

## Project Scope

The objective of this project is to create a device that offers paraplegic scuba divers greater independence while in the water.

## Motivating Problem

Recent technology allows paraplegics to enjoy various activities, but why has a device not been created for scuba diving?

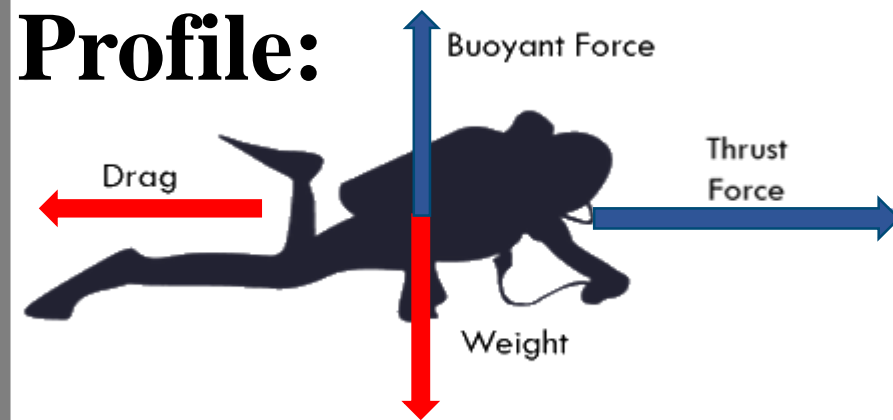


## SCUBA Diving?

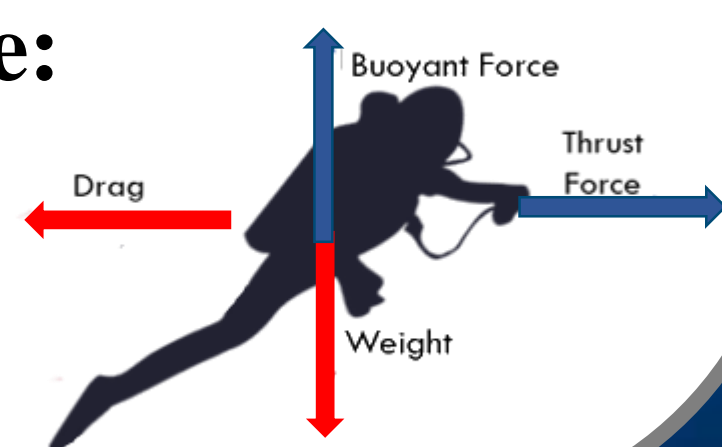
## Design Considerations

- Heat Loss
- Trim Control
- Body Compositions
- Increased Oxygen Consumption
- Difficulty Suiting-up
- Susceptible to Injury
- Increased Drag
- Compatibility With Scuba Gear

