

# Foldable Travel Walker

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## Problem Statement

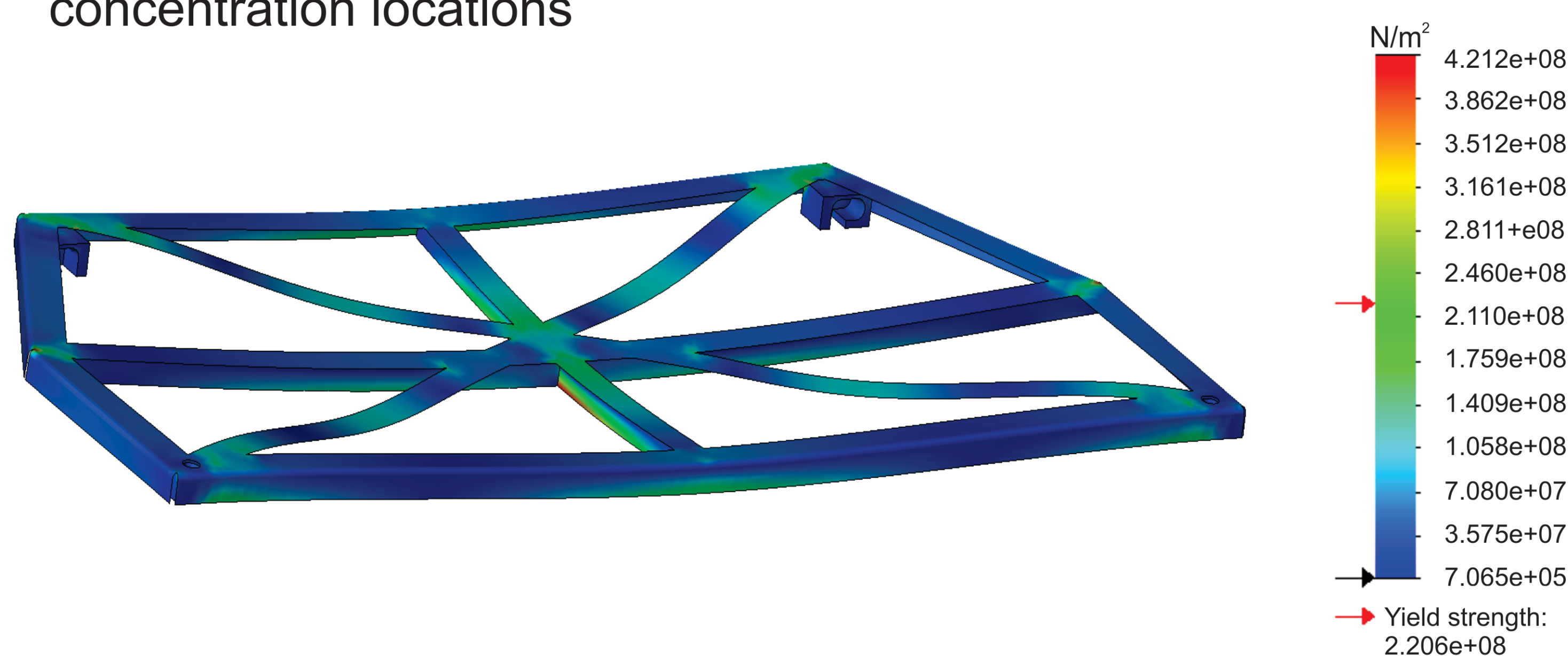
Two-thirds of mobility device users have limitations in everyday activities such as preparing meals, shopping and cleaning. From consultations with a mobility device user, a major issue was the inability to open, close and stow a walker in their car independently. Travelling with a traditional walker is also challenging due to the bulky and heavy design.

## Proposed Solution

- Unique folding mechanism collapses to carry-on luggage size
- Carbon fibre and steel structure adheres to carry-on weight
- Ergonomically-sound design of handles and gait path
- Cross-braces lock without need for mechanical locking
- Parts designed to manufacture (laser-cut, machined, 3D printed)

## Testing Methodology

- Force testing on load-bearing joints to verify structural integrity
  - Designed for 75 kg load (minimum Factor of Safety: 1.2)
- Finite Element Analysis in SolidWorks to identify critical stress concentration locations



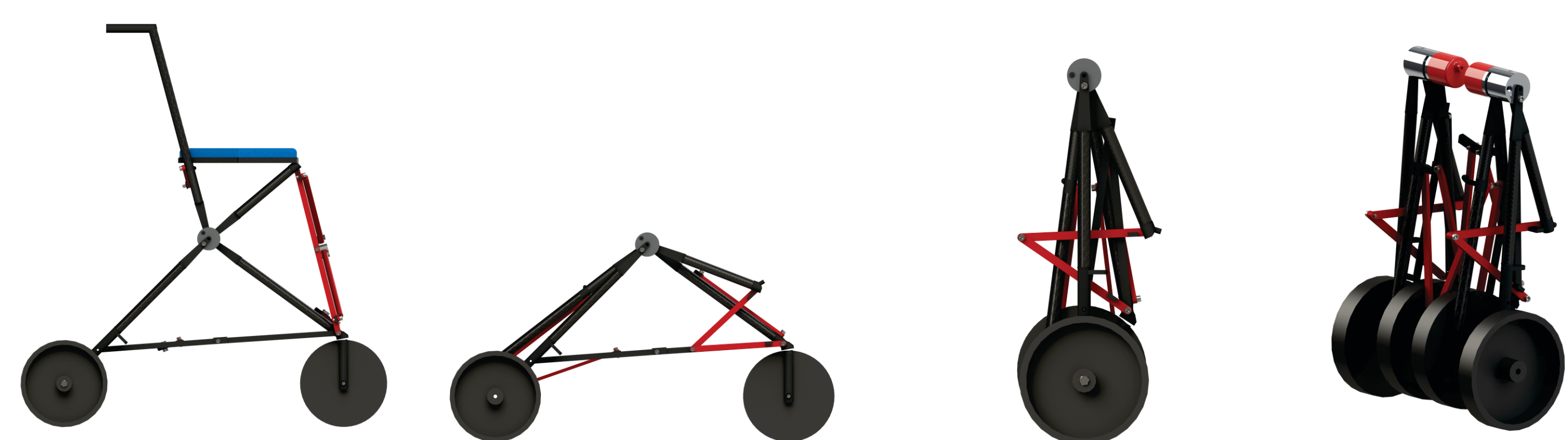
## Technical Specifications

Construction Materials	Steel, aluminum, plastic, carbon fibre
Total Mass	7.5 kg
Maximum Weight Capacity	75 kg
Folded : Unfolded Volume	1 : 10
Folded Dimensions	22 x 35 x 56 cm
Cost to Manufacture	\$100
Retail Price	\$799

## Future Work

- Iterate design for higher weight capacity
- Optimize design with fully aluminum and carbon fibre structure to minimize weight (reduce by 27% to 5.5kg)
- Test mechanical and performance properties as per ISO 11199-2 (Walking Aids) for FDA approval
- Add adjustable joints to universalize size for a range of consumers
- Include accessories for optimal device storage and transport

## Folding Mechanism



**Step 1:**  
Remove seat and front cross-brace

**Step 2:**  
Pull pins and fold handles down

**Step 3:**  
Fold front to back

**Step 4:**  
Fold side to side