

Up to **70%** less vibration with **loopwheels**

Loopwheels give a smoother ride
with less jolting on any surface



“We’re proud to be a
British manufacturer of
a world-class innovation
in wheel technology.”

Sam Pearce
Designer, Inventor, Co-Founder



Be more comfortable

“Potholes, cracks, cobbles – when you have chronic pain, you feel every vibration like a knife. Loopwheels took only a few seconds to fit. They definitely reduce the pain of going over bumps, kerbs and cobbles and have made every trip out far more comfortable.”

Libby Parfitt
CPRS sufferer

Go more places, more comfortably with Loopwheels

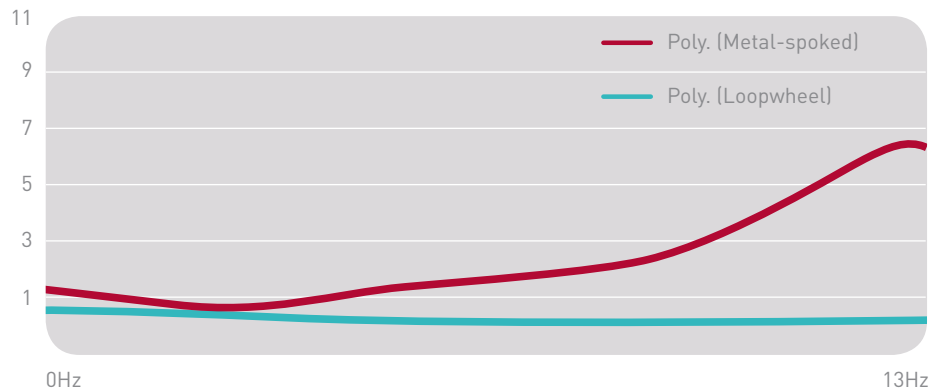
Loopwheels are designed,
engineered and made in
Nottinghamshire by
Jelly Products Ltd



Revolutionary Loopwheels have been specially designed to help wheelchair users get around more easily and with more comfort.

The springs give you extra power to get up kerbs, and reduce jolting as you come down. This gives a much smoother ride than standard wheels, wherever you go.

70% less vibration with **loopwheels**



A Nov 17 test showed that Loopwheels reduced transferred vibration **by 76%** at 13Hz and **68%** at 7Hz over a standard spoked wheel.

Go more places


“What amazed me about Loopwheels is what an unbelievable confidence boost they gave me. They made it so much easier to get over uneven ground, and made me feel so much happier about getting out and about with my friends and family after my accident.”

Ian Maskell

Injured in a cycling accident in 2013



Shock-absorbing suspension wheels make going places more comfortable.



Only Loopwheels use perfectly engineered springs to adjust to the smallest vibrations and big bumps.

Get out and about more easily

Loopwheels give a smoother ride on bumpy, uneven ground such as woodland tracks, cobbles, grass and beaches, as well as smoother surfaces like paths around town.

Less effort is needed to push over uneven pavements, cobbles, grass and gravel paths and it's easier to get up kerbs too.



Have more fun

“Going out and about with my hand bike is so much more enjoyable with Loopwheels. I’m able to go further, faster and for longer and I’m able to enjoy it more than I have done for years. They would make a huge difference to anyone using a hand bike.”

Martin Schuth

Quadriplegic since 1973
and former national wheelchair rugby player



Do what you love doing

Manual wheelchair use can be great exercise, but when you're on uneven ground, vibrations can wear you out, making it harder to drive your chair and triggering spasms and pain.

Loopwheels work really well with hand bikes, front wheel attachments and other motorised aids. They make travelling fast over bumpy ground more fun and less tiring.

Made from strong, durable and innovative carbon composite, so getting about is less effort.

We recommend you seek expert advice to ensure you're doing the right exercise and to protect the rotator cuffs in your shoulders.

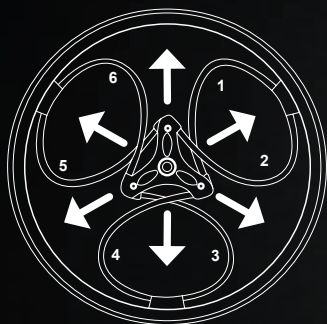


Customise your Loopwheels

Loopwheels use standard axle bearings, so they can swap on and off easily. Use your own quick release axle pin, or buy from us.



Choose from black, blue, green, orange, purple, red and white with black logo, or go for a multi-coloured look.



