

New research suggests it's all about the bass

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When we listen to music, we often tap our feet or bob our head along to the beat – but why do we do it? New research led by Western Sydney University's MARCS Institute suggests the reason could be related to the way our brain processes low-frequency sounds.

The study, published in *PNAS*, recorded the electrical activity of volunteers' brains while they listened to [rhythmic patterns](#) played at either low or high-pitched tones. The study found that while listening, volunteer's brain activities and the rhythmic structure of the sound became synchronized – particularly at the frequency of the beat.

Co-author of the paper, Dr. Sylvie Nozaradan from the MARCS Institute, say these findings strongly suggest that the bass exploits a neurophysiological mechanism in the brain – essentially forcing it to lock onto the beat.

"There is mounting evidence supporting the hypothesis that selective synchronization of large pools of neurons of the brain to the beat frequency may support perception and movement to the musical beat," says Dr. Nozaradan.

While this research is an important step in answering the mystery of why we "dance to the beat of the drum," according to co-author Dr. Peter Keller from the MARCS Institute, these findings could also prove important in clinical rehabilitation.

"Music is increasingly being used in clinical rehabilitation of cognitive and motor disorders caused by brain damage and these findings, and a better understanding of the relationship between music and movement, could help develop such treatments," says Dr. Keller.

The research team – also comprising of co-authors Dr. Manuel Varlet and Tomas Lenc – suggests that while this research is an important step in understanding the relationship between [bass](#) and movement, there are still many open questions about the mechanisms behind this phenomenon.

"Future research is needed to clarify what networks of [brain](#) areas are

responsible for this synchronization to the beat and how it develops from early in infancy," says Dr. Nozaradan.

More information: Tomas Lenc et al. Neural tracking of the musical beat is enhanced by low-frequency sounds, *Proceedings of the National Academy of Sciences* (2018). [DOI: 10.1073/pnas.1801421115](https://doi.org/10.1073/pnas.1801421115)

Provided by University of Western Sydney

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