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Frame Running: A Path to Improved Health and Fitness in Individuals with Cerebral Palsy (CP)

This research investigates the health effects of Frame Running, a cardio-respiratory exercise and parasport designed for individuals with cerebral palsy (CP), but also beneficial for others with limited mobility. Frame Running offers an effective means for high-intensity training, improving both fitness and muscle strength. CP, a motor disability caused by early brain injury, affects movement and coordination, leading to decreased fitness and increased health risks over time.

The studies in this thesis focus on whether Frame Running can improve cardiorespiratory fitness, muscle growth, and overall health, while also evaluating the Six-Minute Frame Running test (6-MFRT) as a measure of aerobic capacity (VO_{2peak}).

Key Findings:

- **Health benefits:** Frame Running training (12 weeks, 2x/week) significantly improved fitness (increased running distance on the 6-MFRT by 34%) and muscle growth (calf muscle thickness increased by 9%).
- **Fitness testing:** The 6-MFRT is a practical, non-laboratory alternative for assessing aerobic fitness (VO_{2peak}) in individuals with CP, showing strong correlations with gold standard method; incremental treadmill test.
- **Determinants of performance:** In addition to a high VO_{2peak} , muscle mass has a positive impact, while spasticity in hip and knee extensors negatively affects Frame Running capacity. Training programs should target these areas to enhance performance.

Bullet Points:

- Physical activity levels are lower in people with CP.
- Recommendations for physical activity remain the same for people with and without CP.
- The body and muscles respond to exercise in people with CP.
- Frame Running enables high-intensity training, improving both fitness and muscle growth.
- 6-minute Frame Running test distance can be used to estimate aerobic capacity.

Take Home Message:

- **DO FRAME RUNNING AND GAIN:** Every effort counts—small increases in activity bring significant health benefits.
- Invest in regular activity: Mix intensity levels (low, medium, high) in your training, but be sure to include short bursts of high intensity, like interval training with your running frame.
- Strive to reach the physical activity recommendations but remember the "5 F-words": Fitness, Function, Friends, Family, FUN!

*Best wishes,
Emma Hjalmarsson*