Choice of wide 19mm or narrow 11mm distance between the wheel rim and push rim to suit hand size and how you push.



How Loopwheels work

Loopwheel springs are made from strong, innovative carbon composite material, tested to give outstanding stability and durability.

The three loops in the wheel work together as a self-correcting system. The spring between the hub and wheel rim provides suspension that constantly adjusts to uneven ground, cushioning the rider from bumps and potholes in the road.

HUB

The hub floats within the rim, constantly adjusting as shocks from uneven surfaces hit the wheel rim.

PUSH RIMS

With wide or narrow offsets on push rims to suit the size of your hand and how you push.

RIGID RIM

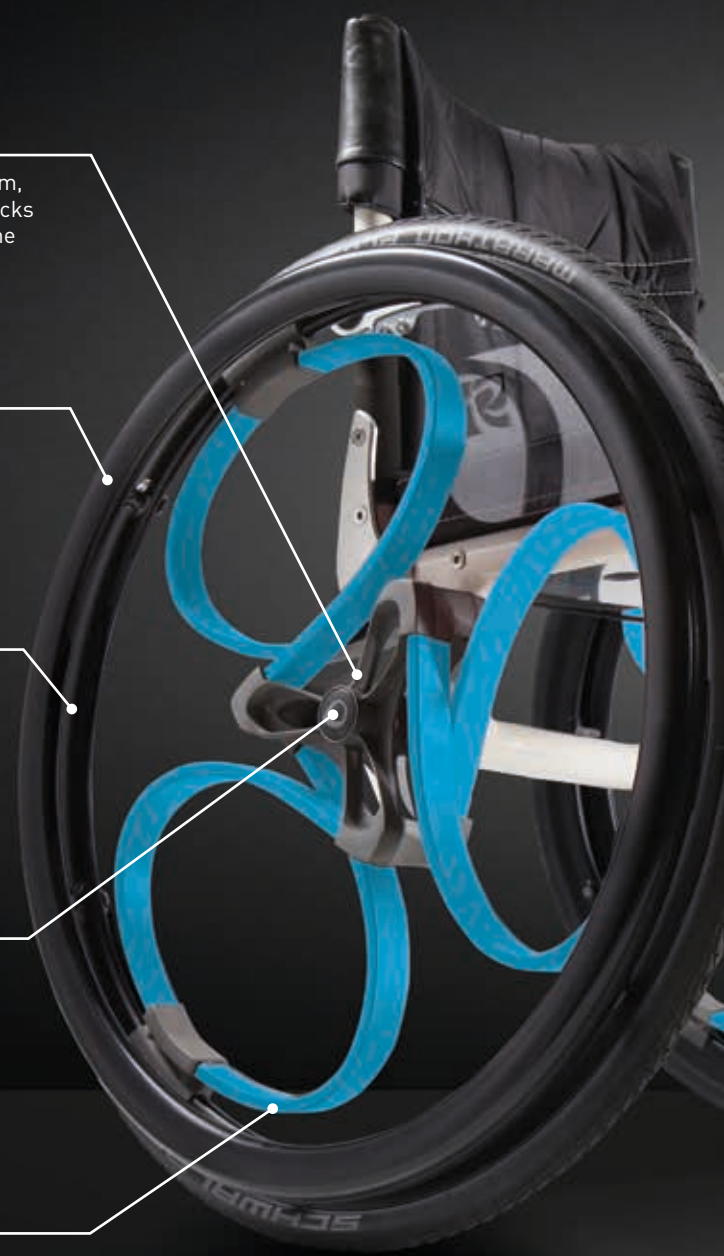
The robust rim rolls efficiently on level surfaces too.

AXLE PINS

Loopwheels take a completely standard pin in either 12mm or 1/2" diameter (12.7mm).

INTEGRAL SUSPENSION

Shock absorbing suspension wheel that makes going places more comfortable.





SPRING CONFIGURATION

This lets the torque, between hub and rim, transfer smoothly.

CARBON COMPOSITE

This innovative material makes getting out and about less effort.



