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# Meta-strategy learning in physical problem-solving: the effect of embodied experience

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## Abstract

‘Embodied cognition’ suggests that our motor experiences shape our cognitive and perceptual capabilities broadly, but often considers tasks that directly relate to or manipulate the body. Here we study how a history of natural embodied experience affects abstract physical problem-solving in a virtual, disembodied physical reasoning task. We compare how groups with different embodied experience – congenitally limb-different versus two-handed children and adults – perform on this task, and find that while there is no difference in overall performance, limb-different participants solved problems using fewer actions, and spent a longer time thinking before acting. This suggests that differences in embodied experience drive the acquisition of different meta-strategies for balancing acting with thinking, even on tasks that are designed to equalize differences in embodiment.