

SUMMER INTERNSHIP

TRIVIKRAM



Mobility India campus, Bangalore

Mobility India

- NGO in Bangalore
- Rehabilitation Centre

What is product design?

What will you do here?



Wheelchair ramps and railings in administrative block



Prosthetic and Orthotic Development Block



Furniture Development Block

Design Opportunities

- One-hand driven wheel chair for amputees
- Design of child growth development aids
- Re-design of orthotic knee joints
- Enhanced aesthetic prosthetic leg for humans
- Leg divider for treadmills
- Pelvic support for gait training
- Hemiplegic hand splints
- Lamination room Layout design
- Wall mounted toilet commode
- Prosthetic leg for four legged animals
- Creating a mobile app for monitoring the patient improvement
- Design of a knee joint based on stress analysis

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- Lamination room Layout design
- Wall mounted toilet commode
- Prosthetic leg for four legged animals
- Creating a mobile app for monitoring the patient improvement
- Design of a knee joint based on stress analysis
- Space design for preservation of moulds
- Session on future technology
- Prosthetic knee joint
- Threadmill divider
- An app for hostel count
- Wall mounted CDF lapboard
- Knee joint breakage solution
- New design for crutches

20 opportunities



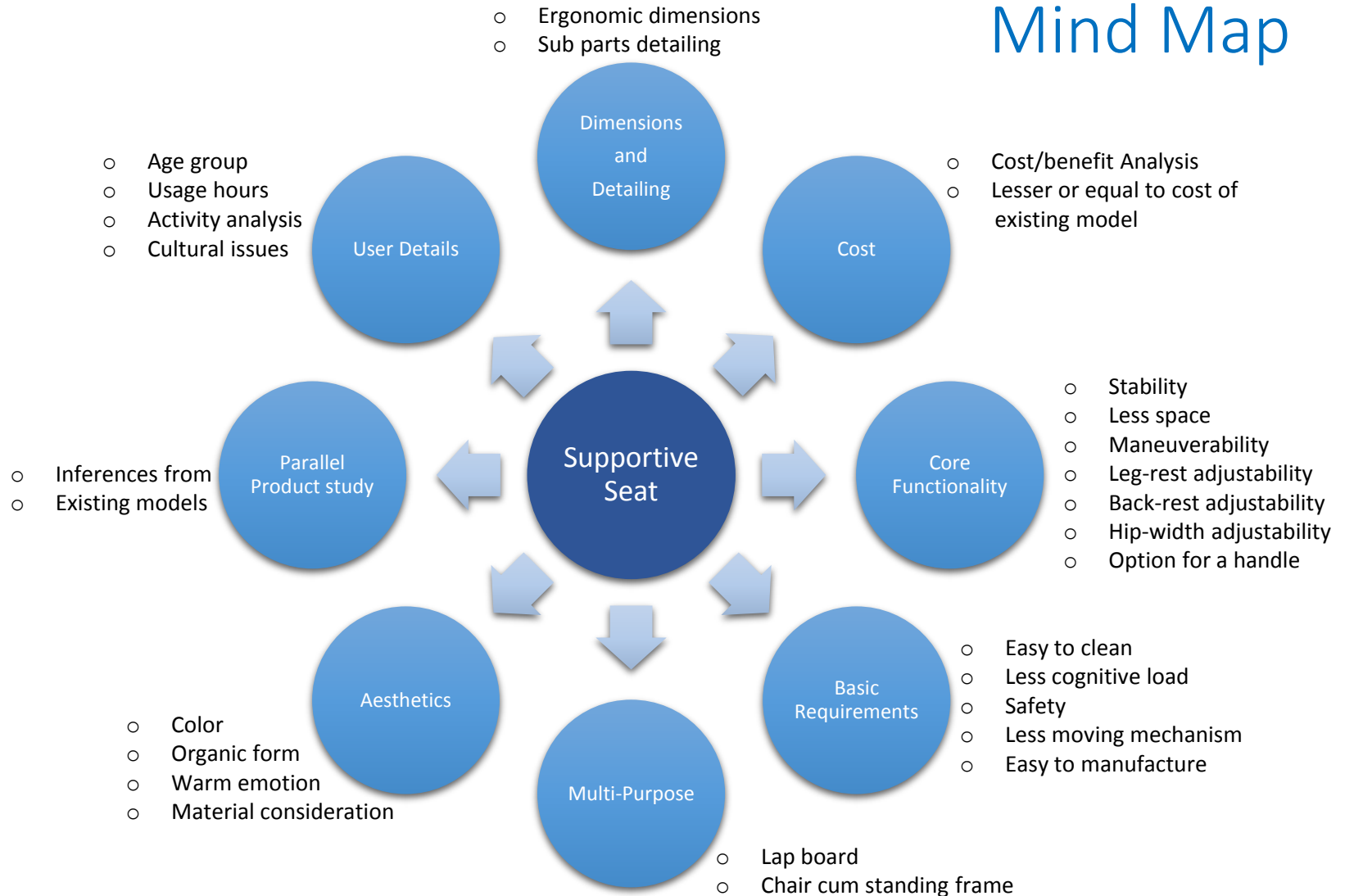
Existing model of special chair

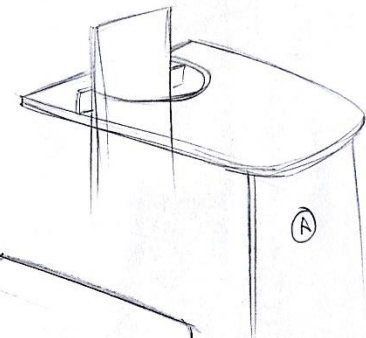
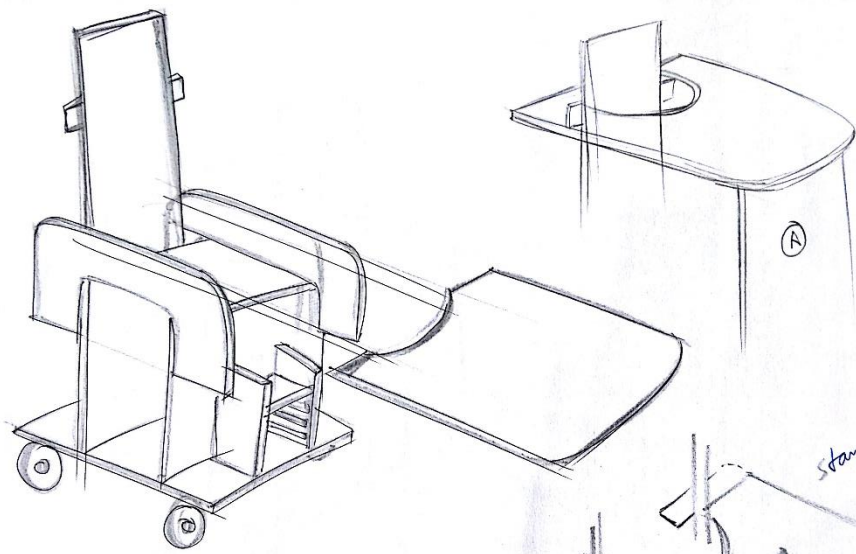
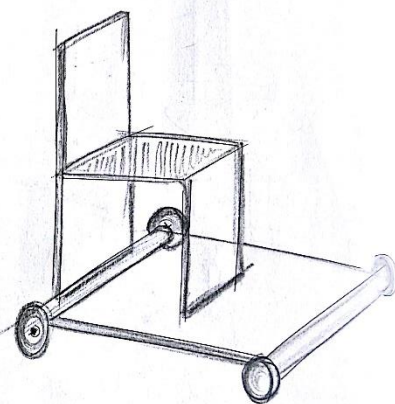
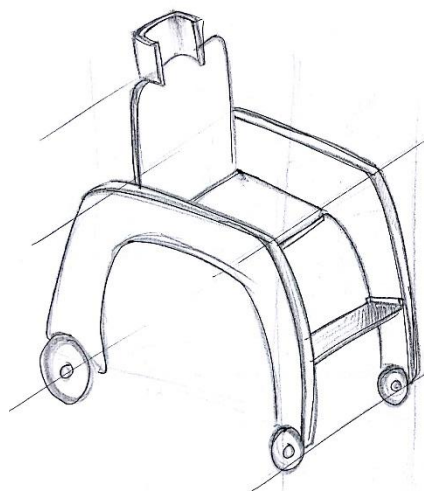
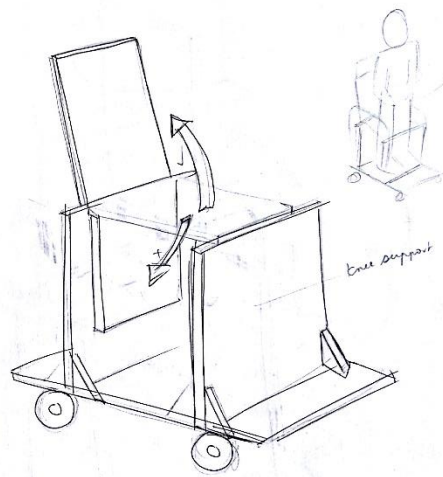
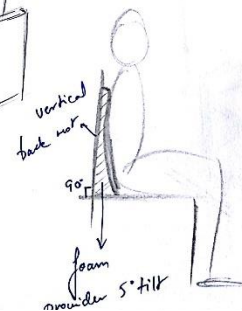
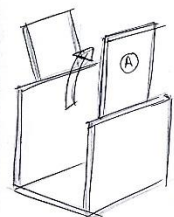
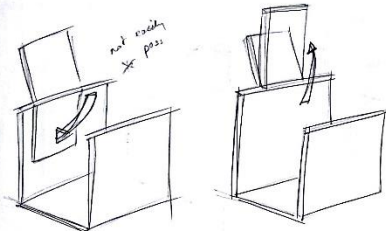


Existing model of standing frame



Mind Map





standing la beam

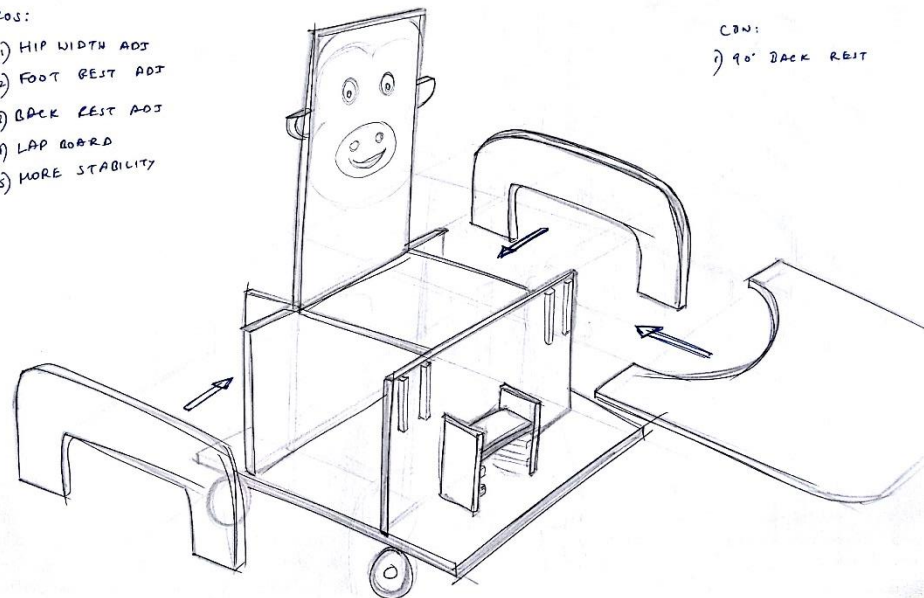
CONCEPT - 2 (SEATING)

