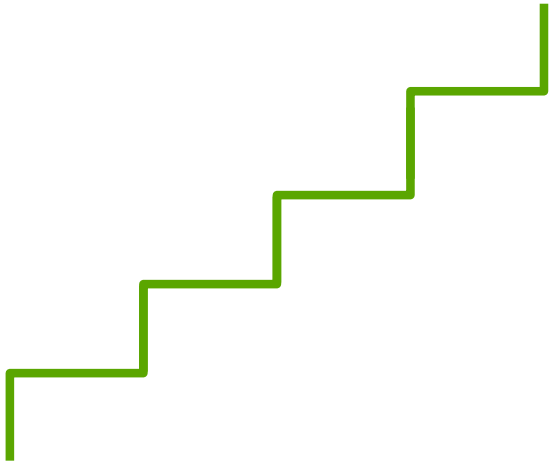
Stair Stretcher

Green A

Long Lam



The Product

Tripod wheels

Backboard attaches

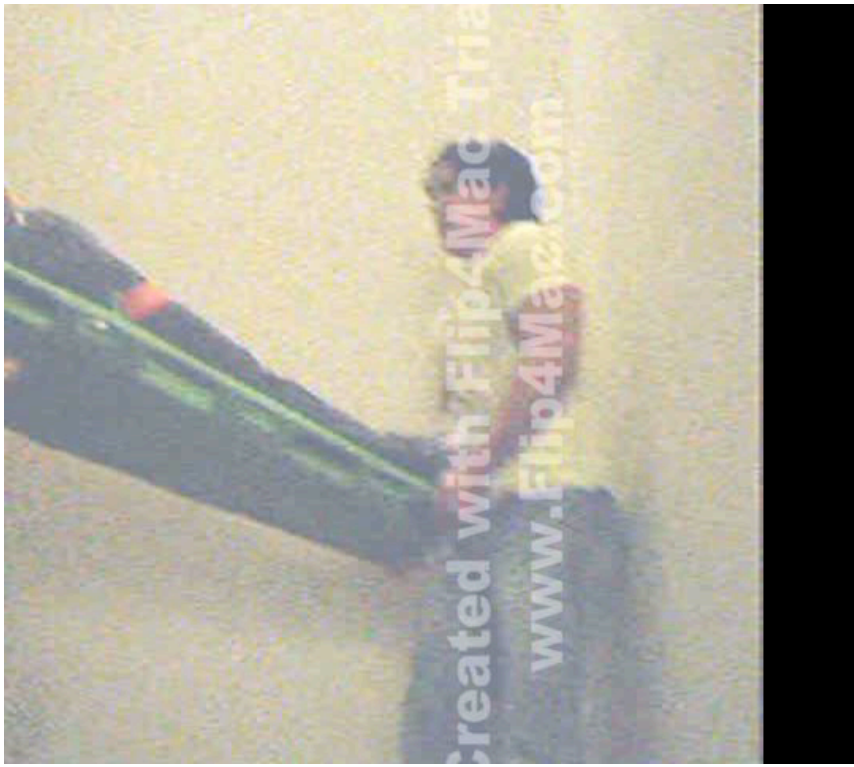
Disc brake

Electromagnetic brake

Problem

Transporting a backboard up and down stairs

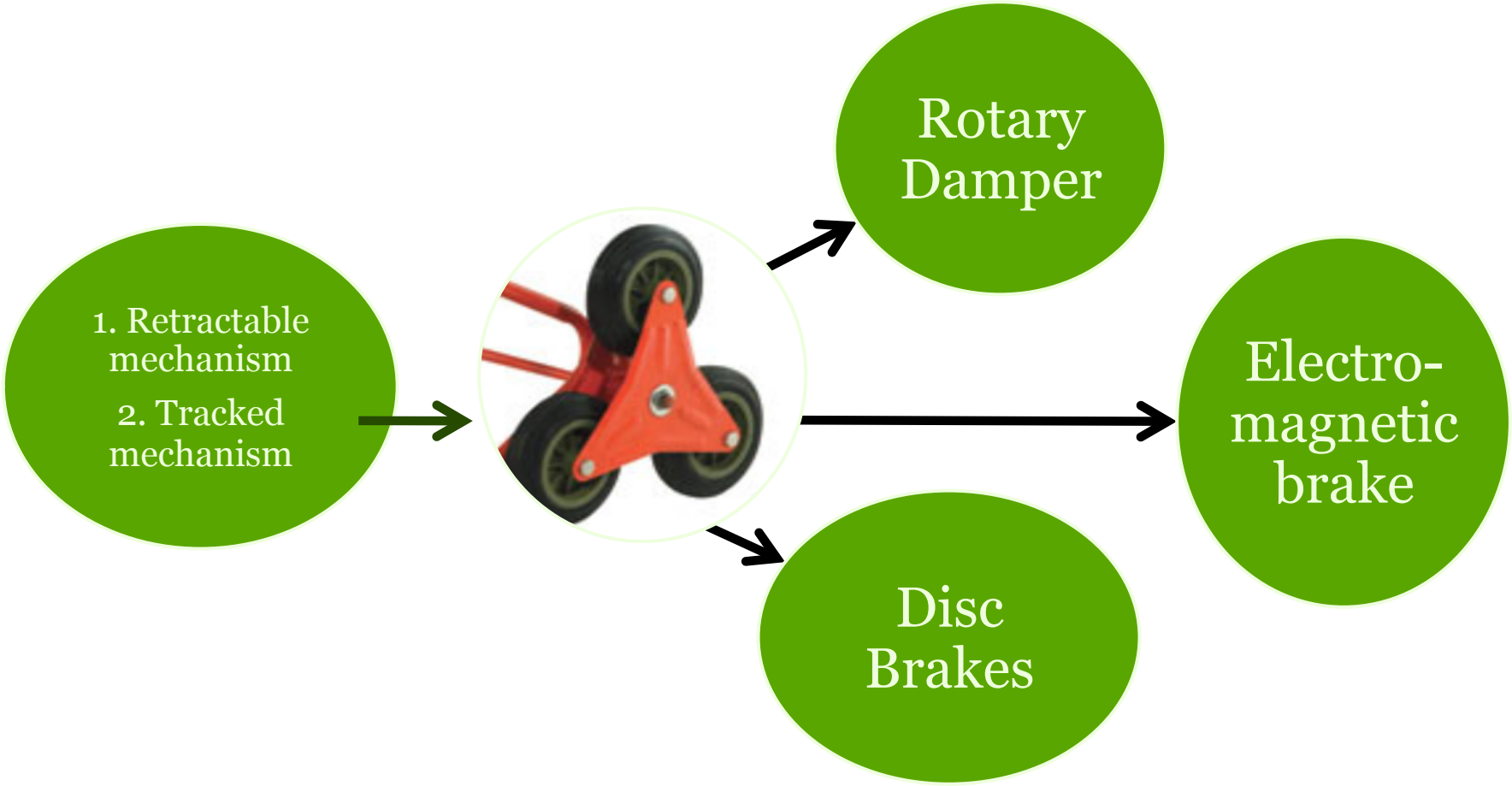
- Spinal injuries/falls account for 12% of ambulance calls
- People are too heavy to lift
- Limited space in staircase



Mock situation Staircase 1-190

- Horizontal backboard
- Stryker chair

Development from Sketch Model

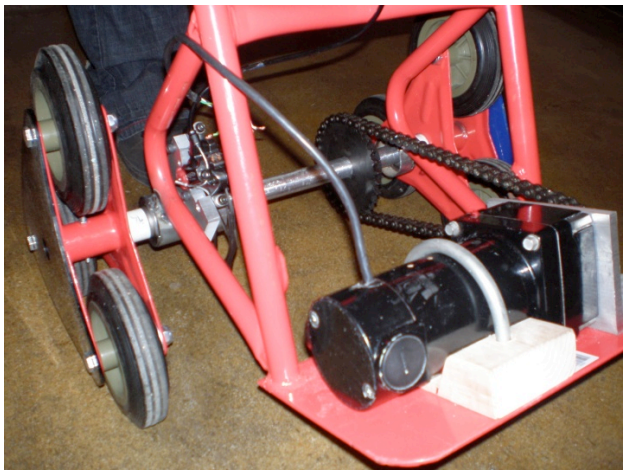


Risk 1: Controlled descent

Product Attribute	Engineering Specification
Support patient's weight	Maximum 500lb load Maximum 12 steps/min

Disc Brake

Electromagnetic Brake



Risk 2: Usability for EMTs

Product Attribute	Engineering Specification
Usable by standard EMT team	Maximum of 2 EMTs to operate
