

## How Heavy Can a Backpack Get?

By WILLA PLANK

The fastest growing backpack by sales at L.L. Bean Inc. this back-to-school season is the Turbo Transit II. It's the retailer's largest daypack—measuring 2,400 cubic inches, about the capacity of a small dorm refrigerator—with a separate compartment at the bottom that allows a child to store a change of clothes or shoes.

"It's a really valuable tool, like a car trunk," says Pam Jones, senior designer of the travel division at L.L. Bean, which specializes in outdoor equipment. The pack is nicknamed the minivan at the company because of its capacity and versatility, she says.

The amount of stuff kids haul around on their backs has increased over time, leading manufacturers to make packs with more ergonomic features to help avoid injury. Some kids carry all their books, a laptop and other electronics all day due to limited time between classes. Many schools also are doing away with lockers because of security concerns.

A loaded backpack shouldn't exceed 10% of a child's body weight, according to recommendations from the American Occupational Therapy Association Inc., a professional group that sponsors a National School Backpack Awareness Day each fall. That means, for instance, a 100-pound teen should only be hauling 10 pounds. In reality, the average child carries about 22% of his or her body weight, according to the American Chiropractic Association. That's more than twice the recommended amount.

There were an estimated 27,900 backpack-related injuries among U.S. kids and adults last year, according to the Consumer Product Safety Commission. The figures don't include camping backpacks, luggage and baby carriers. Most injuries occur to the upper back, as many kids grab one strap and go, says Cynthia Vaughn, spokesperson for the ACA and a doctor of chiropractic in Austin, Texas. The resulting strain and inflammation frequently resolve on their own. But if a child keeps up the same motion, it can lead to more serious problems including damage to the brachial plexus network of nerves that conducts signals from the spine to the shoulder, arm and hand, Dr. Vaughn says.

Wearing a backpack incorrectly can also hurt a child's posture, says Scott McGuire, product director of equipment at outdoors brand North Face, part of VF Corp. A backpack worn too low will cause the child's shoulders to hunch and his or her neck to

lean forward. Also a heavy pack causes a high-level of frustration, as some children resort to dragging their pack.

Mr. McGuire says North Face began consulting with the ACA more than two years ago on designs for youth packs. The company engineered straps so the proper fit was also the most comfortable. Now, if the pack is worn too low on the back, the narrow part of the straps end up near the neck, he says.

Rob Mizelle, senior designer for backpacks and luggage at Lands' End, part of [Sears Holdings Corp.](#), says ergonomic features on its backpacks include C-shaped shoulder straps that contour to the body, pack bottoms that angle up so the weight moves down closer to the child's back and compression straps that hold weight closer to a child's back to help posture and balance.

L.L. Bean says its packs with more technical features include sternum and waist straps that aim to distribute weight more evenly and to prevent loads from swaying or shifting, for instance, while on a bicycle or skateboard. Foam in shoulder straps and back of the pack cushion the wearer's back and shoulders. The foam should be a firm, medium density for greatest effectiveness, the company says.

Stefania Pomponi Butler, in San Carlos, Calif., says she lets her daughters pick out their own backpacks. Her 6-year-old likes anything pink and flowery, she says, while her 9-year-old goes for sporty and functional to carry all her gear such as her lunchbox, sunscreen and water bottle, and hold clip-on doodads.

"If they don't like what they look like, they won't pick them up," says Ms. Pomponi Butler, who maintains the CityMama blog and is co-founder of a social-media marketing agency. Still, she says she checks to see if the backpacks are made of quality materials and if there are secure side pockets for water bottles.

Karen Jacobs, a Boston occupational therapist and spokesperson for the AOTA, says when buying backpacks for school kids, parents should look for padded straps, padding on the back of the pack and side pockets for bottles. When wearing them, weight should be distributed evenly by using both straps.

Shoulder straps should be adjusted so the pack fits snugly on the child's back. Heavier items should be loaded closest to the child's back in order to maintain balance and posture. And the pack's bottom should rest in the curve of the lower back.

L.L. Bean's Ms. Jones says there was growing demand for wheeled backpacks for several years, but sales have leveled off this year. She says rising materials costs have boosted prices of these carriers. Also, some schools have banned wheeled packs because they don't fit in lockers.

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