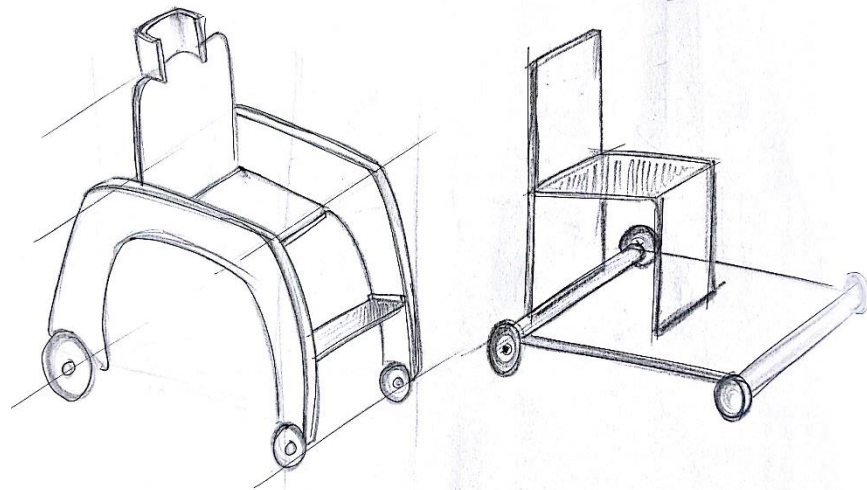
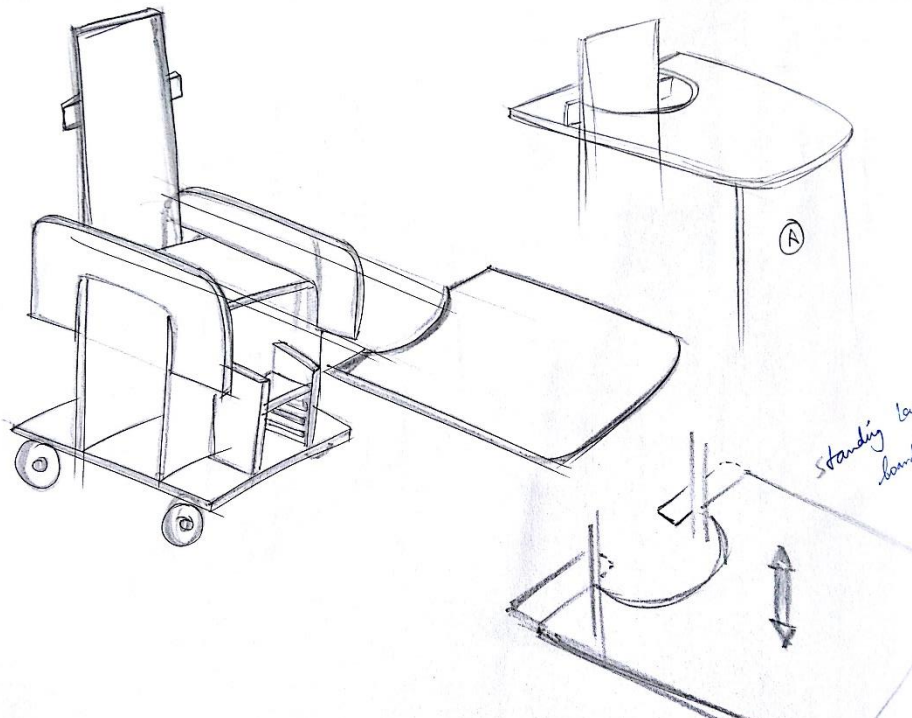
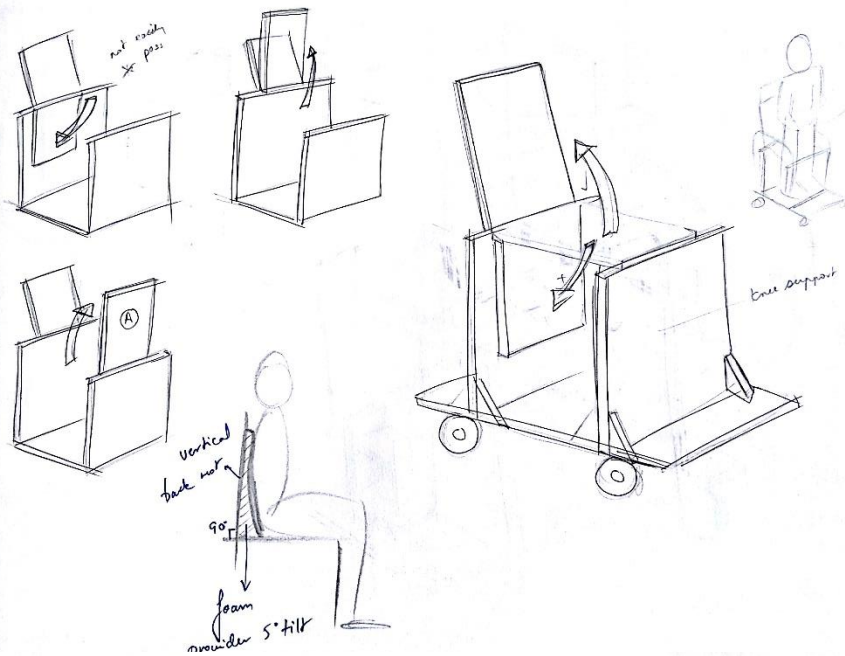
PROS:

- 1) HIP WIDTH ADJ
- 2) FOOT REST ADJ
- 3) BACK REST ADJ
- 4) LAP BOARD
- 5) MORE STABILITY

CON:

- 1) 90° BACK REST





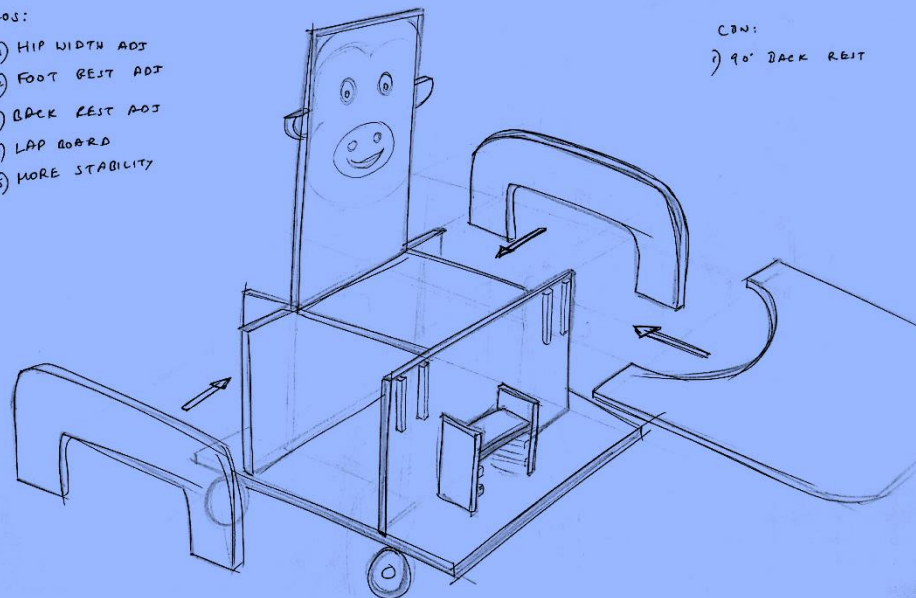
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A low cost device for children with cerebral palsy



