Introduction

Our client is a sophomore at Loyola University studying Graphic Arts. She has osteogenesis imperfecta (OI) and has thereby been a wheelchair user since birth. She is approximately 31” tall and weighs 40-45 lbs; she cannot support her full body weight, and desires a device to help exercise her lower body.

Osteogenesis Imperfecta

• Caused by a collagen I deficiency  
• Results in brittle bones and weak joints  
• OI patients often are of short stature due to stunted growth  
• Commonly known as “brittle bone disease”

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EXERCISE SYSTEM FOR OSTEOGENESIS IMPERFECTA

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Model Features

- 10 levels of resistance
- Collapsible
- Wheels for easy transport
- Lightweight (<25lbs)
- Durable wooden frame
- Designed with custom ergonomics for our client
- Indexed load settings

Top: Device in its deployed state.  
Bottom: Device in its stowed state.

Future Directions

An additional feature of the device is a set of interchangeable lengths of surgical tubing that serve as a displacement-dependent load. Our client can lay the device horizontally and work against various strengths of tubing, set the device to a desired incline for a constant load, or some combination thereof. In the coming month we will devise a workout plan for our client. In addition to the Operation & Safety Manual, we will deliver placards enveloped in plastic that will walk the client through various workouts and detail which muscle groups are being worked.

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