Product specification

Wheel sizes: 24" (540mm) and 25" (559mm)

ETRTO numbers:

25-540 (24x1.00")

25-559 (26x1.00")

Axle bearings: 1/2" (12.7mm) and 12mm

Push rims: 6 rivnut fitting required

Rivnut centre measurements: 24" is 515mm;

25" is 539mm

Spring/loop materials: Carbon composite with plastic sleeve

Rim: double-walled aluminium, black

Inner rim width: 16mm

Hub: Die-cast aluminium, anodised graphite grey, Sealed cartridge bearings

Bearing width at faces: 1.87" (47.5mm)

Wheel weights: 24" is 1.8kg (3lb 15oz);

25" is 1.85kg (4lb)

NB. Wheel weights are without push rim, tyre or axle

Minimum user weight: 50kg (110lbs)

Maximum load (user and chair): 120kg (265lb)

Recommended tyres: Schwalbe Marathon Plus

Colours

Spring colours: Black, red, purple, orange, green, blue, white



Logo colours: Black, red, yellow, green, teal, light blue, pink, purple, grey, white



Loopwheels facts

How Loopwheels reduce vibration by up to 70%

Overall, Loopwheels significantly reduce the amount of harmful whole body vibrations a wheelchair user will face. In turn, this reduces pain and fatigue and lets them travel further.

About whole body vibration

Studies have shown that wheelchair users are exposed to levels of vibration that are considered unsafe and that this can affect health and life quality¹.

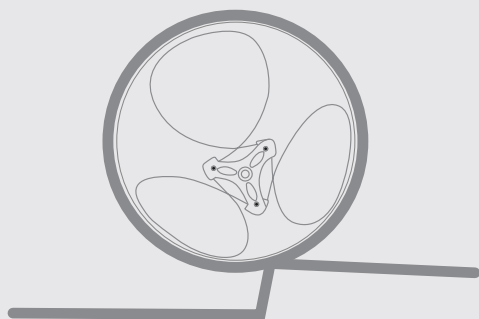
It is a significant risk factor for those with spinal disorders, increasing the amount of muscle fatigue and potentially damaging connecting nerves². Vibration is also believed to have significant impact on pain, the development of pressure sores, spasticity and general discomfort. It limits the time, distance and surfaces that users will consider for manual chair use.

Vibration is higher on rougher surfaces and at higher speeds, for example when using a hand bike attachment off-road.

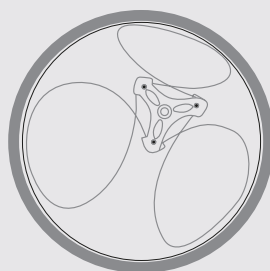
Wheelchair manufacturers have tried to reduce vibration by adding suspension or designing wheelchair frames from innovative materials. Unfortunately, this has not fully addressed the problem, as wheelchairs with suspension only marginally improve vibration control but incur a large weight penalty and an increase in frame costs³.

Our innovative in-wheel spring

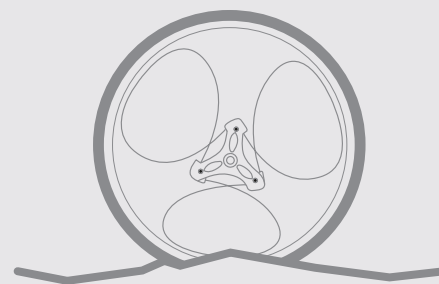
We've addressed this problem by using carbon composites to create an 'in-wheel' spring to absorb vibration, without the weight penalties of a suspension chair or the cost penalties of a full carbon frame.



Kerbs are less of an obstacle with Loopwheels. They reduce jolting, soften the impact of landing, and can help manage pain.



