User Needs
- Vestibular sense stimulation
- Used by a child or small adult
- CDKL5 or other neurological disorders
- 1 million potential users

Design Input
- Goals
  - Stimulates vestibular system
  - Clients fit as they grow
  - ~$2000
  - Quiet motor
  - Harnessed for safety
  - Last up to 15 years
- Constraints
  - Side to side motion or forward and backward
  - Lightweight
  - Safe
  - Adjustable
  - Support 100 kg max
  - 2 m tall and 2.5 m wide base
  - Motor can support adult
  - Comfortable seating

Design Output
- Square pyramid shape
- 2 m tall and 2.2 m by 2.2 m base
- Ball-and-socket joint
- 35 kg without support weights
- 30 kg support weights
- Plastic PVC base
- A36 structural steel support rods
- Aluminum alloy legs
- Keys to lock components in place
- Plastic PVC dome for motor
- Control panel on leg
- Batteries or power outlet
- The motor can move 125 kg
- Interchangeable seat padding
- Adjustable harness
- Padding on points of contact

Design Validation
- Frame endurance test
- Frame strength test
- Motor endurance test
- Battery life test
- Seat comfort survey
- Portability survey
- Aesthetics survey

Design Change
- Height reduced from 3 m to 2 m
- Front side of base curved inwards towards center
- Cloth added to cover top layer of padding
- Removed wheels

Future Development
- Cooling system
- Shading for outdoor use
- Silent motor
- Entertainment system
- Baby monitor
- Customizations

References