



## *National Association of School Nurses*

### **POSITION STATEMENTS**

#### ***Backpacks***

##### **SUMMARY**

It is the position of the National Association of School Nurses that the improper use of backpacks is not healthy for any individual and may be harmful. Children are particularly susceptible to orthopedic injuries from wearing backpacks because their bodies are growing and developing. Wearing a backpack that weighs more than 15-20% of one's body weight can contribute to back pain and other disorders throughout life (The Nemours Foundation, n.d.). Education and appropriate interventions can reduce these possibilities.

##### **HISTORY**

In recent years, backpacks have become very popular and are now widely used by students of all ages to transport books, musical instruments, athletic equipment, and a variety of other items between home and classrooms. In 2003, according to the U.S. Consumer Product Safety Commission (as cited in Ferguson, n.d.), overloaded backpacks were the cause of more than 21,000 injuries treated at hospital emergency rooms, doctor's offices, and clinics. Injuries ranged from contusions, strains, and sprains to fractures of the back and shoulder (Ferguson, n.d.). MRI studies revealed that overloaded backpacks alter the fluid content of the discs in the spine, making the wearer a prime candidate for disorders such as herniated disc and osteoarthritis later in life (Backpack safety, 1999). A study calculating and comparing cervical and shoulder position angles revealed that both backpack weight and time carried influenced cervical and shoulder posture. Forward head posture increased when carrying a heavily loaded backpack (Chansirinukor, Wilson, Grimmer, & Dansie, 2001).

This problem is magnified when students carry their backpacks with one strap and use only one shoulder to support the weight, thereby directing the entire weight to one side of the body. This may cause the bearer to bend forward under the excess weight, and it can subject them to muscle spasms, headaches, spinal discomfort, and the aggravation of pre-existing spinal conditions such as scoliosis (Ferguson, n.d.).

##### **DESCRIPTION OF ISSUE**

School nurses are concerned about the increasing student complaints of pain in the back, neck and shoulder areas, as well as headache discomfort, which may be precipitated by the increased use of backpacks by students. There has been an increased number of school clinic visits for back complaints and therefore, subsequent increased loss of educational time. Physical problems often arise because students choosing poorly constructed backpacks wear them improperly and carry more than the recommended weight for their body size.

Recommendations for safe backpack use:

1. Match the size of the backpack to the size of the student; making sure it is not too long or too short.
2. Select a lightweight style that has two wide, padded shoulders, a waist strap, and a padded back.
3. Position the backpack to rest evenly in the middle of the back.
4. Use both shoulder straps.
5. Bend at the knees and use your legs to lift the backpack, one shoulder strap at a time.
6. Tighten the straps so that the backpack is close to the body.
7. Distribute the weight of objects evenly within the backpack, and do not carry a weight greater than 15% of body weight.
8. Utilize all compartments and pack the heaviest objects close to the back with the center of gravity near the pelvis.
9. Lighten the load whenever possible.

## RATIONALE

School nurses are in a unique position to help promote healthy lifestyles and health practices to both students and families. They can not only help to educate them about improper backpack use and how it can contribute to present and future back pain and other discomfort but can also teach the appropriate interventions to help reduce injuries. Backpack safety issues can also be addressed though inclusion in the school's health curriculum. A 2002 follow-up study showed that backpack education for elementary school children is efficacious for up to one year, suggesting that backpack information should be reviewed annually.

### References/Resources:

American Occupational Therapy Association. (2002). Backpack strategies for parents and students. Pack it light, wear it right. Retrieved January 23, 2006, from <http://www.promoteot.org/doc/BackPackStrategies.pdf>.

Arnsdorff, M., & Carroll, J. (2005, October). Back Troubles from Back-to-School Backpacks. *Backpack Safety America*. Retrieved January 23, 2006 from [www.backpacksafe.com/N5\\_News\\_Detail.aps?pid=6&ID=8](http://www.backpacksafe.com/N5_News_Detail.aps?pid=6&ID=8).

Backpack safety data sheet. (1999). *Spine*, 24(13), 16-21.

Brackley, H. M., & Stevenson, J. M. (2004, October). Are children's backpack weight limits enough? *Backpack Safety America*. Retrieved January 23, 2006, from [www.backpacksafe.com/N5\\_News\\_Detail.aps?pid=6&ID=1](http://www.backpacksafe.com/N5_News_Detail.aps?pid=6&ID=1).

Brannon, T. (2001). *Backpack safety. Timely Topics*. Retrieved January 25, 2006, from <http://coop.co.pinellas.fl.us/TimeTweb/2001/august01/augtammmy.htm>.

Cardoon, G. M., DeClercq, D. L. & De Bourdeaudhuij, I. M. (2002, February 1). *Back education efficacy in elementary schoolchildren: A 1-year follow-up study* [Electronic version]. *Spine*, 27(3), 299-305. Available from [www.pubmed.gov](http://www.pubmed.gov).

Chansirinukor, W., Wilson, D., Grimmer, K., & Dansie, B. (2001). Effects of backpacks on students: Measurements of cervical and shoulder posture [Electronic version]. *Australian Journal of Physiotherapy*, 47(2), 110-116. Available from [www.pubmed.gov](http://www.pubmed.gov).

Ferguson, S. (n.d.). *Backpack safety information* [Brochure]. Enon, Ohio: Ferguson Chiropractic Solutions.

Guyer, R. L. (2001). Backpack = back pain. *American Journal of Public Health*, 91(1), 16-19.

Nemours Foundation (n.d.) *Backpack safety: What problems can backpacks pose?* Retrieved May 27, 2006, from <http://www.kidshealth.org/parent/positive/family/backpack.html>.

Taylor, L. A. (2005). *Backpack safety* [Brochure]. Fairborn, Ohio: Fairborn Chiropractic Associates.

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