

The Effects of Backpacks on School-Aged Children

Look for packs with padded shoulder pads and waist belts

By Karen Pearl

Parents – Pay attention to what your children haul around. Back injuries don't just occur in adults.

Dr. Jeffrey Larson, a neurosurgeon at Kootenai Medical Center, said children with heavy, cumbersome backpacks are at risk of injuring their developing bone structure.

“When children are growing, their bones aren't solid,” Larson said. “And when there's undue pressure on them, especially when backpacks are pulling backward, it can cause detrimental effects.”

Although there are many factors that lead to back pain – increased participation in sports, poor posture and long periods of inactivity – a heavy backpack could be the culprit. Some children simply carry a locker's worth of stuff on their backs. Overtime, every schoolbook, school supply and personal items can hinder developing bones.

Larson recommends that children carry no more than 15 percent of their body weight in their packs.

To help you understand how heavy backpacks can affect your child's body, let's delve into how the spine is built. The spine is made of 33 bones called vertebrae, and between the vertebrae are discs that act as natural shock absorbers. When a heavy weight, such as a backpack filled with everything you can imagine is incorrectly placed on your child's shoulders, the weight's force can pull your child backward.

“To compensate, your child may bend forward at the hips or arch his or her back, which can cause your child's spine to compress unnaturally,” Larson said. “Because of the excessive weight, the child might develop shoulder, neck and back pain.”

If ignored, growth plates can be injured and stress fractures can occur. Larson offers a few tips to parents of elementary and adolescent children:

- If your child is 100 pounds, don't let the backpack exceed more than 15 pounds. Always follow the 15 percent of bodyweight rule.
- Pack smarter. Eliminate unnecessary items.
- Listen to your children. Be aware if they complain of pain.
- Seek immediate treatment from your pediatrician if pain arises.

Now, let's go shopping. The following shopping list will help you find an “ergonomically” correct backpack that will protect your child's developing bone structure.

- **Wide, padded shoulder straps.** Avoid backpacks with tight narrow straps that dig into the shoulders can interfere with a child's circulation and nerves. These types of straps can contribute to tingling, numbness and weakness in the child's arms and hands.
- **Two shoulder straps.** Backpacks with one shoulder strap that runs across the body cannot distribute weight evenly.
- **Padded back.** A padded back protects against sharp edges on objects inside the pack and increases comfort.
- **Waist strap.** A waist strap can distribute the weight of a heavy load more evenly.
- **Lightweight backpack.** The backpack itself should not add much weight to the load.

- **Rolling backpack.** This type of backpack may be a good choice for students who must tote a heavy load. Remember that rolling backpacks must be carried up stairs.

Backpacks are a popular and practical way for children and teenagers to lug around every reading, math and science book including their own personal diary or lunch sack.

When used correctly, backpacks can be a good way to carry the necessities of the school day. They are designed to distribute the weight of the load among some of the body's strongest muscles.

Use backpacks wisely!

Karen Pearl is the community relations partner at Kootenai Medical Center.