

Having a ball on a ball: Meet the self-balancing scooter

16 April 2017, by Nancy Owano



(Tech Xplore)—Scooter fans like the feeling of skating, sliding, gliding through life at least for a few minutes when feeling like masters of the universe. Scooters are not for everyone, though, but a new one being offered on Kickstarter might hold forth fresh appeal.

It is a self balancing scooter, with the core component not spinning wheels, or even one spinning wheel, but a ball. In *Gizmodo*, Andrew Liszewski said, the Üo uses "a solid sphere of rubber that can support a rider's weight without deforming."

Üo was designed by a German electrical engineer, Olaf Winkler. "All the way back in 2010, this crazy idea hit me," he said, "to build a vehicle that rides on a ball and to all directions. Ever since that day, I kept thinking about the best mechanism. As an electrical engineer, as well as an automotive electronics developer, I have the knowledge of building such a vehicle."

He said most of the service and component providers were located in Germany.

It's described in various ways but for now think of it as a 360° scooter that rides on a ball. It balances

you—not the other way around. Winkler's goal was to build a personal transporter, designing it for smooth and safe ride.

Winkler said in response to a viewer question on YouTube that the Üo has a 3-axis gyro and an acceleration sensor.

"If you have experience in skiing or skating you might understand the fascinating feeling of freedom to slide," he said on the Kickstarter page. "But those activities require a lot of balancing skills and can also be dangerous. The Üo provides a somehow similar feeling, but it takes over the balancing part of the work." The ball is kept under the rider's center of gravity.

A comment in *Gizmodo*: "Because the ball can move in any direction, the Üo can ensure it always remains directly below the rider's center of gravity, making it hard to fall [over](#)."

This special machine riding on a ball actually moves on three motor-driven wheels and a ball. These wheels are made from laser cut steel.

Ben Coxworth in *New Atlas*: "...the Üo does actually incorporate three motorized 'omni wheels' – although none of them touch the ground." He explained how the wheels "press in against the top of the [ball](#), causing it to move in response to feedback from onboard accelerometers and [gyroscopes](#)."

Easy to ride, you just step on it and it gets you going. The technique is mostly in leaning motions.

Accelerating and braking are achieved if you lean forward or back. If you lean to either side, you can make your turns.

It has a beginner's mode for easy familiarization.

On top of the stick is an automatic steering

mechanism. Coxworth described it as "A small joystick" and Winkler said that "With this joystick you can also enable and disable automatic yaw [adjustment](#). When enabled, the Üo will rotate until you face towards the driving direction (facing forward)."

Using the joystick at the end of a long handle, said *Gizmodo*, can be useful in having to navigate crowded areas without bumping into pedestrians.

How fast can it go?

The top speed 12 km/h.

Development is finished. First deliveries are planned to be out this summer. The project will only be funded if it reaches the goal by May 13. The goal is \$42,451.

Prices vary on the Üo, depending on which offer you pick, but one such price is about US\$953 with delivery in August.

There are two versions of the Üo available. The main difference between Üo and Üo ez are the motors and the LED illumination.

The Üo ez is the little brother of the Üo. It is powered by three motors, each capable to deliver 350W of mechanical power. The Üo ez has no LED lights installed and comes without a battery. You can check the campaign page for further details on each package offer.

Winkler studied electrical engineering (Dipl.-Ing.) and received a doctoral degree in semiconductor technology (Dr.-Ing.) from the RWTH Aachen University, Germany. He worked on automotive electronics development in Lippstadt and in Shanghai.

More information:

[www.kickstarter.com/projects/o ... ball-out/description](http://www.kickstarter.com/projects/o...ball-out/description)

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