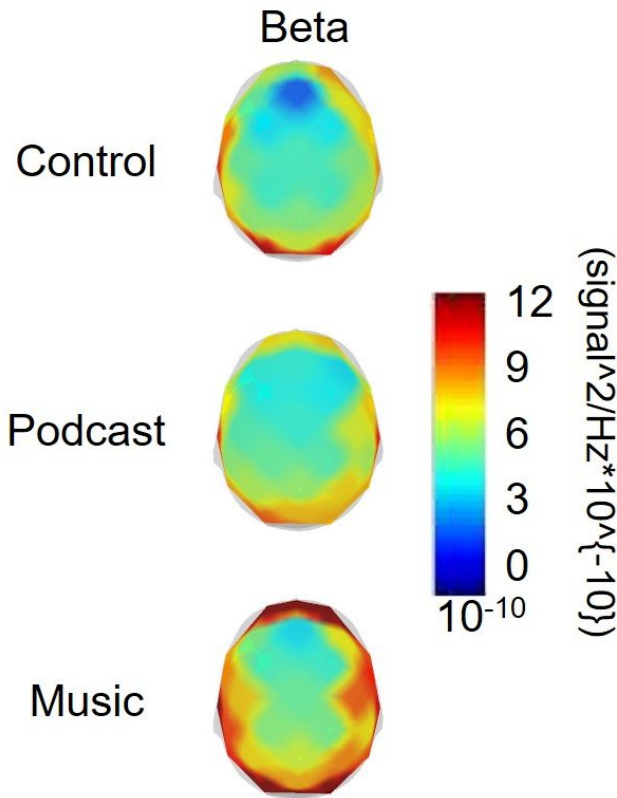


Brainwaves show how exercising to music bends your mind

18 February 2018, by Hayley Jarvis



Credit: Brunel University

Headphones are a standard sight in gyms and we've long known research shows listening to tunes can be a game-changer for your run or workout.

Back in 2012, Brunel University London's Costas Karageorghis likened music to a legal, performance-enhancing drug, cheating tiredness and sparking feel-good vibes.

But the precise brain mechanisms music triggers during exercise are less understood. That's

because monitoring technology is easily tricked by [body movements](#), so scientists couldn't know if the results would be the same outside the lab.

Now researchers have used portable electroencephalogram (EEG) monitoring with interference shielding technology to measure three types of brainwaves during exercise. This lets them compare the brain's electrical feedback while exercising outdoors to music, a podcast, or no soundtrack at all.

They found music rearranges the brain's electrical frequency, causing a drop in focus but enhancing enjoyment 28% more than silence and 13% more than a podcast.

"The EEG technology facilitated measurement during an ecologically-valid outdoor task, so we could finally explore the brain mechanisms that underlie the effects of music during real-life exercise situations", said Brunel psychophysicist Marcelo Bigliassi.

Setting their own pace, 24 people walked 400m on an outdoor track to either a six-minute blast of *Happy* by Pharrell Williams, a TED Radio Hours talk about cities, or no sounds at all. Researchers used psychological scales to measure how good the walkers felt, what they focussed their attention on, how pepped or alert they felt and how tired they felt. Simultaneously they used EEG measurements and analysing software to plot their brainwaves across different band frequencies such as lower-alpha, upper-alpha, sensorimotor rhythm and beta.

Music distracted the walkers' focus, but boosted their energy levels and enjoyment more than the TED podcast and not listening to anything. The podcast didn't affect the walkers' perceptual responses, such as how tired they felt, or their affective responses, such as how happy they felt. But it made them enjoy walking more than without a soundtrack. The study says the brain mechanisms

behind these effects appear to be linked to a boost in beta frequencies in the frontal and frontal-central regions of the cortex.

"We showed that music has the potential to increase beta waves and elicit a more positive emotional state," said Bigliassi. "This can be capitalised upon during other forms of exercise and render a given activity more pleasurable. People who struggle to engage in physical activity programmes should select appropriate pieces of [music](#) to [exercise](#) and see *The Way It Makes You Feel*."

More information: Costas I. Karageorghis et al, Music in the exercise domain: a review and synthesis (Part I), *International Review of Sport and Exercise Psychology* (2011). DOI: [10.1080/1750984X.2011.631026](https://doi.org/10.1080/1750984X.2011.631026)

Provided by Brunel University

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