

Running and rehabilitation improved with the right beat

August 26 2013



Runners can best improve their performance with motivating music that has a clear and constant beat. With a stable sound rhythm the pace of runners becomes more regular and they therefore run more efficiently. NWO researcher Melvyn Roerdink published these findings in the open access journal *PLoS ONE*. These insights can also help to improve rehabilitation methods.

Roerdink's students Robert Jan Bood and Marijn Nijssen let 19

[recreational runners](#) run on a treadmill on three different days until they were exhausted. The students investigated the differences between running without sound, running to a constant sound rhythm ([metronome](#)) and running to motivating music (songs from the Black Eyed Peas, Red Hot Chili Peppers and DJ Tiësto).

The study subjects ran for longer with sound rhythms than without. A surprising result was that the more monotonous metronome was just as effective as motivating music. This is because most pop songs have too many changes in beat for the runner to maintain a constant pace.

Roerdink concludes that the ideal [pacemaker](#) for a runner must contain two elements: motivating music with a clear and constant beat that is matched to the runner's pace. The motivating aspects enable a runner to make more effort and as a result of the synchronisation he or she will run more efficiently.

The research article can be consulted free of charge online via the website of *PLOS ONE*.

Rhythm for rehabilitation

A better understanding of how sound rhythms influence our movement makes it possible to improve training and rehabilitation efforts. Walking training, an important part of rehabilitation, can benefit from sound rhythms. These can be used to influence the pace or symmetry, for example. Walking rehabilitation is also a matter of practising a lot. Understanding how people can perform better and be more motivated to walk using sound rhythms is therefore valuable knowledge for the [rehabilitation process](#). For example, with the aid of motivating music rehabilitation patients can persist with walking exercises for longer.

Movement scientist Roerdink: 'A good example of how music can motivate is athlete Haile Gebrselassie who ran a world record in the

2000 metres in 1998. During his run the rapid beat of Scatman boomed throughout the stadium. Loud music with a stirring tempo and inspiring text works like doping for the brain: the arousal level rises ("morale") and signals of fatigue and pain are experienced less negatively.

Consequently a greater effort can be made. However, the beat in the music also plays an important role. Haile said that the beat of Scatman helped him to maintain his pace. Our research has clearly shown that in addition to the motivational qualities of music, a constant beat can also result in an improved performance.'

Patented rehabilitation treadmill

The fundamental research of Melvyn Roerdink into movements to external rhythms has yielded several possible applications. During rehabilitation an auditory or visual rhythm can improve the gait or elicit changes in step. In collaboration with partners from rehabilitation centres and industry this has led to a new rehabilitation treadmill, the C-Mill. Various nursing homes and rehabilitation centres in the Netherlands and other countries are already using this rehabilitation treadmill together with external rhythms to make walking rehabilitation more functional, challenging and fun.

'The translation of scientific insights into practical applications within the fields of sport and [rehabilitation](#) is something I really believe in,' emphasises Roerdink. 'Collaboration with Dutch SMEs is a vital part of this.'

More information: www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0070758

Provided by Netherlands Organisation for Scientific Research (NWO)

Citation: Running and rehabilitation improved with the right beat (2013, August 26) retrieved 11 May 2024 from <https://medicalxpress.com/news/2013-08-running-and-rehabilitation-improved-with.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.