

The Right Backpack: Guidelines for Parents¹

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Backpacks are a popular, useful, and convenient way to carry items needed for school and other activities. When used correctly, backpacks carry the day's necessities on the body's strongest muscles, the back and abdomen (American Academy of Orthopedic Surgeons [AAOS], 2004; Gavin, 2004).

However, when backpacks are too heavy or are worn incorrectly they can injure the muscles and joints of growing children and teens. The result can be severe pain from strains and sprains on the back and shoulders, and even contusions and fractures (National Safety Council [NSC], 2004). An estimated one half of U.S. school children carry too much

weight in their backpacks and the number of backpack related injuries in children is increasing (AAOS, 2004; Dobbs, 2005; NSC, 2004).

Parents can follow these guidelines to help their family use backpacks safely and prevent injuries (American Occupational Therapy Association [AOTA], 2004-2006).

Choose a backpack that fits right.

- Look for a lightweight pack with wide, padded shoulder straps, a padded back, and a waist belt.
- The pack should fit the child. It should not be bigger than the length of the child's torso (American Academy of Pediatrics [AAP], n.d.; California Physical Therapy Association [CPTA], 2003).
- Compression straps on the sides or bottom of the backpack tighten to compress and stabilize the contents of the backpack (NSC, 2004).

Use the backpack correctly so weight is distributed evenly.

1. This document is FCS2246, one of a series of the Family Youth and Community Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date August 18, 2006. Reviewed by Carol Lehtola, Ph.D. and Carolyn Hanson, Ph.D., O.T. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.
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- Always use both shoulder straps and adjust them so they are snug, but not too tight, and the child's arms and shoulders move freely (AAOS, 2004; AAP, n.d.; Dobbs, 2005).
- Wear the pack close to the body and about two inches above the waist so it rests evenly in the middle of the back (CPTA, 2003).

Pack only what is needed.

- The backpack should not weigh more than 15% percent of the student's body weight (AOTA, 2004-2006). For example, a 90 lb child can carry up to 13.5 lbs in their backpack.
- Spread the weight among the compartments, with "heavier items closest to the center of the back" but not poking out (AAOS, 2004).

Other Guidelines

There are other precautions your student can take:

- Don't bend over at the waist when wearing or lifting the pack.
- Bend using both knees and squat if necessary.
- Do back strengthening exercises, and stay fit.

Encourage your child to use a locker if available. Talk to the school about buying a second set of textbooks for students, distributing the homework load, and permitting students to stop at their lockers during the day.

Backpacks with wheels may be a good option when there is a heavy load. However, wheeled backpacks may be difficult to use on stairs or in crowded halls. Be sure your child's school allows rolling backpacks before making this choice (AAOS, 2004).

Signs of Injury

How do parents know if their children are being injured? Signs of a too-heavy load include struggling to put on or take off the pack, stooped posture, pain

when wearing the pack, tingling or numbness in the arms, and red marks on the shoulders (AOTA, 2004-2006; Gavin; NSC). If these problems continue after adjusting the pack, see your family doctor or pediatrician.

Notes

1. Injury occurs in several ways. When a backpack is too heavy, it pulls a person backwards, and the person may lean forward to compensate. Bending forward at the hips and arching the back can compress the spine unnaturally (Gavin, 2004). Over time, the shoulders can become rounded and the upper back, curved, and the child or teen can develop shoulder, neck, and back pain. In addition, tight narrow straps may interfere with circulation and heavy weight may cause stress or compression to the shoulders and arms. When nerves are compressed, the child may experience tingling or numbness in the arms and hands. When wearing the backpack over just one shoulder, the child or teen may lean "to one side to offset the extra weight." This can result in lower and upper back pain, shoulder and neck strain, and poor posture (AAOS, 2004; AOTA, 2004-2006; Gavin, 2004).
2. Reflective material also helps keep the child visible to drivers at night (CPTA, 2003).
3. To check the fit of your child's backpack, see the following illustrations:
<http://www.ccapta.org/BackpackSafetyIllus.htm>,
http://www.promoteot.org/AI_BackpackStrategies.html

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