



RipTune: Adding Variable Swim Resistance for Swimmers

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MSSAC swimmers need individualized variable swim resistance in their training.

Current tools offer limited variability that restricts individualized training capabilities.

Key Objectives

Adjustable Resistance: 5 levels (110-250 N)

Granularity: < 5% of the maximum offered resistance between levels

Compact: smaller than 13 x 13 x 11 inches

Ease of Use: < 15 seconds to set-up and change levels

Major Design Decisions

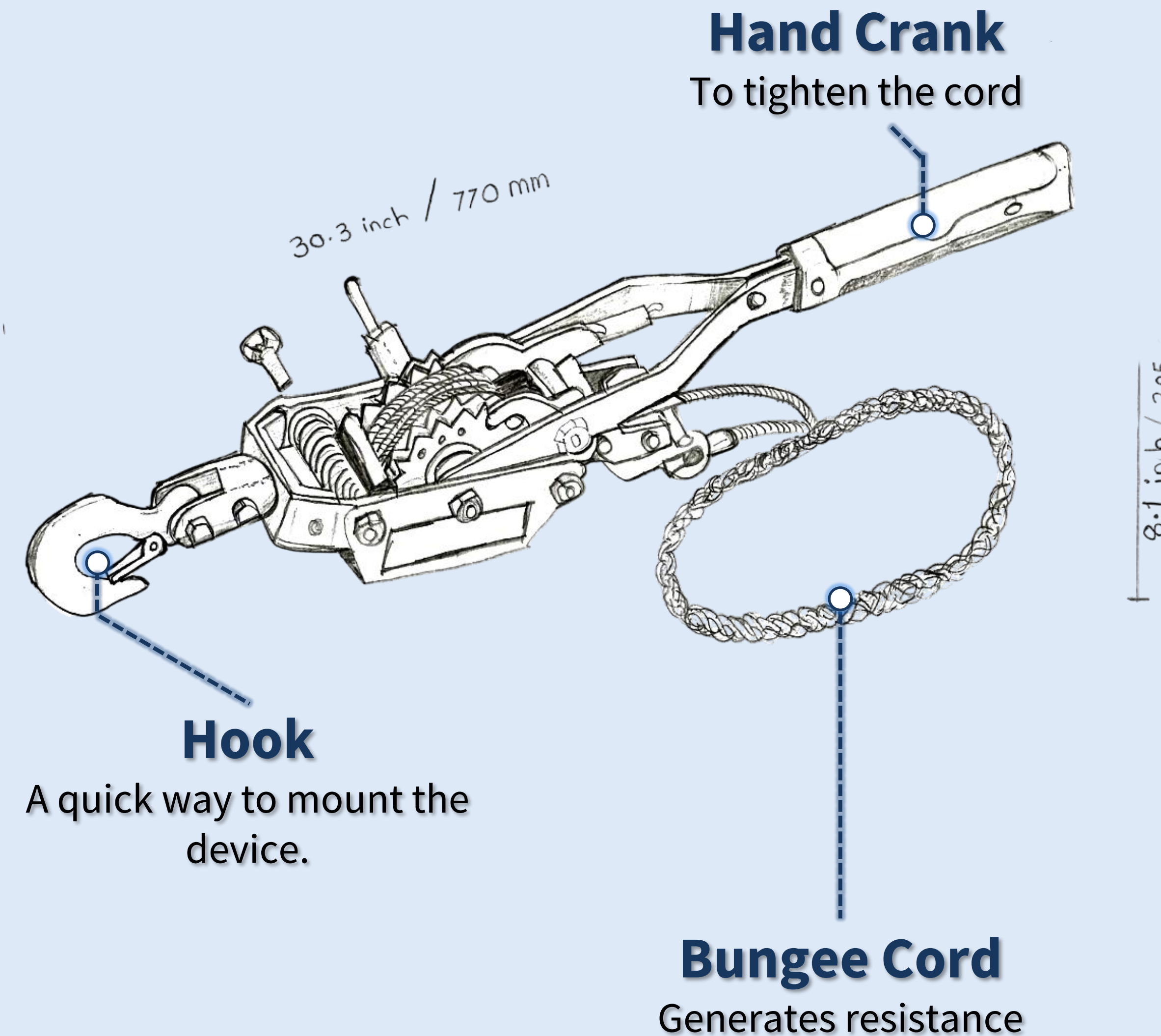
Come-along instead of a mounted winch

Bungee cord instead of steel cord

Carabiner attachment

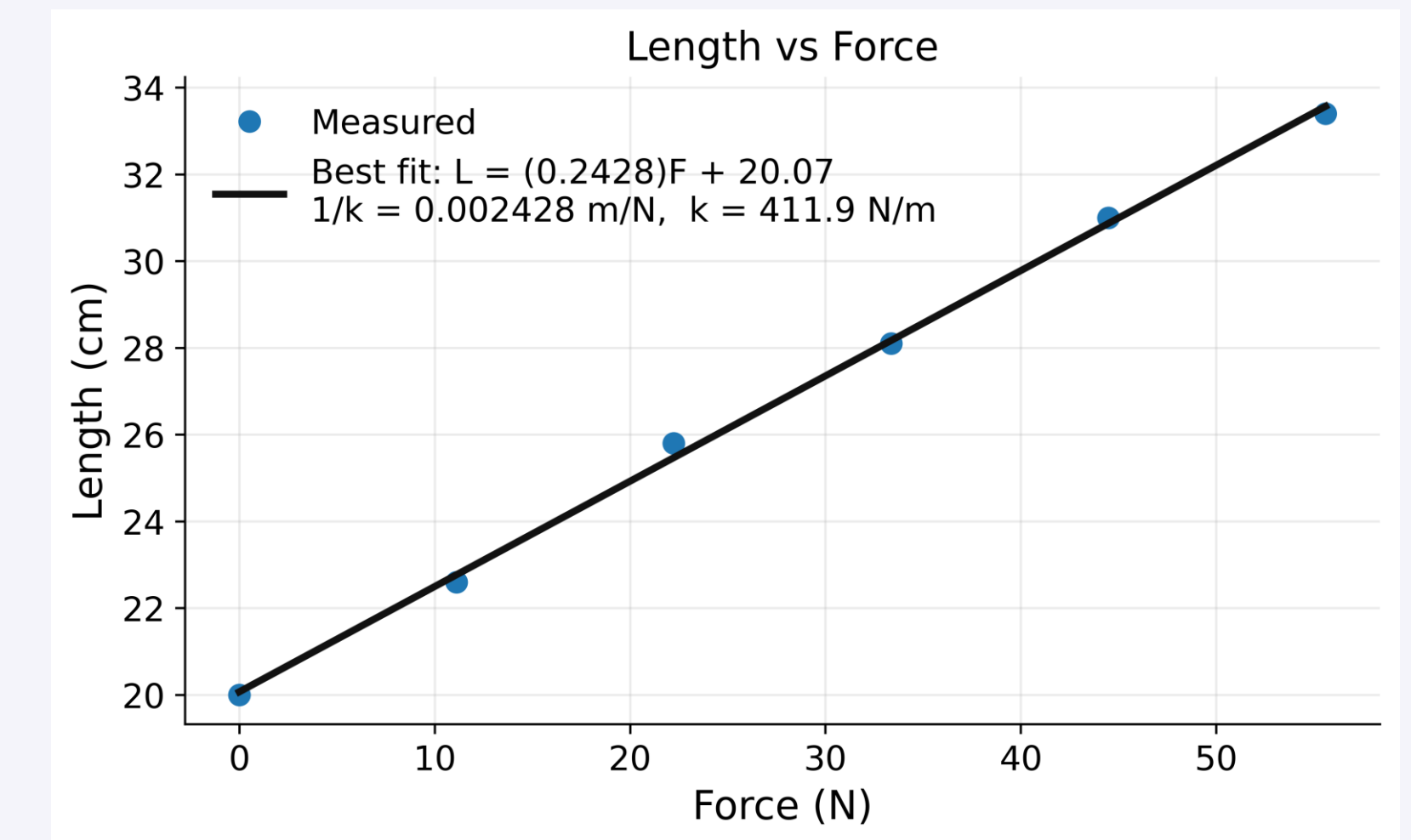
The Solution:

A come-along winch design that clips to diving blocks.



Testing & Outcomes

Resistance Range



Determined a spring constant of **~412 N/m**

Setup Time

Average setup time: **~7.87s** across multiple trials

Resistance Delta (Change)

Gradual and consistent increases in resistance

Fine and continuous adjustment