

# — AIRHUB RESISTANCE IS USEFUL —

Former world champion Michael Freiberg has come up with a solution to a problem he faced when training: how to get the resistance required for a session when environmental factors don't allow it? The Airhub is his invention and it's bound to build stronger riders.

The idea of fitting heavy training wheels to your bike and replace them with something more fancy on race day is as old as cycling but the Airhub takes that idea and adds some tech. This new product's inventor (and former omnium world champion) Michael Freiburg takes voluntary resistance to the next level. Not only does this Airhub front wheel weigh close to 2,400g – which will invoke an enhanced training effect on its own – but it also applies additional watts to the rider, increasing exertion at lower speeds. Essentially, the Australian-designed Airhub allows the bike rider to control their training session, optimising quality and consequently developing power.

This Airhub is for any rider serious about improving strength, endurance and speed.

Prototype testers have revealed myriad uses for this innovation. One talented professional who has been using a prototype told *RIDE* that it works as a social equaliser. "Normally I go out training with a friend who's a bit overweight," he explained about his rides while he's back in Australia. "Now, I'm riding at nearly threshold around the river and he's having a chat with me at the same speed."

Slowing down to chinwag with old pals when home for the European winter is one thing, but how does it improve a structured training session? Freiberg believes that his invention is suitable for riders who are prescribed long and strong rides from their coaches. He says that riding at 270-280 watts for three to four hours is "not really feasible in all situations because you may want to ride with your friends, you might want to have a good time... and the environment might not allow it." The Airhub is useful for a lengthy 'zone three' session because it minimises power fluctuations that occur due to varying environmental factors like lumpy terrain. Eradicating these variations will provide a more consistent training effect.

To reiterate, the Airhub is for riders who yearn for improvement. Time trial specialists, triathletes and road racers can all benefit from the Airhub so long as they stick to a tailored training regime.

There is one unlikely category of rider who could benefit from the Airhub: commuter cyclists. We often see our colleagues turn up to the office sweating profusely because they have stuck to their goal heart rate or wattage for the entire journey to work. This is great! Any time devoted to training is good time but often these cycling flagellants are speeding towards the workplace in an unsafe way. Fitting an Airhub to their bike and increasing their resistance by 100 watts will further the training effect as well as slow them

— By Jack Lynch

For more information, videos and interviews about the AirHub, scan the QR-code (below).



down to safer speeds – a benefit to both the rider and community alike.

It could also be put to good use by professional riders as they prepare for major races. "There can be people walking around while you're trying to warm up and you can't ride around fast," our prototype rider explained when chatting about his experiences before elite races. "You know, it's dangerous and everyone's just trying to get their efforts done... everyone wants to be activated and ready to go."

"You could put the hub in and ride at the safe speed of 25km/h at 400 watts! Everyone would be doing their efforts properly and it'd be nice and safe."

So, the Airhub is about training smart, retaining safety, and enjoying being outdoors while you're at it.

## Setting up the Airhub

In my job, I test many different products and, honestly, every time I get something which requires Bluetooth or ANT+, I am hesitant to use it for fear of technical failure. Among many reasons, this is why the Airhub sat behind my desk for weeks before I had to muster the courage to learn how to use a new app as well as pair it with this wheel. It was almost too much to bear. (For the record, I was also in the middle of testing a disc brake bike.)

Fitting the wheel was a cinch. I just had to make sure that I installed it facing the right direction and this was hardly ambiguous due to the large arrow and 'hub operates in this direction' inscription: 10 seconds, job done!

I adjusted the brakes, fitted the iPod to my stem, opened the app and was immediately impressed. The screen is so user-friendly! The display is clear and easy to operate. The Airhub's mode easily changed, adjusted or turned off with a flick of a finger – an alluring feature of this product.

I was a little concerned because the hub did not activate immediately. But, at 15km/h it relayed information to the app and at 20km/h the hub switched on and the resistance was activated. You know it's working because of two things: you hear it... and, obviously, you feel it.

The Airhub charges itself, so I only had to make sure that the iPod had plenty of battery life as I cycled forth.

## What's it like to ride?

I was astonished by how quickly the hub takes directions from the app. It powers up instantaneously when prompted and backs off as soon as 'pause' is tapped. >>

# — ROAD TEST —



AIRHUB: ATTACH AND GO...! Using this training device is as simple as putting in the front wheel which has the hub, and riding away. The new Airhub is a sure way to improve your cycling and, thanks to the simple app that is part of the package, equipment failure or rider error is next to impossible. If you're serious about getting stronger on the bike, the Airhub is the latest essential ingredient to achieve rapid improvement. Get out there and start training!

## Application for a professional

In the lead-up to the Tour de France this year, Michal Kwiatkowski was given a program by his trainer. While riding, he had to complete several intervals at a prescribed wattage. To do this properly, he needed hills. Actually, just one decent hill would do – and he could do repeats to achieve what was asked of him. The problem was, the world champion was in Warsaw. It's flat – *very* flat!