Chair Cum Standing Frame



In-built Handle

Adjustable options

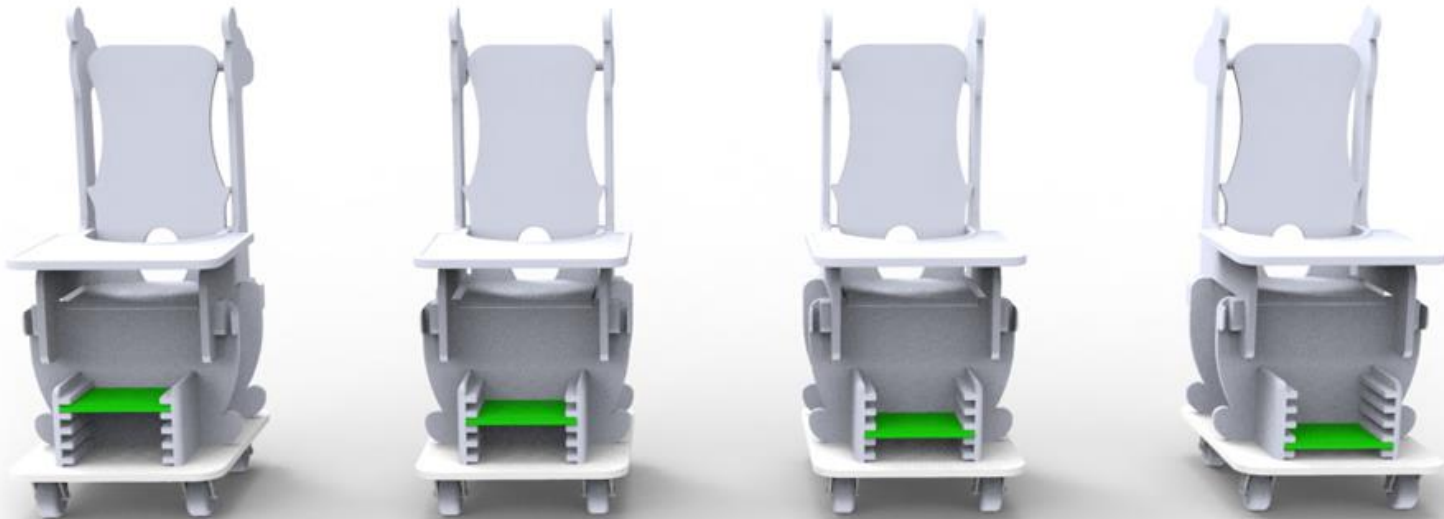
Hip width

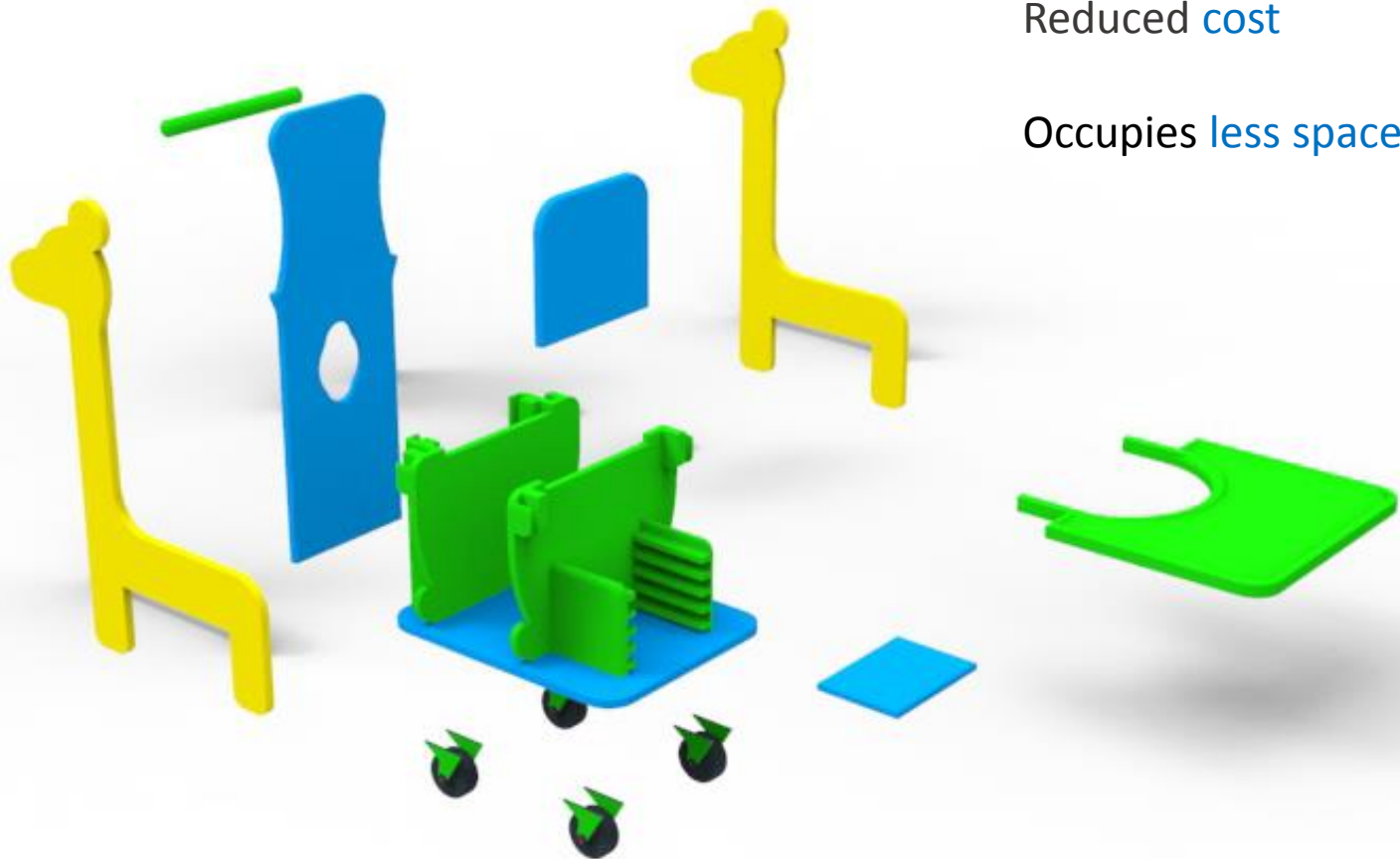


Back rest



Foot rest





Minimal use of material

Reduced cost

Occupies less space



Making **prototype**



Testing of Prototype



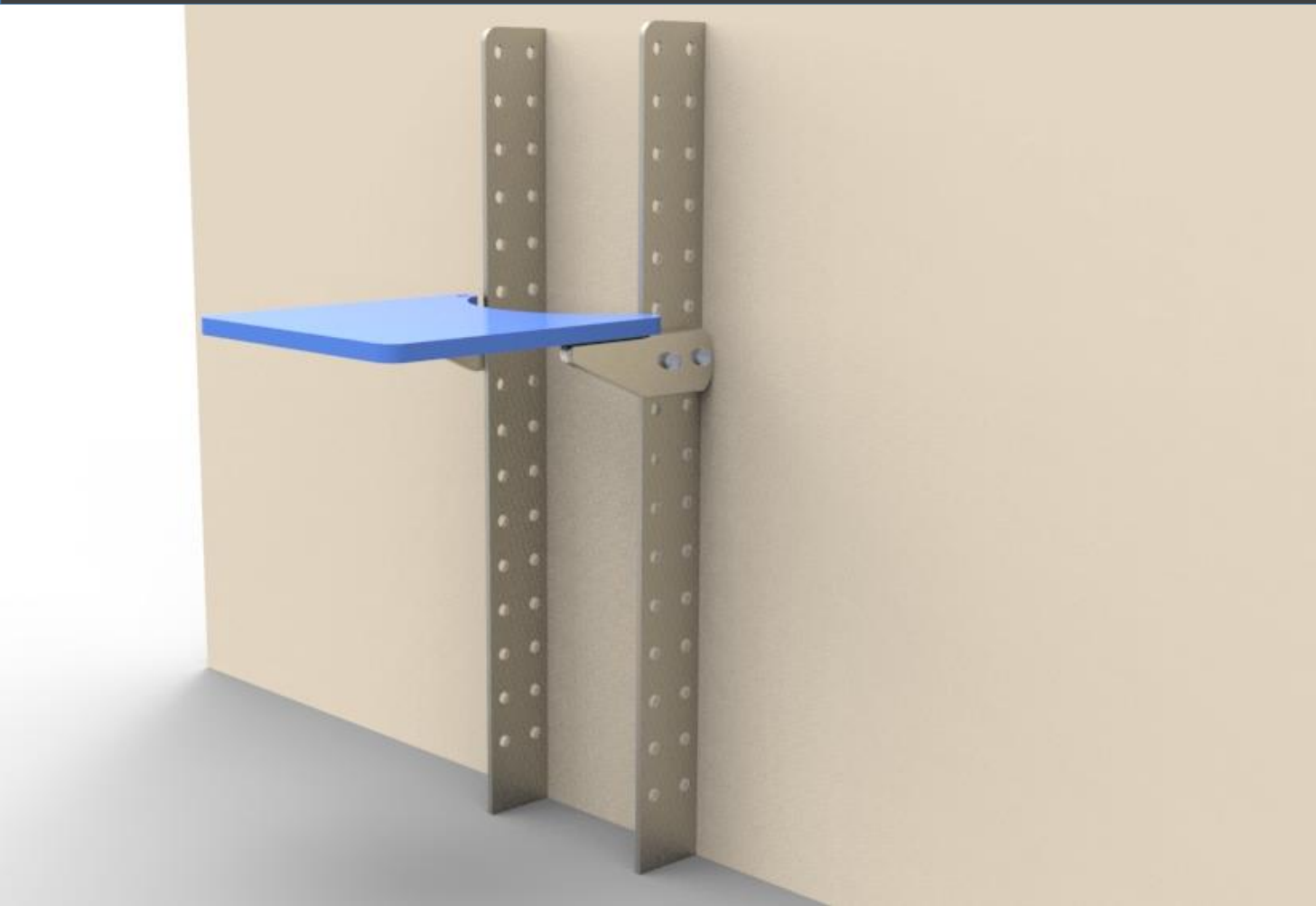
