How Heavy Are School Bags of Dunedin’s Secondary School Students?

Daniela Aldabe & Sandra Mandic
Overview

• 90% of students carry school bags

• Musculoskeletal disorders
  • Lower back, neck and shoulder pain

• Weight, use style, design and time

Straps need to be on both shoulders

Wide Straps

Light Load (No more than 15% of body weight)

Notice Rounded Shoulders

Too Heavy

• School bag weight
  • Recommended: up to 10 to 15% of body weight
  • Reality: 10 to 40% of body weight

Chow et al. (2005) Ergonomics. 48(6): 642-56
How Schools Bags Affect Adolescents?

Grimmer et al. (2002) BMC musculoskeletal disorders. 3(10): 1 – 10
Ramprasad et al. (210) Indian Pediatrics. 47(4): 572 - 3.
How Schools Bags Affect Adolescents?

- Postural alteration

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How Schools Bags Affect Adolescents?

• Postural alteration

• ↑ stress over muscles, ligaments, vertebral discs and bones

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How Schools Bags Affect Adolescents?

- Postural alteration
- ↑ stress over muscles, ligaments, vertebral discs and bones
- Musculoskeletal maturation

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Aim

Examine school bag weights in adolescents attending a secondary school in Dunedin
Methods

• 555 students
  • On-line survey
  • Anthropometric measurements
    • Height
    • Weight
  • School bag measured
Results

Gender

- Girls: 48%
- Boys: 52%

School Year

- Year 9: 38%
- Year 10: 26%
- Year 11: 13%
- Year 12: 11%
- Year 13: 12%
<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>School bag weight</td>
<td>5.4 kg</td>
<td>2.0 kg</td>
<td>0.8 to 12.9 kg</td>
</tr>
<tr>
<td>School bag weight (% of body weight)</td>
<td>9.2 %</td>
<td>3.9 %</td>
<td>1.4% to 29.3% of body weight</td>
</tr>
</tbody>
</table>

35% of adolescents’ school bags exceeded 10% of body weight

7.5% of adolescents’ school bags exceeded 15% of body weight

School bag weight more than 10% of body weight

82.1% Underweight adolescents
41% Normal weight adolescents

School bag weight more than 15% of body weight

35.7% Underweight adolescents
Type of Transportation

- Active Transportation: 9.20%
- Combined: 8.90%
- Motorised: 9.40%
Conclusion

• Approximately one third of the adolescents attending secondary schools in Dunedin are carrying school bags over the safe limit.

• Risk groups:
  • Underweight adolescents
  • Normal weight adolescents
  • Boys
  • Adolescents enrolled in E-schools
Recommendations

- Schoolbag weight should be controlled
  - Less than 10% of body weight
  - Perception
- Both straps
- Padded in the back, shoulders and waist
- Close to the body
Active Living Laboratory
otago.ac.nz/active-living

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Thank you!

daldabe@gmail.com

www.otago.ac.nz/beats