

# CU Boulder Today

## Electric assist bikes provide meaningful exercise, cardiovascular benefits

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A new University of Colorado Boulder study shows that using an electrically-powered bicycle on a regular basis can provide riders with an effective workout while improving some aspects of cardiovascular health, especially for riders who previously had been sedentary.

Electric assist bicycles (“pedelecs”) are equipped with a built-in electric motor that provides modest assistance while the rider is actively pedaling, making it easier to cover greater distances and hilly terrain. Pedelecs have steadily grown more popular with consumers over the pas

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and Asia.

While an assist from an electric motor would get a rider disqualified from a competitive cycling competition such as the Tour de France, CU Boulder researchers were interested in studying whether or not pedelecs could help physically inactive non-cyclists achieve recommended daily fitness levels.

To conduct the study, the researchers recruited twenty non-exercising volunteers who were sedentary commuters (car commuters). The researchers tested various aspects of their health, including blood glucose regulation and fitness. The volunteers were then asked to substitute their sedentary commute for riding their pedelec at the speed and intensity of their choice for a minimum of 40 minutes three times per week while wearing a heart monitor and a GPS device.

After a month, the volunteers came back to the lab and had their health tested again. The researchers noticed improvements in the riders' cardiovascular health, including increased aerobic capacity and improved blood sugar control.

“Commuting with a pedelec can help individuals incorporate physical activity into their day without requiring them to set aside time specifically for exercise,” said James Peterman, a graduate researcher in the Department of Integrative Physiology at CU Boulder and lead author of the new study.

Pedelec bicycles are designed to provide motorized assistance up to speeds of 20 miles per hour. Above that speed, riders must provide all the pedaling power themselves. Based on GPS data, the riders involved in the study rode at an average speed of 12.5 miles per hour and reported no crashes or accidents.

The city of Boulder provided partial funding for the study. Data from the research was provided to the city to assist with the decision on whether or not to allow pedelecs on bike paths.

Additional funding for the research was provided by the National Institutes of Health and Boulder-based businesses Pete's Electric Bikes, Republic Cycles and Skratch Labs, LLC.

The study was co-authored by Associate Professor Rodger Kram, Associate Professor William Byrnes and undergraduate student Kalee Morris, all of the Department of Integrative Physiology at CU Boulder.

[The findings were recently published online](#) in the *European Journal of Applied Physiology*.

*Photo: Researchers William Byrnes (left) and James Peterman demonstrate a pedal electric bicycle in Boulder, Colorado. (Photo by Sydney Chinowsky / University of Colorado Boulder)*



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