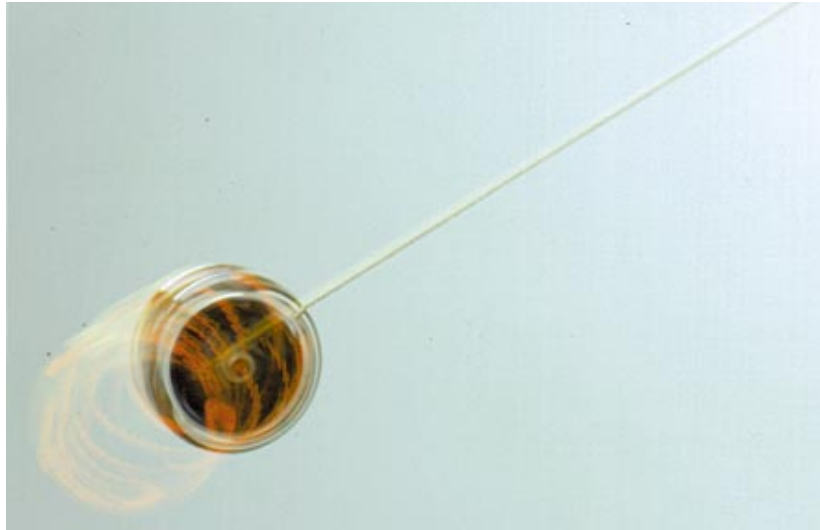


Yo-yo



“Look at this, I can make it jump back in an instant. Hey, now I’m making it crawl along the ground. Doesn’t it look like I’m walking a dog? Come here, let dad teach you how this works, and we’ll play together.”

Two years ago the yo-yo returned from toy oblivion to become a major trend among young people. Some say the boom was started by surfers waiting for good waves, but in fact, the first wave of this trend came 20 years ago, when today’s fathers of 10-year-old sons were once crazy about yo-yos themselves. The difference now is that yo-yo quality and features have been improved so dramatically, children can perform yo-yo tricks their fathers could never have done 20 years ago, even if they practiced for hours.

The trick names have changed as well. For example, what was once called a “quick spin,” where the yo-yo spins so fast it doesn’t return, is now called a “long sleeper.” Two decades ago, a quick spin of just three seconds was impressive, and took practice to achieve. Today, with relatively little effort, a long sleeper of one minute is quite easy. And with some serious practice, you can get this up to three minutes. Why the big improvement? The yo-yo now has a new axis.

According to Nobuhiro Arai of the Toys and Entertainment Division at Bandai Co., Ltd.: twenty years ago, the yo-yo string wound up around a fixed center axis. But today’s yo-yo axes are surrounded by bearings, which function like a pulley to reduce friction with the string. As a result, the long sleeper is sleeping longer than ever before. What’s more, modern yo-yos contain a centrifugal clutch made of internal springs that produces an automatic return feature for the

long sleeper. It works like this: With the yo-yo at rest, the centrifugal clutch freezes the bearings to the axis. When you throw it, the centrifugal force of rotation overcomes the spring tension, compressing the springs and releasing the clutch allowing the bearings to roll freely. As the yo-yo slows down, the springs return to their natural position, closing the clutch onto the bearings and making the yo-yo jump back to your hand.

Today there are 53 standard yo-yo tricks, and dozens of yo-yo varieties. For the long sleeper, metal ball bearings work better than nylon, while for loop-de-loops (where you keep throwing the yo-yo out in front of you) an old wooden yo-yo works best, thanks to its higher friction. To roll down a tightrope, your best choice is a yo-yo that has a center diameter smaller than its outside edges, like a spool of thread, or traditional Japanese drum (tapered at the center).

But if you want to perform a wide range of tricks, don’t you have to buy several different kinds of yo-yos? Not anymore. Today some yo-yos allow you to change the bearings, axis cylinder, overall weight and other items to let you perform a wide range of tricks with one yo-yo.

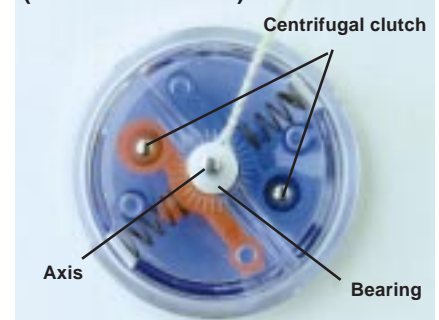
Mr. Arai explained: yo-yos used to come with a warning against opening it up, or tampering with it. Thanks to improved technology, though, now you can customize your yo-yo with ease. For example, yo-yos can now utilize precision metal bearings made of the same material used in VCR heads and used in CD players to read CDs. As the demand for higher precision parts for electronics products grew, these technologies were applied to the yo-yo. When I was a boy, I used to love the yo-yo. Once I even applied candle wax to the string in an attempt to increase my long sleeper time. Now in my

career I’m working along similar lines, and I feel like I’m making my childhood dreams come true.

Because it’s easy to learn and good exercise for the fingers, the popularity of yo-yos has recently been on the rise for their health benefits, especially among the elderly and handicapped. In other countries, yo-yos are sometimes provided by educational institutions to children as a healthy form of recreation.

After 20 years of the long sleep, yo-yos are beginning to roll again.

Centrifugal Clutch Illustration (axis enters clutch)



Centrifugal forces compress the spring, allowing the bearing to roll freely. Then, as rotation slows and centrifugal force drops, the springs expand to their natural position, closing the clutch. Once immobilized and frozen to the axis, the bearings are ineffective, causing the yo-yo to jump back to your hand.