New Design

Exiting model

Variant 2



High space constraints

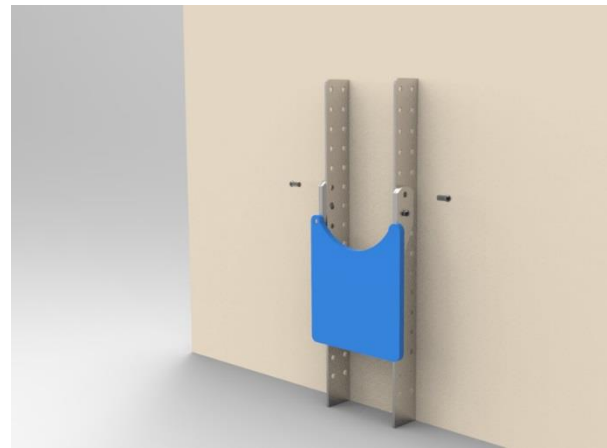
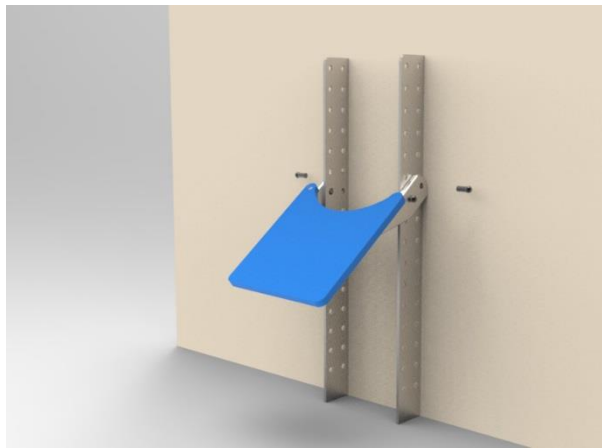
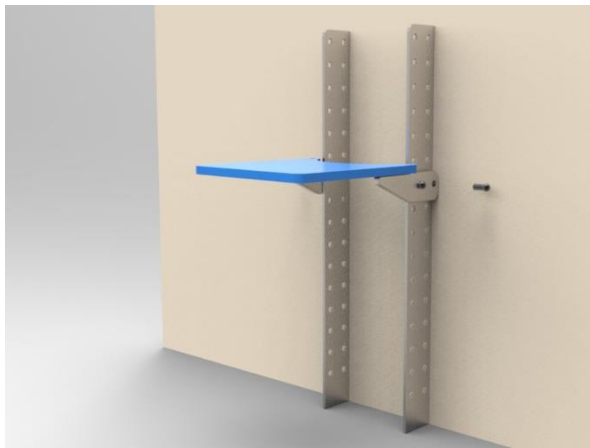
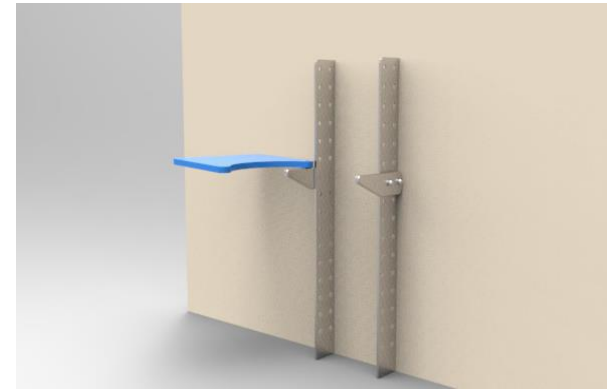
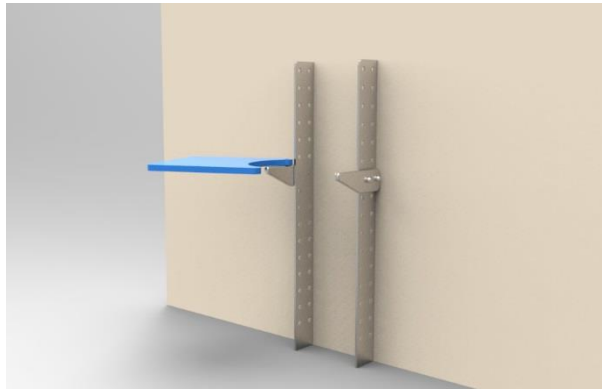
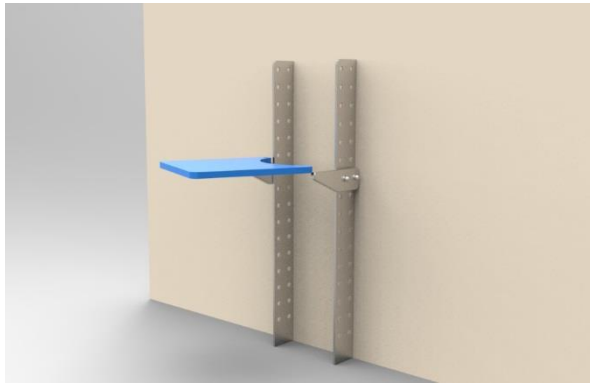