Lightweight for transportation	Weighs less than 40lbs
Time to set up	Less than 3 minutes

Risk 3: Compatibility

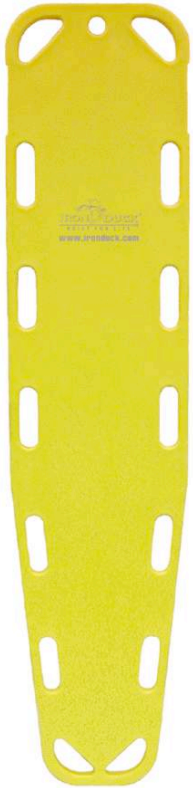
Product Attribute	Engineering Specification
Sized for standard stairs	Max rise=7 ¾” Max depth=10”
Attachable to standard backboard	Size of standard backboard = 72”x 16”
Must fit in ambulance	Folded Stryker chair: H 37.5” , D 8”

Testing on stairs

Feedback: EMS & Cambridge Fire Dept

Benchmarking

Backboard
$216 10lb



Paramed MOV Chair
$6000 96lb

Stair Stretcher
Retail price: **$ 1500**
Manufacturing cost: **$500**
40lb

Next Steps…

Outstanding risks	Proposed Solutions
Improving smoothness of ride	Optimize damping
Maneuverability	Differential
Adjusts for non-standard stair sizes	Cam mechanism for wheels
Backboard attachment	Existing backboard straps
Scaling	Full scale model
Fold-up mechanism for carrying	Foldable handles, hinged frame