



News Room

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Is Your Child's Backpack Making the Grade?

ALEXANDRIA, VA – While backpacks are one of the most convenient ways to carry books and school supplies, an overloaded or improperly worn backpack gets a failing grade, according to the American Physical Therapy Association (APTA). Legislators in California agree, with the California Assembly voting to approve a bill requiring school boards to develop cost-effective strategies to reduce backpack loads.

Assembly Bill 2532 requires the California State Board of Education to survey school districts to see how they have addressed the issue of backpack weight in relation to pupil health.

"Wearing backpacks that are too heavy, or wearing them improperly, can put children at increased risk for spinal injury," said David T Hayes, PT, president of the California Physical Therapy Association, the organization that supported the bill.

A study led by APTA member Shelley Goodgold, PT, associate professor of physical therapy at Simmons College in Boston, found that 55 percent of the children surveyed carried backpack loads heavier than 15 percent of their body weight, the maximum safe weight for children recommended by most experts.

"It is disturbing to find children carrying backpacks heavier than the recommended weight limit, particularly given the vulnerability of youths' musculoskeletal systems during these growing years," Goodgold said.

Goodgold explains that injury can occur when a child, in trying to adapt to a heavy load, uses faulty postures such as arching the back, bending forward or leaning to one side. These postural adaptations can cause improper spinal alignment, which hampers functioning of the disks that provide shock absorption. A too-heavy backpack load also causes muscles and soft tissues to work harder, leading to strain and fatigue. This leaves the neck, shoulders and back more vulnerable to injury.

In the Simmons' study, one-third of the children reported back pain that had caused them to visit a doctor, miss school, or abstain from physical activities. "After just one episode, the risk of future back problems increases, and children who experience back pain often have recurrent problems." Recent research studies have shown that heavy backpack loads produce changes in posture and requires more energy. This starts to occur when carrying backpack loads beyond 10 percent of the child's weight. Evidence is also mounting to establish a relationship between backpack weight and musculoskeletal problems.

Goodgold recommends following these tips for safe backpack use:

- **Wear both straps.** Use of one strap causes one side of the body to bear the weight of the backpack. This is true even with one-strap backpacks that cross the body. By wearing two shoulder straps, the weight of the backpack is better distributed, and a well-aligned symmetrical posture is promoted.
- **Wear the backpack over the strongest mid-back muscles.** The size of the backpack

should match the size of the child. It is also important to pay close attention to the way the backpack is positioned on the back. The backpack should rest evenly in the middle of the back. Shoulder straps should be adjusted to allow the child to put on and take off the backpack without difficulty and permit free movement of the arms. Make sure that the straps are not too loose and that the backpack does not extend below the low back.

- **Lighten the load.** Choose to carry only those items that are required for the day. Each night remove articles that can be left at home. When organizing the contents of the backpack, place the heaviest items closest to the back to reduce kinetic forces that cause postural malalignment and overwork muscles.

According to the APTA, the Land's End Collegiate™ and Collegiate Junior™ are desirable backpacks because of their padded and contoured shoulder straps, padded backs, multiple compartments, and appropriate size for children.

When selecting a new backpack, Goodgold recommends choosing ergonomically designed features that enhance safety and comfort:

- A **padded back** to reduce pressure on the back, shoulders and under arm regions, and enhance comfort;
- **Hip and chest belts** to transfer some of the backpack weight from the back and shoulders to the hips and torso;
- **Multiple compartments** to better distribute the weight in the backpack, keep items secure, and ease access to the contents;
- **Compression straps** on the sides or bottom of the backpack to stabilize the articles and compress the contents so that the items are as close to the back as possible and;
- **Reflective material** to enhance visibility of the child to drivers at night.

Some children may find backpacks with wheels a good option. Professor Goodgold cautions, however, that rolling backpacks may present problems, such as getting them up and down stairs or trying to fit them into cramped locker spaces or buses. If a wheeled backpack is chosen, Goodgold says to be sure that the extended handle is long enough so that the child is not forced to twist and bend, and that the wheels are sufficiently large so that the backpack doesn't shake or topple.

How do you keep your child injury-free? According to Goodgold, parents and children should recognize the warning signs that the backpack is too heavy:

- Change in posture when wearing the backpack;
- Struggling when putting on or taking off the backpack;
- Pain when wearing the backpack;
- Tingling or numbness; or
- Red marks.

APTA encourages parents and teachers to become involved in backpack safety initiatives. After just one class on backpack safety developed by Goodgold, more than 40 percent of participating students in a suburban middle school reported that they heeded backpack injury prevention advice and changed how they used their backpacks. In 2001, APTA was added to the American Society of Association Executives' (ASAE) 2001 Associations Advance America Honor Roll for its Backpack Safety program.

[Click to see the correct way to wear a backpack.](#)

For a free brochure on the back or scoliosis, send a self-addressed stamped envelope to American Physical Therapy Association, "Taking Care of Your Back" and/or "Scoliosis," PO Box 37257, Washington, DC 20013.

The American Physical Therapy Association is a national professional organization representing more than 61,000 members. Its goal is to foster advancements in physical therapy practice, research, and education.

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Exclusively for APTA Members: Talking Points for Backpack Safety

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