Wall Mounted Variant

Less **space**

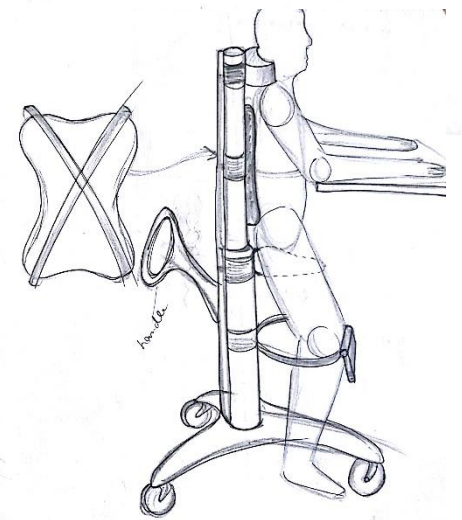
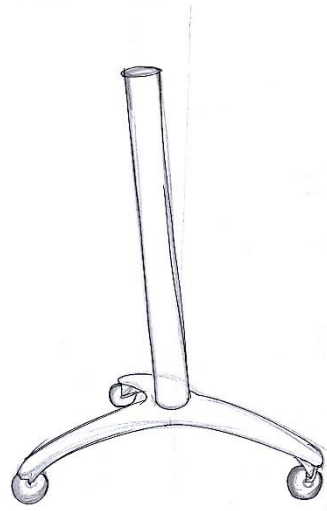
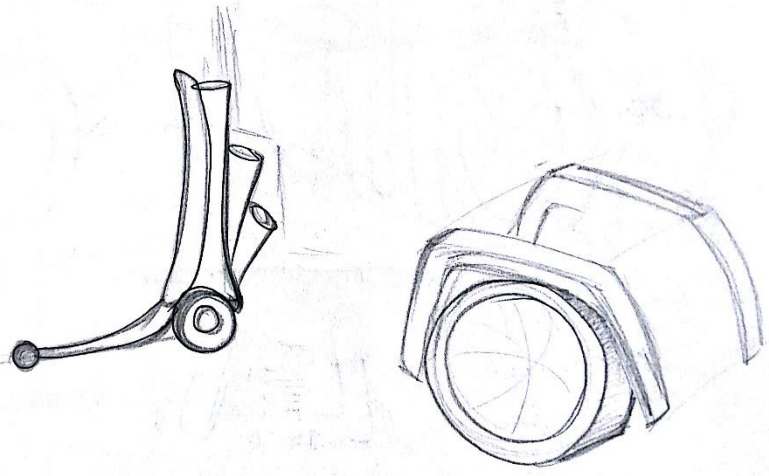
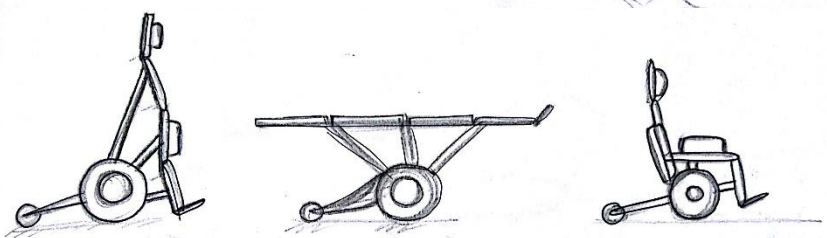
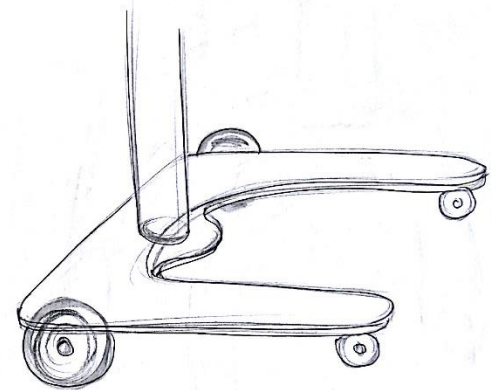
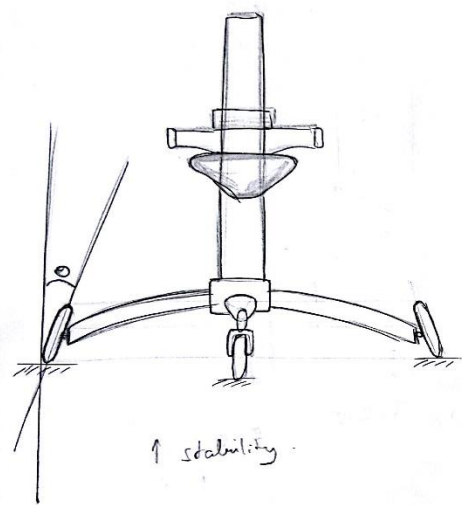
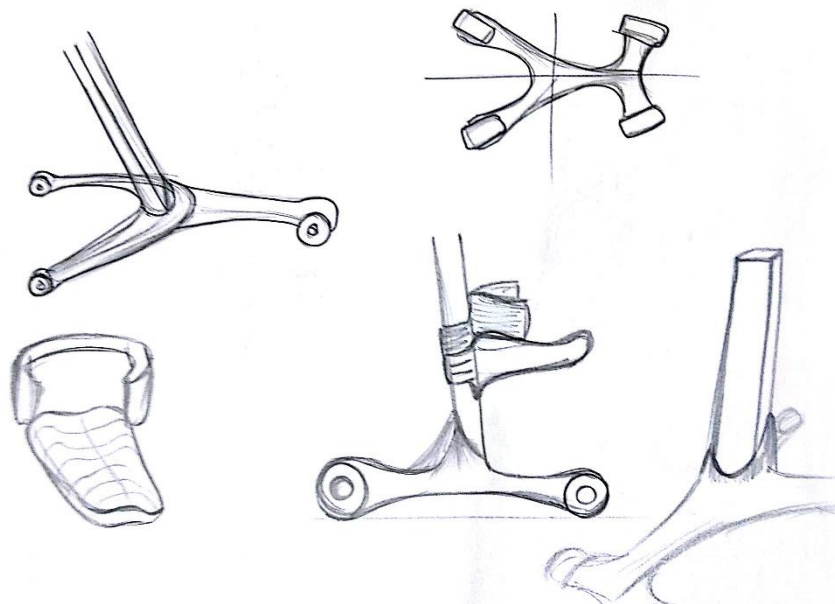
Less **cost**

