

Located at the NASA Research Center in Iowa is a 5,000-gallon vat of water, and inside the tank is an underwater treadmill designed by Dava Newman, an aerospace engineer.

在爱荷华美国国家航空航天局研究中心有一大桶 5000 加仑的水，在水槽内有一个水下跑步机，由 Dava Newman，一个航空工程师设计。

For four years Newman observed scuba divers as they simulated walking on the Moon and on Mars on her underwater moving belt.

四年来，当水肺潜水员们在她设计的水下移动带上模拟月球和火星上行走时，Newman 观察他们。

She wanted to discover how the gravity of the Moon and of Mars would affect human movement.

她想要发现月球和火星的重力是如何影响人体运动的。

To do this, Newman attached weights to the divers and then lowered them into the tank and onto the treadmill.

为此，Newman 在潜水员身上附加了重量并且把他们下放到水箱中的跑步机上。

These weights were carefully adjusted so that the divers could experience underwater the gravity of the Moon and of Mars as they walked on the treadmill.

这些重量是仔细校准过的，所以当他们在行走在跑步机上时，潜水员们能够在水下体验月球和火星的重力。

Newman concluded that walking on Mars will probably be easier than walking on the Moon.

Newman 推断行走在火星上可能会比行走在月球上容易些。

The Moon has less gravity than Mars does, so at lunar gravity, the divers struggled to keep their balance and walked awkwardly.

月球比火星重力小，所以在月球的重力下，潜水员们要尽力保持他们的平衡并且步履蹒跚。

But at Martian gravity, the divers had greater traction and stability and could easily adjust to a pace of 1.5 miles per hour.

但在火星的重力下，潜水员们有较大的抓地力和稳定性并且能够轻松适应 1.5 英里每小时的步速。

As Newman gradually increased the speed of the treadmill, the divers took longer, graceful strides until they comfortably settled into an even quicker pace.

当 Newman 逐渐增加跑步机速度的时候，潜水员们耗时长一些来达到优雅的步伐直到他们舒服的适应了一个更快的步速。



Newman also noted that at Martian gravity, the divers needed less oxygen. The data Newman collected will help in the future design of Martian space suits.

Newman 也注意到在火星的重力下，潜水员需要较少的氧气。被 Newman 收集的数据将会在未来有助于火星宇航服的设计。

Compared to lunar space suits, Martian space suits will require smaller air tanks; and, to allow for freer movement, the elbow and knee areas of the space suits will also be altered.

同月球的宇航服相比，火星的宇航服将会要求小一些的空气箱，并且，允许更加自由的运动，宇航服肘部和区域也将被改变。