重力的作用就越强，选手的速度就越快。重力在整个下山过程中都起作用，它使选手不断**加速**，越来越快。



Getting air
一飞冲天

Skydivers and Cresta racers like going down. But most extreme riders want to go up! Snowboarders use **gravity** and a **ramp** to get air. "Get air" means doing a spectacular jump.

First, the snowboarder gets up speed by zooming down a long hill. The **force** of gravity pulls the boarder down, faster and faster.

Then, the boarder hits a type of ramp called a kicker. The ramp turns downward speed into upward **motion**. This causes the boarder to fly into the air!

高空跳伞选手和克里斯泰赛手是要向下冲，而大多数极限运动员却是要向上飞。滑雪选手利用**重力**和**斜坡**飞向空中。"一飞冲天"的意思是做一次腾空跳跃。

为了提高速度，滑雪选手首先要冲下山坡，在重**力**的作用下，越滑越快。

然后，滑上一个斜坡，将向下的速度转变为向上的**运动**，选手顺势飞向空中。

EXTREME FACT!
极限运动小常识

The record for the most spins in a snowboard jump is three and a half times!

单板滑雪跳跃旋转的纪录是三圈半！

ramp (斜坡)

◀ Leaping off a cliff like this takes skill and bravery!

像这样跳下悬崖是需要技巧和勇气的。

GRAVITY PULLS DOWN

重力向下

Of course the jump doesn't last forever. Gravity is still working, pulling downwards. Now there is only one way to go—down.

当然，在空中停留是暂时的，重力还在起作用，它把人往下拉。别无选择——向下！