

# Tummy time and reading among recommended activities that boost babies' motor development

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Babies who get recommended amounts of tummy time, reading time and sleep in their first six months hit gross motor milestones sooner and

develop a foundation of healthy habits to build on in the coming years, according to a recent study.

"The [development](#) that happens in those first few years sets the stage for health and well-being throughout life, so it's a really critical period of development," says Valerie Carson, first author on the study and professor in the Faculty of Kinesiology, Sport, and Recreation.

The Canadian 24-Hour Movement Guidelines include the following recommendations for infants: a minimum of 30 minutes per day of tummy time, less than an hour at a time of being restrained in devices like car seats, no [screen time](#), regular reading time and sufficient sleep.

Researchers found that following as many of the recommendations as possible is beneficial not just for a child's gross motor development, but also for their long-term development of healthy habits.

"There's more and more evidence that the behaviors formed at this young age can become habitual and track over time," explains Carson. "The habits and the patterns we're establishing in children at a young age might predispose them to behave in a certain way as they get older."

This study was part of Early Movers, a research project developed to address a gap in knowledge that Carson saw when she was co-leading the development of the 24-Hour Movement Guidelines for the Early Years in 2017. Though the guidelines are intended to target children up to age four, Carson found there was little evidence on infants, and most of the existing evidence was focused on health outcomes related to obesity.

"I was interested in looking more into other health indicators around development, things like gross motor development and social, emotional and cognitive development," she says.

The study involved 411 infants recruited at two-month immunization appointments in partnership with Alberta Health Services. Parents filled out a questionnaire with [relevant information](#) when their child was two, four and six months of age. They were also asked to report the dates their children reached six major milestones—independent sitting, crawling on hands and knees, assisted standing, assisted walking, independent standing and independent walking.

They paired this main study with a sub-study in which some of the participating parents completed time-use diaries at the same two-, four- and six-month intervals. A physiotherapist also assessed the participating infants' gross motor development at six months.

The results showed that infants who met a particular recommendation at two months were between 1.8 and 8.2 times more likely to meet that same recommendation at four and six months.

There were positive associations with all the recommendations, but one in particular played a critical role, says Carson: "We saw the most consistent associations between meeting the tummy-time recommendation and gross motor development."

In infants who aren't yet crawling or walking, tummy time is the main form of physical activity, she explains. "When they're on their tummy it's requiring them to activate the muscles in their head and neck. Developing those muscles is key to setting them up for having stronger gross motor development as they get older."

Infants who continued to get the recommended amount of tummy time reached the sitting, crawling and standing milestones earlier than those who got less than the recommended amount.

For parents who are inundated with information about what's best for

their child, having evidence-based guidelines is key, says Carson, who is also a member of the Women and Children's Health Research Institute.

"They're based on what the best available evidence says will promote optimal growth and development in children."

The researchers also found that very few infants were adhering to all the guidelines, so next steps for the Early Movers project involve finding ways to reach parents and caregivers as early as possible so they're aware of these guidelines and their importance in an infant's development, including determining the best ways to deliver the information.

They also plan to develop interventions to help parents facing certain barriers—for example, if a baby doesn't enjoy tummy time, they hope to offer tips and strategies to get around that resistance while still working toward meeting the guideline.

The findings are published in the *International Journal of Behavioral Nutrition and Physical Activity*.

**More information:** Valerie Carson et al, Adherence to Canadian 24-Hour Movement Guidelines among infants and associations with development: a longitudinal study, *International Journal of Behavioral Nutrition and Physical Activity* (2022). [DOI: 10.1186/s12966-022-01397-8](https://doi.org/10.1186/s12966-022-01397-8)

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