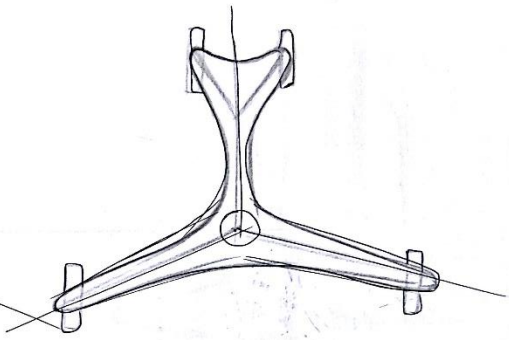
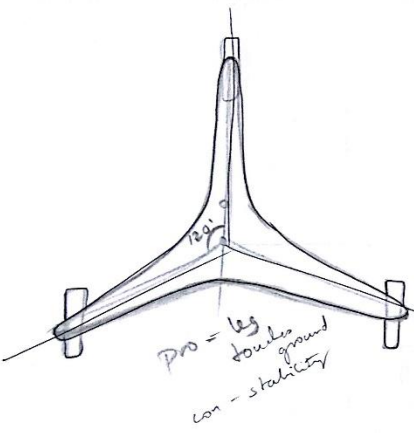
Working Mechanism



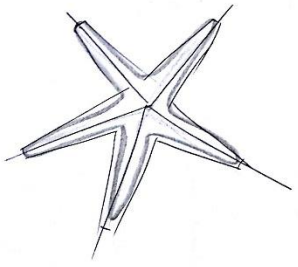
Variant 2

Variant 3

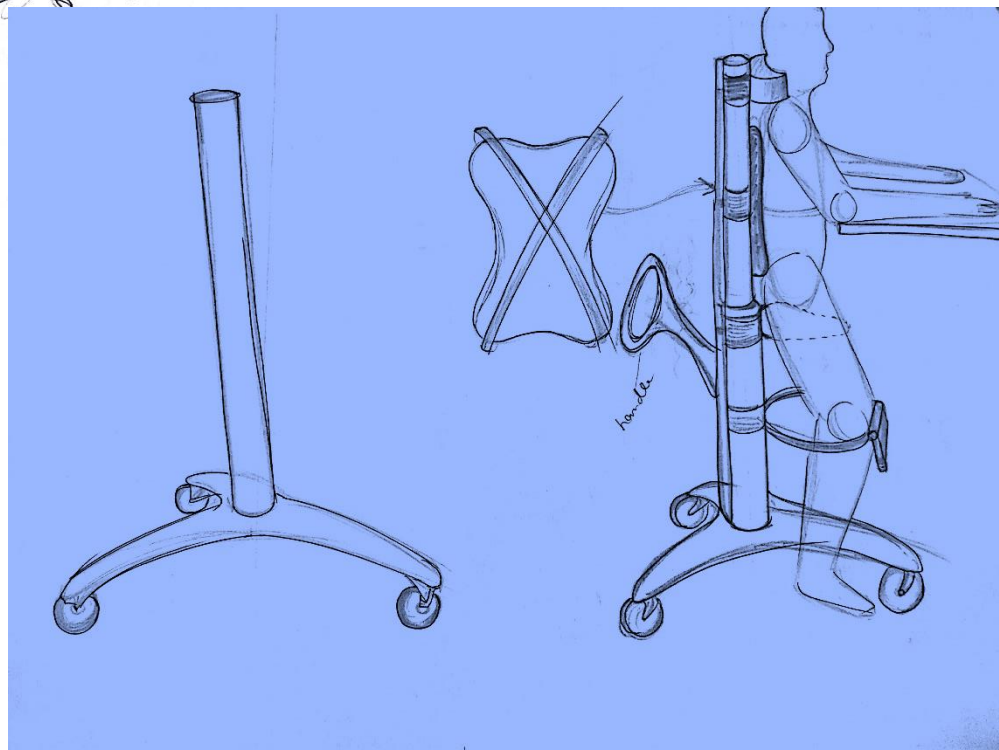




option 2. make base bigger



pro - stability
con - leg does not touch ground - unstable





An aid for children with cerebral palsy to move and play around

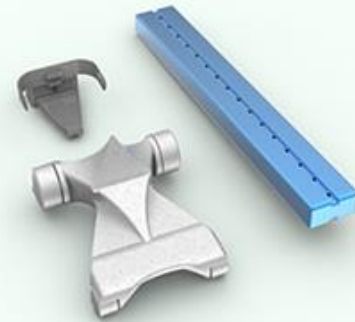
Adjustable Seat



Easy to maneuver



Easy to pack



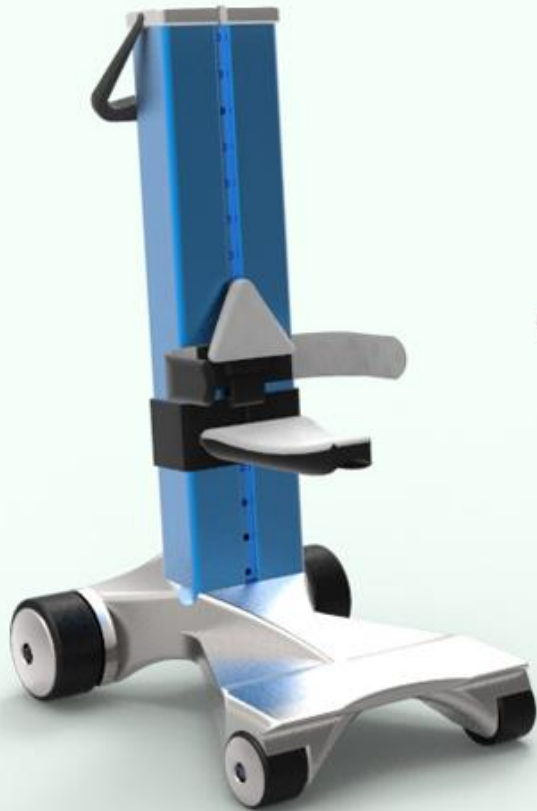
Neck support



Lap Board



Knee support



Add on [features](#)

