

Early walking in toddlers linked to stronger bones

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Children who start to walk and jump earlier are more likely to have stronger bones later on in life, research shows.

A study, published in the *Journal of Bone and Mineral Research*, has demonstrated an association between children's abilities in common movements like jumping, running and walking at 18 months and stronger bones as an adolescent.

It is thought that these movements in toddlers place a stress on the bones, causing them to react by becoming wider and thicker, thereby making them stronger than those in children who may not be moving as much.

Findings from the study may help to identify who is at a greater risk of osteoporosis and bone fractures in later life.

Healthcare scientists from Manchester Metropolitan University and the University of Bristol believe the results could also be partly attributed to children with good early life movement being more physically active as they get older.

These children had bigger muscles which previous work by the Bristol group, led by Professor Jon Tobias, has shown to be associated with greater physical activity. In the current study, the researchers demonstrated that around half of the differences in bone strength at 17 years old associated with movement could be explained by muscle size differences.

Lead researcher Dr Alex Ireland, from Manchester Met's School of Healthcare Science, said: "The findings are intriguing as they provide a link which wasn't previously understood, primarily that how we move as a young child can have ramifications for our bone strength even 16 years later.

"We believe that stronger muscles could act as a 'marker' for this. Being more active gives you stronger muscles which can then apply bigger forces to the bones as we walk, run or jump, helping to strengthen bones as we grow older."

He added: "Importantly, the results could have implications for later life by helping medical practitioners to anticipate and detect those who are at a greater risk of osteoporosis or fractures, thus helping them to devise prevention and coping strategies. For example, attainment of these movement skills at an early age can be easily improved even by simple parent-led walking practice at home."

Researchers analysed data from 2,327 participants from Children of the 90s, a lifelong study of health and wellbeing that has been charting the lives of 14,500 people since they were born in the early 1990s.

Movement was assessed at 18 months, and hip and shin bone size, shape and mineral density was measured at 17 years of age, for both males and females, by scanning with X-ray absorptiometry and peripheral computed tomography.

The study found the effect was more pronounced in males than in females, suggesting early movement plays less of a role in female [bone strength](#). This fits with previous studies by the Manchester and Bristol groups showing that effects of [physical activity](#) and exercise on bone are greater in males than females.

Previous studies from Dr Ireland, published in *Bone* in 2014, showed

that babies who started to walk earlier could have up to 40 per cent higher bone mass in their shinbone compared to toddlers who were still crawling at the age of 15 months.

More information: Alex Ireland et al. Motor Competence in Early Childhood Is Positively Associated With Bone Strength in Late Adolescence, *Journal of Bone and Mineral Research* (2016). [DOI: 10.1002/jbmr.2775](https://doi.org/10.1002/jbmr.2775)

Provided by Manchester Metropolitan University

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