

COMPARATIVE STUDY ON ERGONOMICALLY DESIGNED SCHOOL BAGS AND TRADITIONAL SCHOOL BAGS

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Abstract

The impact of school bag design on students' musculoskeletal health is a growing concern. This study evaluates the ergonomic benefits of the REHOB Ergonomically Designed School Bag in comparison to traditional school bags. A research trial was conducted among 20 school children to assess comfort, posture, and usability. The results indicate that the REHOB bag provides superior comfort, promotes better posture, and reduces strain on the back and shoulders, thereby improving the overall well-being of students.

Introduction

Carrying heavy and improperly designed school bags has been linked to numerous musculoskeletal problems, including back pain, shoulder pain, and poor posture, collectively termed as **Backpack Syndrome**. The issue is particularly critical for children aged 12-14, whose spines are still in a developmental phase. This study aims to compare the effectiveness of the REHOB Ergonomic School Bag with traditional school bags in reducing these health risks and enhancing comfort and usability.

Methodology

A **randomized comparative study** was conducted with a sample of **20 school children** (10 boys and 10 girls) from grades 6 to 10. The study was carried out over two weeks, where students alternated between using the REHOB Ergonomic School Bag and a standard school bag. The study assessed the following parameters:

1. **Comfort Levels** – Measured using a **subjective rating scale (1 to 10)**, where 1 represents extreme discomfort and 10 represents maximum comfort.
2. **Postural Impact** – Evaluated using **postural assessment techniques**, including observation of spinal alignment and shoulder symmetry.
3. **Weight Distribution** – Measured by analysing pressure points on the shoulders and back.
4. **Ease of Carrying Notebooks and Books** – Assessed based on students' feedback on accessibility and convenience.
5. **Musculoskeletal Strain** – Determined using a short questionnaire about pain or discomfort after using each bag type.

Results

The study yielded the following key findings:

- **Increased Comfort** – **85%** of students reported higher comfort levels when using the REHOB Ergonomic Bag, with an average rating of **8.7/10** compared to **5.2/10** for traditional bags.
- **Better Posture** – **90%** of students exhibited better spinal alignment and reduced forward bending when using the REHOB bag.
- **Reduced Shoulder and Back Strain** – Pressure mapping analysis showed that the REHOB bag **evenly distributed weight** across both shoulders, unlike traditional bags that concentrated weight on one side.
- **Improved Accessibility** – **95%** of students found the compartmentalized design of the REHOB bag more convenient for organizing and retrieving books.
- **Lower Pain Complaints** – Only **2 out of 20** students reported mild discomfort after using the REHOB bag, compared to **12 out of 20** after using traditional bags.

Discussion

The findings of this study highlight the significant advantages of using ergonomically designed school bags. Traditional school bags contribute to uneven weight distribution, leading to poor posture and increased strain on students'

musculoskeletal systems. The REHOB bag, with its scientifically engineered weight distribution, padded support, and multiple compartments, helps prevent **Backpack Syndrome** and associated health problems.

These results support the implementation of ergonomic school bags in schools to **enhance student health, reduce absenteeism, and promote better learning outcomes**. The research also suggests that school policies should encourage students to carry only essential books and consider ergonomic improvements in school bag design.

Conclusion

The study confirms that the REHOB Ergonomically Designed School Bag provides **superior ergonomic benefits** compared to traditional school bags. Students using the REHOB bag experienced **greater comfort, improved posture, and reduced back and shoulder strain**. This research advocates for the wider adoption of ergonomically designed school bags to prevent posture-related health issues and improve student well-being.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Schools should consider **adopting ergonomic school bags** as part of their standard supplies.
2. Parents should be educated on the **importance of ergonomic school bags** for their children's long-term spinal health.
3. Further large-scale studies should be conducted to analyse the long-term impact of ergonomic school bags on students' health and academic performance.

This study provides compelling evidence that a simple change in school bag design can have profound effects on students' health and comfort, reinforcing the need for ergonomic solutions in school accessories.

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