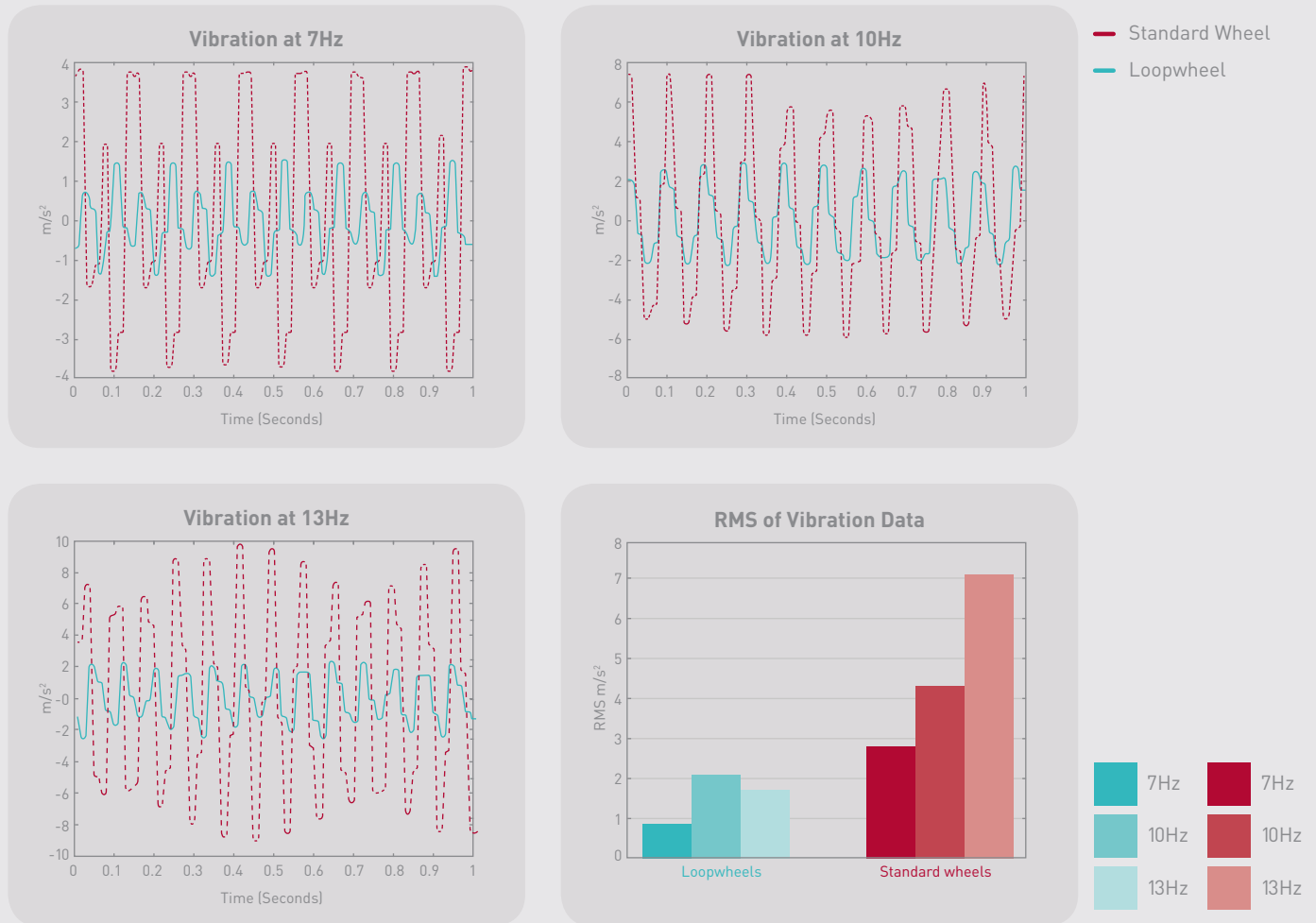
Up to 70mm of movement to reduce jolts.



The constant rumble and vibration from bumpy roads is tiring and can cause you problems. Loopwheels reduce vibration by up to 70% in comparison to traditional spoked wheels.

Results

Raw acceleration data was plotted for all three conditions along with RMS*.



Loopwheels were shown to reduce **vibration by 68%** at 7Hz, **52%** at 10Hz and **76%** at 13Hz.

*RMS – Root Mean Square value

Method for vibration test

To test vibration reduction qualities of Loopwheels, it was compared to a standard metal-spoked wheel that is usually the original equipment found on a wheelchair.

The wheel is positioned directly over the vibration plate. The wheel is loaded with a weight (10kg). An accelerometer is positioned on the frame holding the load. The accelerometer measures the vibration coming through the wheel. Each wheel was tested at 3 different frequencies (7, 10 and 13 Hz). This frequency range was chosen as this has been shown to be in the range of the most problematic frequencies for human health (1-20Hz)⁴.

To make sure all comparisons were equal, both wheels were fitted with the following:

All wheels had the following specification:

- 24" wheel size (BSD: 540mm)
- 1/2" bearings, taken from the same production batch (manufactured by MBL)
- Schwalbe Marathon Plus Tyres
- Schwalbe Schrader inner tubes
- Tyre pressure: 110 psi
- Black aluminium powder coated push rims (wide offset)

