

[IMAGE]

## **For Children, Heavy Backpacks Are a Real Pain**

Almost every child and teenager uses a backpack to carry his or her books to and from school. Over the years, there has been much debate as to whether heavy backpacks may cause back and/or shoulder pain in children. Understanding how backpacks carry weight (and how backpacks are worn by children) can help identify the causes of such pain, which may lead to better backpack design and increased safety and comfort.

In a recent study, 10 children wore backpacks loaded to 0%, 10%, 20% or 30% of their body weight for 30 seconds to determine the amount of pressure under the backpack's shoulder straps. While wearing the backpacks, the children also reported whether they felt any pain and, if so, how severe the pain was.

Pressure beneath the shoulder straps was "significantly increased" when the backpack was loaded at 10% of the child's body weight or higher. Increased pressure also was associated with an increase in pain, and the pressures were higher on the right shoulder than the left shoulder. Over the long term, the authors noted that uneven backpack loads could alter the curvature of a child's spine and produce back pain.

Based on the results of the study, the authors offered four recommendations for children who wear backpacks:

1. Backpacks should be positioned high on the back.
2. Backpack straps should be worn over both shoulders.
3. Weight in the backpacks should be minimized.
4. Backpacks should have wide shoulder straps.

Doctors of chiropractic who treat children should advise their patients (and their patients' parents) about the importance of proper backpack use and keeping the weight in a child's backpack to a minimum. For more information, visit [www.chiroweb.com/find/archives/pediatrics](http://www.chiroweb.com/find/archives/pediatrics).

Macias BR, Murthy G, Chambers H, et al. High contact pressure beneath backpack straps of children contributes to pain. *Archives of Pediatric and Adolescent Medicine*, December 2005;159:1186-1187.

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