PEDI-ICARE TRAINING IMPROVES WALKING AND ENDURANCE OF CHILD WITH CEREBRAL PALSY

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Children with cerebral palsy (CP) sometimes have difficulty walking and engaging in physical/play activities.

ICARE (Figure 1) is used in rehabilitation, fitness, and home settings for adults to improve walking and fitness.

Device modified to enable children with weakness, endurance, and balance deficits as young as three years to use (Pedi-ICARE, Figure 2).

- 7”-17” step length
- Adjustable height pedals
- Modified seat and handles
- Speeds up to 65 revolutions per minute, RPM
- Integrated body weight support

Objective

Evaluate impact of 24-session motor-assisted elliptical (ICARE) intervention on walking and fitness of child with cerebral palsy.

Figure 1. ICARE

Figure 2. Pedi-ICARE

Methods

Participant: Study approved by Institutional Review Board. 12-year-old with medical history including:
- Spastic diplegic CP,
- Hydrocephalus (ventriculoperitoneal shunting, 2004),
- Bilateral hamstring tendon lengthening (2008),
- Asthma (managed by medications), and
- Repeated pneumonia.

Interventions: Motor-assisted elliptical training parameters (i.e., speed, motor assistance, body weight support, and total training time) manipulated across 24 sessions (2-3 days/week) to progressively challenge walking and fitness.

Main Outcome Measures: GAITRite walking speed, Two-Minute Walk Test (2MWT), and Timed Up and Go (TUG) performed without AFOs.

Results: By final training session, child trained longer, intermittently over-rode motor, and completed more Pedi-ICARE strides at faster average speed. Post-intervention, child walked faster and farther, along with an improved (lower) TUG score.

Results

Post-intervention walking and endurance improvements for a single participant are encouraging, but more extensive study is required.

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