### Fully Aabled Diver Profile:

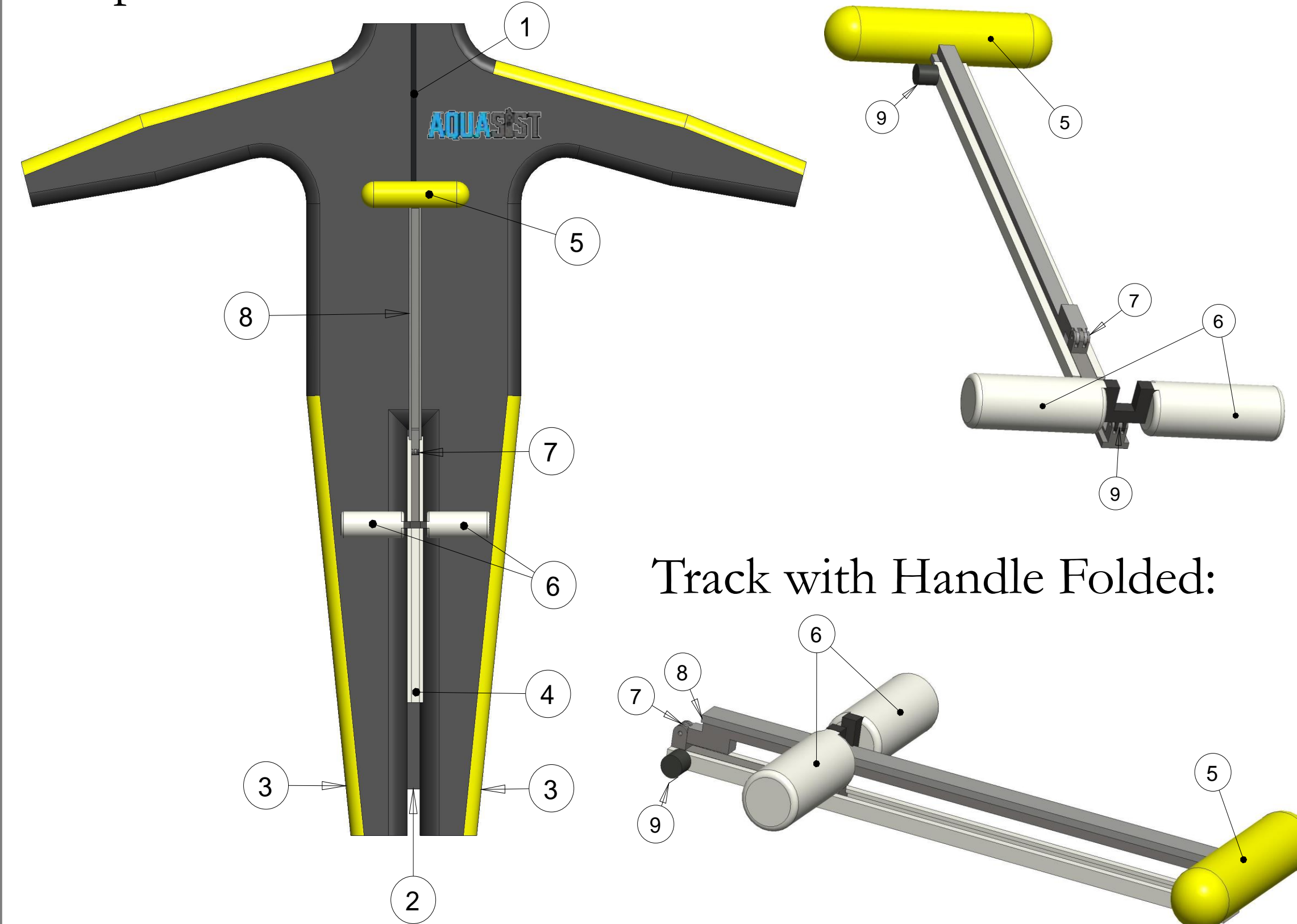


### Paraplegic Diver Profile:

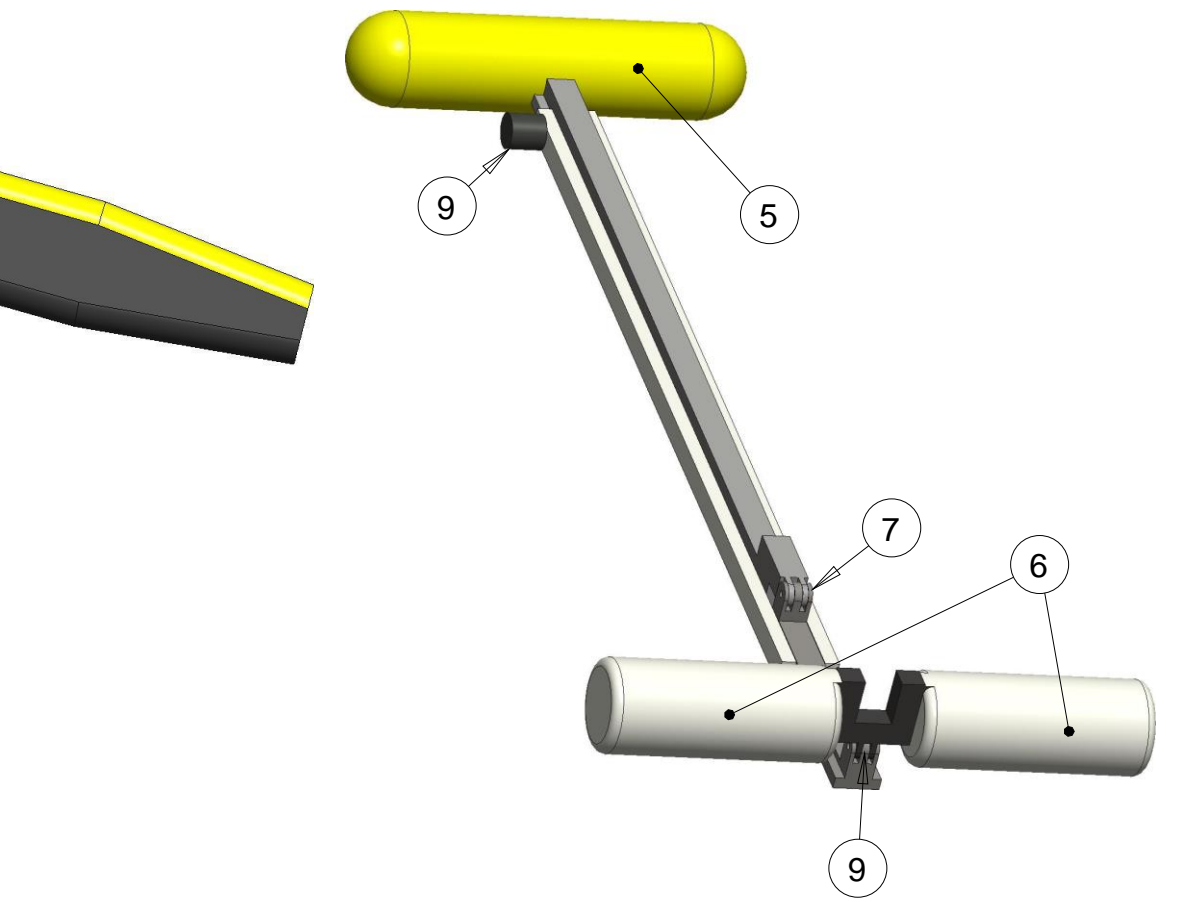


## Design

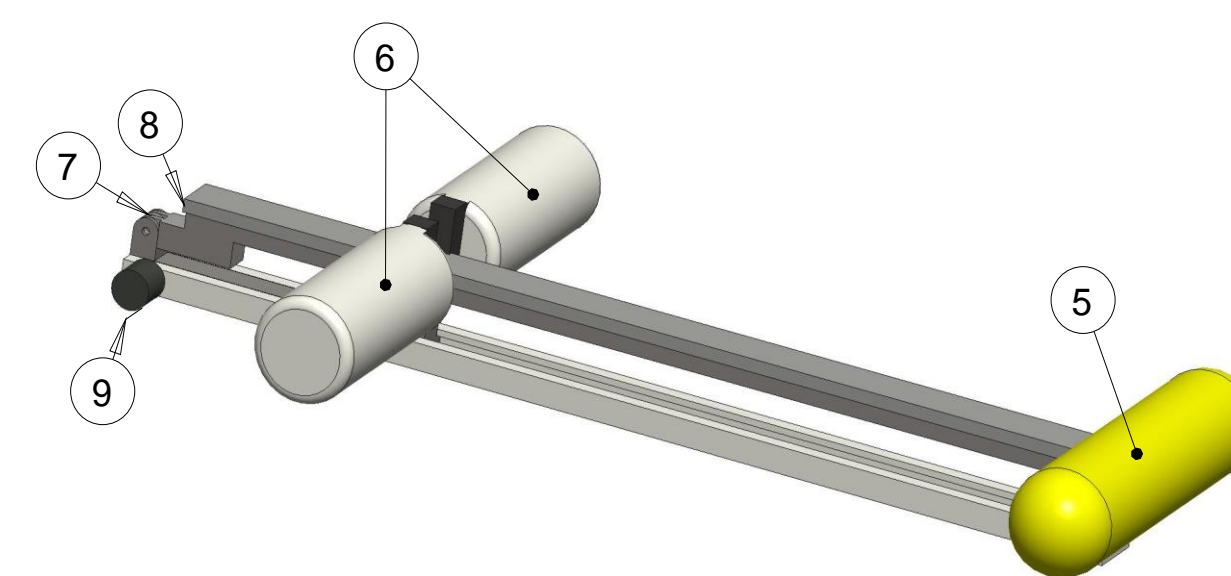
Front View with Float Up :



Track with Float Down :



Track with Handle Folded:



## Design Reasoning

1. Front zipper: Provides easy accessibility for diver
2. Secures legs together: Controls location of diver's legs
3. Zipper along legs: Allows diver to dress themselves
4. Float track: Limits float to one degree of freedom
5. Handle: Moves the float's location with hands\
6. Float: Adjusts trim and two-piece design allows handle to fold flat
7. Handles pivot: Allows diver to store handle along legs
8. Hand key-way: Locks handle into float track
9. Set screws: Locks float to float track and handle to float track

## Prototype Build



## Testing & Validating Metrics

- By decreasing frontal area, the drag will decrease as well

$$F_D = \frac{1}{2} C_D A \rho V^2$$

	Shape	Frontal Area	$C_d$
Cube		$A = 3x$	1.05
Long Rectangle		$A = x$	0.82

## Competitions & Patent



- Competed in the InNOLEvation Challenge and won Most Viable prize
- Currently filing a provisional patent application
- Competing in the Engineering Shark Tank as well as the Governor's Cup Competition