

# Backpack Support



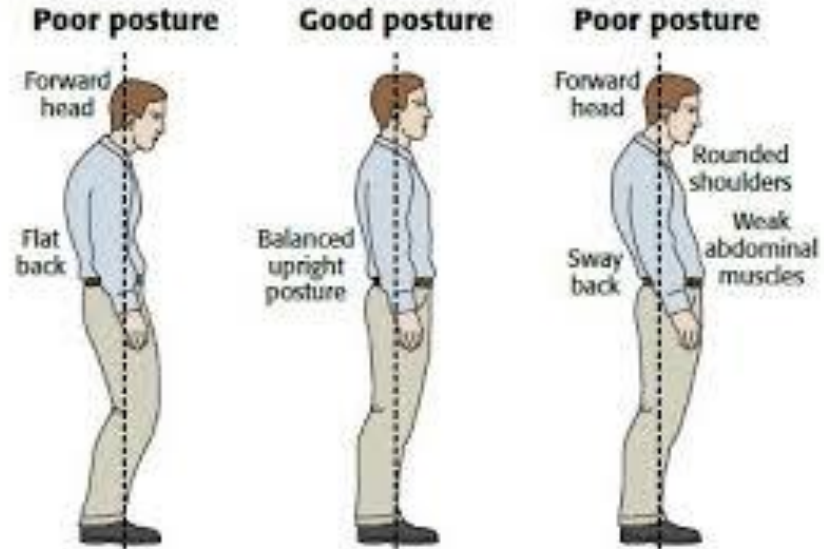
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# Category of this problem



- This problem falls under the Category of Engineering Applications.
- Anatomy
- Project that would potentially create a useful item for many people to be used in their day-to-day lives



# What is the problem?

- As kids grow into adulthood, back pain and spinal problems are becoming more and more common.
- Growing children use backpacks almost every day, and can shape their backs into their permanent form.



# Why is this problem is important to solve?

- This problem is very common and affects millions of people.
- This problem causes people to be out of commission and miss work/school.
- Over 80% of Americans have been faced with back pains in their lives.
- Many children are growing up with back problems such as scoliosis, spinal arthritis, and herniated disks.



# Current Solutions

## Rolling Backpacks



## Lumbar Back Support



- Currently, there are rolling backpacks which include wheels on the bottom with a elongated handle to be able to drag the back pack on the floor without it being on your back
- There are lumbar back support devices that encourage good posture when sitting and standing
- Posture correctors are used when some people have severe back deformities and usually are effective at recorrecting one's posture

# Current Solutions continued

## Pros

- Rolling backpacks put no strain on your back directly
- Lumbar supports improve posture
- Some bags distribute weight equally
- Posture correctors can correct your posture very well

## Cons

- Rolling backpacks are seen poorly amongst high school etiquette
- Must bend over to roll backpack
- Cannot take a lumbar support with you around work, school, etc.
- Other types of backpacks that do include some support for backs are expensive.

(Deluxe Full Back Posture Corrector Brace)



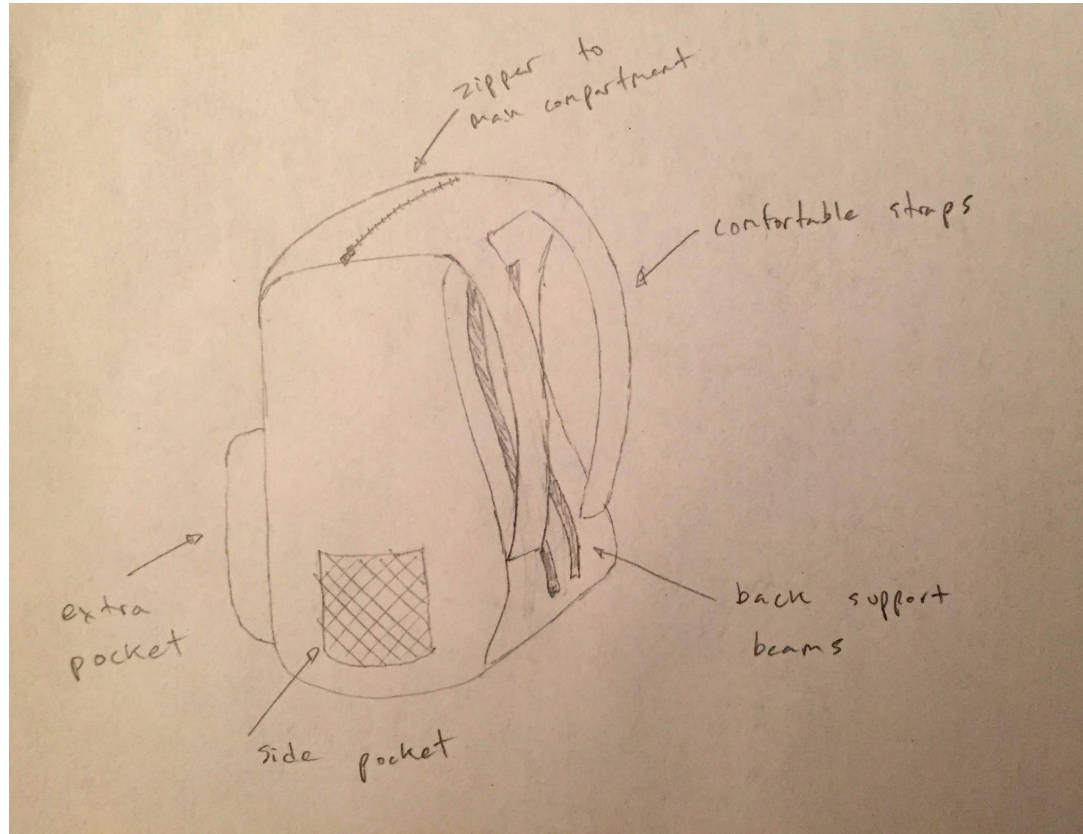
Hiking backpacks have better support than traditional backpacks but are very expensive

# What do these solutions not fully solve the problem?

- Although there are many solutions and inventions to fix the problem after the fact of its effects on your back, there are not many solutions that focus on the prevention of back pains
- Rolling backpacks create stress on the shoulder joints since you have to bend down
- There is never an even way to distribute weight in backpack



# Solution to Problem





# Solution to Problem

Our solution is to make a new backpack that is formed to fit with a humans natural spine. The backpack will have lumbar support to allow and maintain good posture. The backpack will also be made of mesh so that the persons back can “breathe” and avoid sweat. Along with solving the problem, It will be cheap and affordable for everyone to own.

Our group will first research different types of back supports and find the best shape to support a person’s back using the different prototypes. Next, we will take generic and cheap backpacks and replace the backs of them with our own supports. This will be a more efficient and cost effective way to accomplish this problem rather than making entirely new backpacks.

# How will this be done?

- Taking a regular, inexpensive backpack
- Modifying the backside of it to include added breathable mesh, along with the framework of the normal prototype of a back
- Making the framework out of a soft but sturdy material (plastic, gel, mesh)
- Adding the framework to conform to the back of a human and shape the back correctly.



# Citations

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