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## **Backpack-related injuries in children**

Overloaded backpacks used by children have received a lot of attention from parents, doctors, school administrators and the media in the past several years. According to the U.S. Consumer Product Safety Commission there were more than 21,000 backpack-related injuries treated at hospital emergency rooms, doctors' offices, and clinics in the year 2003. Injuries ranged from contusions, to sprains and strains to the back and shoulder, and fractures.

"Back pain in children is not so uncommon anymore," according to John Purvis, MD, pediatric orthopaedic surgeon. "Orthopaedic surgeons nationwide have seen an increase in children visiting their offices complaining of back and shoulder pain. If a child complains of back pain, parents should consider that it might be due to the backpack or perhaps something more serious. Back pain that persistently limits a child's activities, requires medication or alters sleep patterns warrants investigation."

The American Academy of Orthopaedic Surgeons recommends that a child's backpack should weigh no more than 15 to 20 percent of the child's body weight. This figure may vary, however, depending on the child's body strength and fitness.

While some experts disagree on whether heavy backpacks are the source of back pain in children, most agree that using good judgment when wearing one will reduce the risk of backpack-related injuries. It is important to partner with your child on the selection, packing and caring of the backpack.

### **Warning signs a 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
- Red marks

### **Tips for safe backpack use**

#### **Wear both straps**

Use of one strap shifts the weight to one side, causing muscle spasms and low back pain. 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**

A heavy backpack forces the wearer to bend forward. 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.

### **Use proper lifting techniques**

Bend at the knees and use your legs to lift the backpack placing one shoulder strap on at a time.

### **Tips for selecting a backpack**

- Choose 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
- Reflective material to enhance visibility of the child to drivers at night