"I can't find anything steep enough," Kwiatkowski told his trainer over the phone, "but I'll work on a solution."

He hung up and then went to work on his brakes. He tightened the cables and ensured that his calipers – front and rear – were squeezing his rims tightly before he set off riding again.

It wasn't the ideal scenario but, his trainer told me in Utrecht on the eve of stage one, "the power files he sent me that evening were on par with what I'd asked for... he didn't have a hill so he used some ingenuity. His brakes gave him the resistance he required."

The fun thing about having a problem is finding the solution. Kwiatkowski clearly isn't the only rider to find himself in this predicament; needing resistance to achieve the requisite power for a training session is part of modern cycling.



A DELIBERATELY HEAVY PRODUCT... There's no mistaking the Airhub when it's on a bike. It will retail (with an online distribution model to begin with) for USD\$2,200 and a fully built wheel weighs in at 2,386g (with durable training tyres like the Continental Gatorskin). On the road, it quickly becomes apparent when the device starts working – with resistance kicking in at 20km/h – as the rider will notice the additional load... as well as the noise emanating from the large hub on the front wheel. This has been in beta-testing for several years and details such as waterproofing and other potential hindrances have already been remedied. "We expect there'll be upgrades," said Michael Freiberg, "but they'll apply to the app, not the hardware."

» I was eager to try the three different modes the Airhub is capable of so began to warm up with an added 50 watts of applied power. This was on the 'watts' setting and allowed an additional amount of resistance between one and 100w to be added to my natural output. Of course, this slowed me down and I can say I was impressed rather than wowed at this static training approach. (Perhaps I'm the victim of seeing too much high-end technology and this virtual headwind was a minor annoyance rather than a revelation.)

The next setting was 'cdA' (coefficient of drag area). This dynamically changes the Airhub's applied power when riding to 'smooth out the road', so to speak. I set it to maximum and watched the wattage adapt depending on my speed. As I went up hills, the applied power dipped to increase my resistance by 35 watts or so. As I pedalled down them, the Airhub was at full capacity, slowing me down with 100 extra watts applied to the bike.

The cdA mode did as advertised and it's incredible. I was able to keep steady power and hold the position on the bike that I would adopt during completely flat, seated efforts.

Training to heart rate has become less popular since power meters have become more accessible but it's still a valid form of improving anaerobic threshold. I used the heart rate setting when completing a 20-minute threshold set on a relatively flat road. I set it to 160bpm and watched as the applied power held me in that heart rate range.

Trying my best to trick the Airhub, I pushed harder up risers in an attempt send my heart rate spiralling. Alas, the technology was too clever and never let my heart rate pass 166bpm or fall below 155.

When set to 160bpm, one extra beat above translated to five watts of applied power. For example, when at 161bpm,

the applied power would fall from 100 to 95 watts, when at 165bpm, the resistance would ease off to 75 watts.

This ramping system makes sense and allows a smooth transition between training zones as it brings the heart rate back to its allocated frequency.

Those dedicated to heart rate training will find this feature difficult to switch off – it is fabulous! For me, it was hard for me to suppress memories of my formative years road cycling, when I used to time trial up and back on the same 2.5km stretch of road monitoring nothing but speed and heart rate. It's a gritty training type but as the pro rider told RIDE, "There's no easy way to get form."

## A positive conclusion

Michael Freiberg's invention should be applauded. Airhub has to be one of the most useful and genuine innovations of 2015. It makes training feel like training. Every kilometre is earned, every pedal stroke is a challenge.

Benefiting training is one thing, but improving safety and allowing social riders to roll with serious ones are just two of the many unexpected benefits that Airhub owners will discover with each ride. (For example, I found that the hum from the hub alerted other riders, pedestrians and birdlife to my presence – another safety benefit.)

When riding with the Airhub, the trick is to expel any thought regarding average speed, total distance and Strava segments. Airhub users must focus on what's really important – the body's adaptation to training. Once this becomes ingrained, the Airhub will be standard fare on training rides... competitors better watch out on race day!

JACK LYNCH

FROM RACER TO INVENTOR... Freiberg, the omnium world champion from 2011 (below), was always quirky with his equipment; he's applied innovative thinking since retiring from racing.



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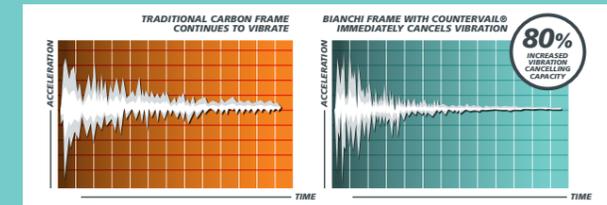
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