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Getting ready for a pogo competition in Pennsylvania, Mark Aldridge (*left*) does a backflip off a new type of pogo stick. Nick Ryan (*right*) gets airborne one-handed.



Extreme Pogo!

New high-tech pogo sticks allow riders to bounce higher than ever

Dan Mahoney hopped onto his pogo stick. Springing off a 2-foot-tall box, Mahoney bounced 7 feet into the air. His feet flew over his head as he did a spinning backflip. Mahoney landed the stunt perfectly. He snagged first place in the Best Trick category at a global pogo competition in California last July.

“That was probably my favorite thing I’ve ever done on a pogo stick,” says Mahoney, 19. That’s saying something: Mahoney also holds the world record for the highest pogo jump. In August 2010, he jumped 9.5 feet—almost as high as a basketball hoop!

Over the past 10 years, pogo has grown from a children’s activity into an extreme sport. Pogo sticks originated in the 1920s as toys for kids to bounce up and down on. But these retro toys have had a makeover. Now extreme pogo

words to know

energy—the ability to do work, such as moving things, or giving off heat or light

force—a push or pull

potential energy—stored energy that is available when an object is raised, stretched, or squeezed

kinetic energy—energy of a moving body

fiberglass—a plastic material that is strengthened with glass fibers embedded inside

PITTSBURGH POST-GAZETTE/ZUMAPRESS.COM

riders bounce through obstacle courses, jump over taxis, and compete for the highest leap.

To accomplish these feats, riders like Mahoney use special high-tech pogo sticks. They can bounce higher than the sticks of the past. “People used to think that some of the tricks we do nowadays were impossible,” says Mahoney.

From Toy to Jumping Tool

Most pogo sticks are built to bounce the weight of a child a few inches off the ground. How do you create one that can fling an adult high into the air?



UNDER LEG BAR SPIN
The rider passes the stick under his leg at the top of the jump. While passing the stick to the other hand, he spins it 180 degrees.

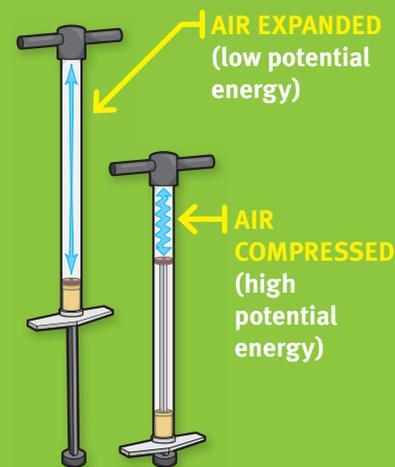
A traditional pogo stick is a tube with footrests on the bottom and handlebars on the top. There's a metal spring inside the tube. This spring is used to store **energy**. When the rider bounces down on the pogo stick, the **force** squeezes the spring making it shorter. In this compressed state, the spring holds **potential energy**. The spring then lengthens back into place. At this point, the potential energy is released as **kinetic energy**, which boosts the rider upward.

High Fliers

To turn pogo sticks from toys into extreme-sports tools, inventors took advantage of the laws of physics. They developed springs that are powerful enough to bounce an adult but light enough to get airborne.

VURTEGO

Vurtego's inventors turned the lightest substance they could think of—air—into a spring.



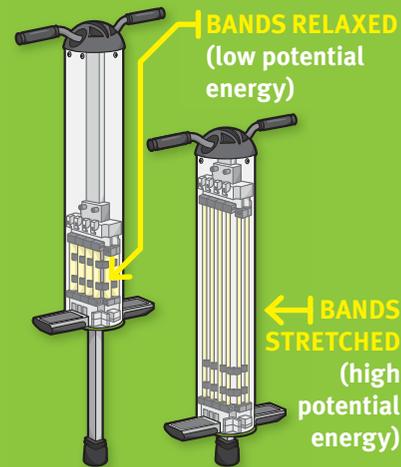
BOWGO

The BowGo uses a flexible fiberglass strip to store and release potential energy.



FLYBAR

Thick rubber cables function like giant rubber bands inside the Flybar.



BACKFLIP
The rider throws his head back during a jump to start rotating backward. He spots the landing area and completes the flip.

With traditional pogo technology, you'd need a big spring (and a lot of energy) to send a 200-pound adult high into the air. But big springs are heavy. It would take a 25-pound spring to lift an adult. All that weight would limit how high the rider could go.

To go from toy to extreme-sports equipment, pogo sticks needed a new design. About a decade ago, father-and-son inventors Bruce and Brian Spencer set out to create one.

Rethinking the Pogo

To build a pogo stick that could reach extreme heights, the Spencers needed a spring that would be strong but not heavy. So they built their spring out of the lightest substance they could think of—air.

The Spencers created a pogo stick called the Vurtego. It has a tube that the rider pumps full of air before climbing onboard. When the rider pushes down on the stick, a plastic stopper moves up the tube, compressing the air inside into a smaller space. Pressure builds until the air can't compress any more. Then the air expands pushing the plastic stopper downwards. This “air spring” pushes the pogo stick up sending the rider high into the air, just like a metal spring would.

New Designs

Most extreme riders use Vurtego sticks. But other inventors are trying to

come up with new designs that will break more records. Ben Brown, a robotics engineer, designed a stick called the BowGo. It uses a flexible piece of **fiberglass** that curves outward, collecting energy. Then it snaps back into place to thrust the rider skyward.

Extreme pogo rider Curt Markwardt uses a BowGo to snag world records like the one for the highest backflip. Now, “Curt thinks he can match [Mahoney's] 9.5-foot high jump record,” says Brown.

No matter which stick they use, experienced pogo riders love to soar to extreme heights.

“There's this amazing feeling of flying,” says Mahoney. “It's like jumping on a trampoline, but with the freedom to go wherever you want.”

—Stephanie Warren



NO HANDER
The rider releases the handlebars during launch and grabs them right before landing.

MIGUEL VASCONCELLOS/THE ORANGE COUNTY REGISTER/ZUMAPRESS.COM (TOP); BROWN BIRD DESIGN (POGO STICK DESIGNS)

TESS DAVIS (TOP); WENN/NEWSCOM (BOTTOM)