Colour Variants



Horse saddle
Inspired seat

Prototype



Prototype Testing



Re-Design of Orthotic knee joint

Ottoblock Orthotic Knee Joint



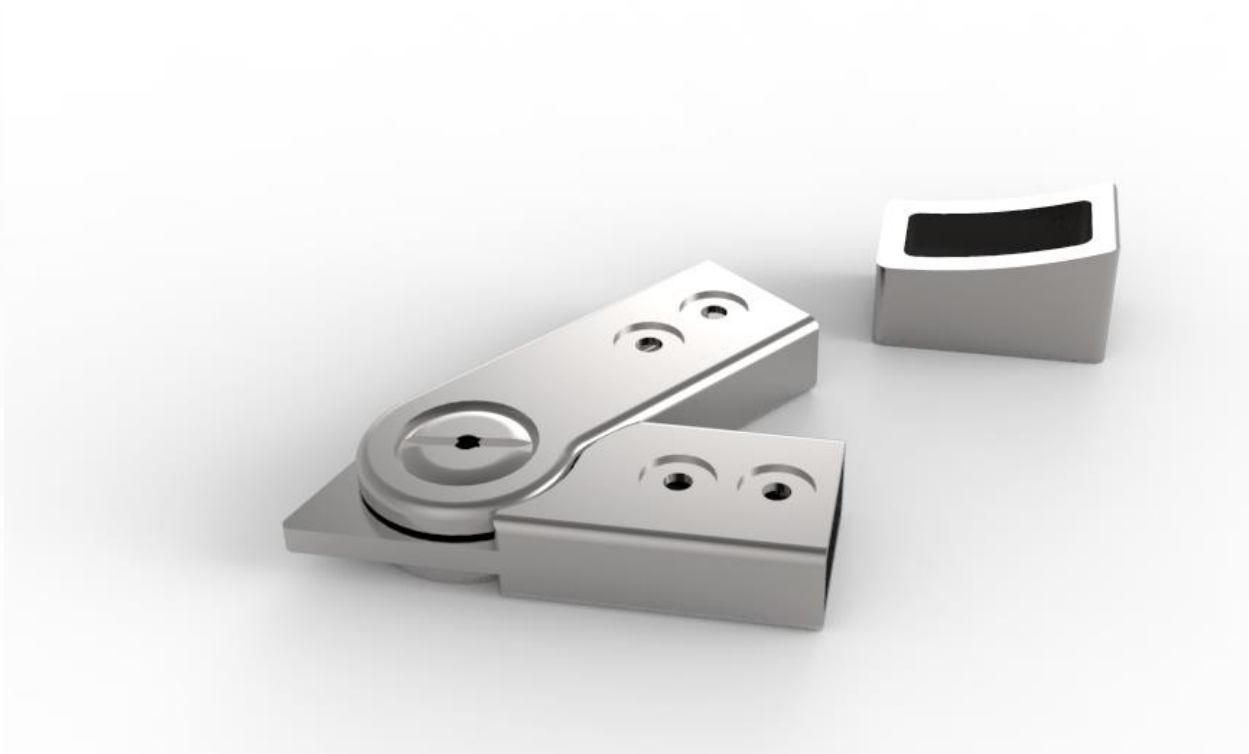
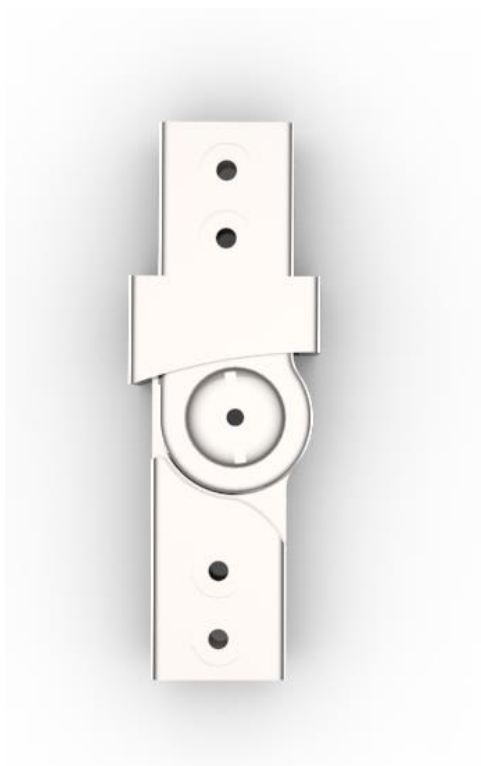
Indian Orthotic Knee Joint



Picture Source : <http://dir.indiamart.com/jaipur/orthopedic-braces.html>



Re-Designed Orthotic Knee Joint



130° flexion angle

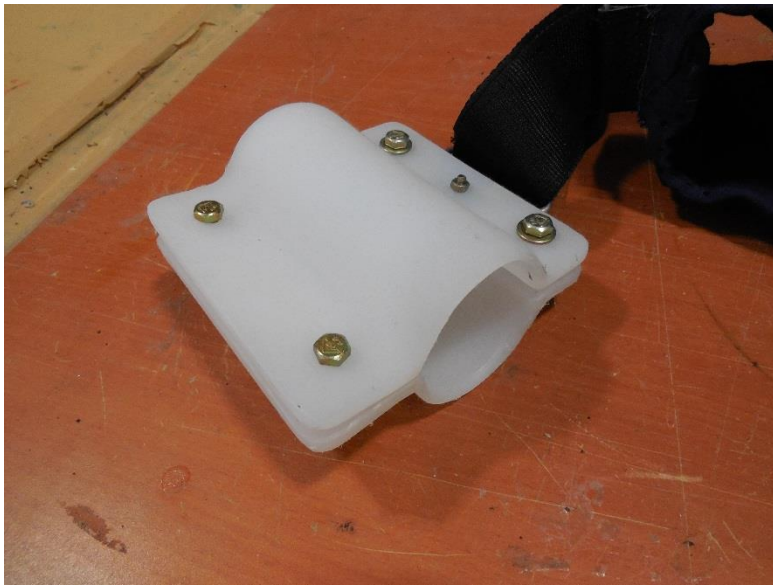
Pelvic Support for Gait Training

Prototype



Testing of Prototype

Grips of Belt



What is a **exo-skeleton**???

What is **3-D printing** ???

What is **Aesthetics** ???

What is **Bio-Compatibility** ???

What is **Ergonomics** ???



Photos taken during presentation in Mobility India

Jaipur Foot



An extensively used Jaipur foot



Jaipur foot manufacturing unit

"Disability is not a brave struggle,
Disability is an art. It's an ingenious way to live."

- Neil Marcus



A disabled employee



Wood block is cut and pasted with foam sheet



Blocks are segregated according to various sizes



Another coating of resin layer is added



The foam and resin are glued together and dried



The foot is removed the from dye and extra pieces of rubber are cut

PROCESS INVOLVED IN MAKING JAIPUR FOOT



Small pieces of skin color vulcanizing rubber is added



The dye is then heated up to 120°C



The dye is closed and pressed at a high pressure



Block is placed inside a metal dye



Entire block is covered with multiple layers of rubber

People met during Internship

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Intern from UK

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Service user-Paralysis
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Mr.Ganesh

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Mr.Waseem

Student
Mobility India

Mr.Poornima

Librarian
Mobility India

Mr.Mamta

Staff
Mobility India





An orthotic leg for Dog



Orthotic being tested



A service user at Mobility India

“I want to stay here a little longer....

because, when I go home - I am a
handicapped...

but when I am here, I am one among
many other disabled, I feel normal....”

Practical application of product design principles
and design methodology

Scope of health care industry

Software rendering skills

People interaction skills

Acknowledge and feel fortunate for the healthy
body you have

Thank you