Research studies

1. Vorrink SNW, Van Der Woude LH V, Messenberg A, Crompton PA, Hughes B, Sawatzky BJ. Comparison of wheelchair wheels in terms of vibration and spasticity in people with spinal cord injury. *Assist Technol Res Ser.* 2010;26:51-53. doi:10.3233/978-1-60750-080-3-51
2. Garcia-Mendez Y, Pearlman JL, Boninger ML, Cooper RA. Health risks of vibration exposure to wheelchair users in the community. *J Spinal Cord Med.* 2013;36(4):365-375. doi:10.1179/2045772313Y.0000000124
3. Kwarcia AM, Cooper RA, Fitzgerald SG. Curb descent testing of suspension manual wheelchairs. *J Rehabil Res Dev.* 2008;45(1):73-84. doi:10.1682/JRRD.2006.11.0142
4. Katu US, Desavale RG, Kanai RA. Effect Of Vehicle Vibration On Human Body – RIT Experience
5. Turner JA, Cardenas DD, Warms CA, McClellan CB. Chronic pain associated with spinal cord injuries: a community survey. *Arch Phys Med Rehabil.* 2001 Apr;82(4):501-9

Rolling resistance with Loopwheels is as good as a spoked wheel

We proved that a wheelchair with Loopwheels rolls just as well as a chair fitted with a spoked wheel. In developing the Loopwheel suspension system to minimise vibration, one of our key considerations was not to absorb too much forward energy and hence reduce momentum. So we tested the Loopwheel against a spoked wheel to examine the rolling resistance.

Method for rolling resistance test

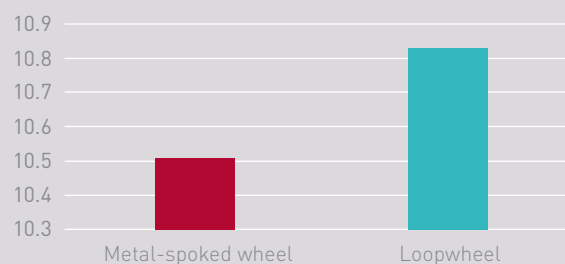
We positioned the wheelchair at the top of a low ramp. It had a pair of identical wheels and the same rider was used in each test. The rider weight was 68.2kg in each test. All the wheels for the test have the same MBL 1/2" bearings, tyres and air pressure. The rider allowed the wheelchair to descend the ramp without any input. The wheelchair was left to roll along a level tarmac surface until it came to a stop.

The test was performed for both Loopwheels and standard metal-spoked wheels. The tests were carried out consecutively and completed within an hour, in dry conditions and with no discernible wind.

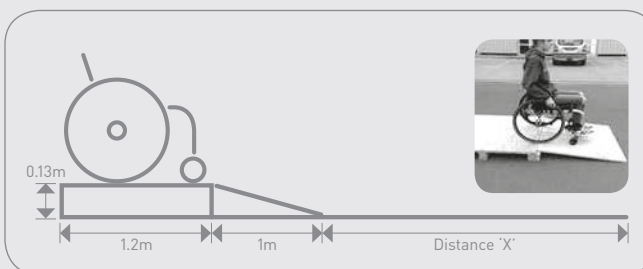
Results

The Loopwheel rolled the furthest for an average of 10.83 metres, the metal-spoked wheel rolled 10.51 metres. Both wheels perform equally well; the small differences in distance rolled were probably due to differences in the weight of the wheel.

Distance travelled (metres)



Wheel number	Wheel type	Distance travelled (metres)
1	Metal-spoked wheel	10.51
2	Loopwheel	10.83



What our customers say

Over **95%** of our customers rate Loopwheels as high or very high quality

Over **80%** of our customers said they'd chosen Loopwheels to reduce the amount of vibration they experienced in their wheelchair

Over **85%** of our customers felt positive about Loopwheels after using them for 2 weeks

To try Loopwheels for yourself, go to loopwheels.com



About us

Reducing vibration through innovation



Sam Pearce
Designer, Inventor, Co-Founder

We're proud to say the wheelchair wheel was reinvented and is made in Nottinghamshire by Jelly Products Ltd. Our visionary inventor is Industrial Designer and Mechanical Engineer, Sam Pearce.

We've carried out extensive tests to prove how Loopwheels reduce harmful body vibrations with no impact on rolling resistance. This means less pain and fatigue so wheelchair users can travel further.

To read more about our tests, medical studies and how Loopwheels can make a big difference to everyday life, visit loopwheels.com



See our website for stockists

 loopwheels.com

Designed and made in the UK

Jelly Products Ltd
Unit 202 Boughton Industrial Estate North
Newark
Nottinghamshire NG22 9LD

t: +44 (0)1623 860909

e: info@loopwheels.com