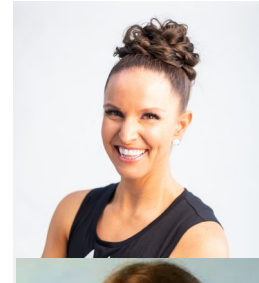


Effects of a Remote Exercise Program on Fitness and Gait in Adults with Down syndrome



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BACKGROUND: Individuals with Down syndrome (Ds) have low physical activity and fitness levels. The COVID-19 pandemic further limited opportunities for physical activity and exercise. We aimed to evaluate the effects of a remotely delivered PT-based exercise program on fitness and gait in adults with Ds.

METHODS: Using a pre-test, post-test design, twenty participants with Ds (19-34 yrs, males n=15) participated in a 12-wk remote exercise program, three 1hr sessions/week using Zoom. Remote testing was performed before and after the program for aerobic endurance (2-Minute Step Test), strength (30-Second Chair Stand (30sCS) and 5-Times Chair Stand (5xCS)) and balance (Functional Reach Test (FRT), Timed Up and Go (TUG) and FICSIT-4 (tandem, semi-tandem, single leg stance)). We evaluated gait with the 4-Meter Comfortable Walking Speed Test (CWS) and video recordings scoring gait deviations using the Rancho Los Amigos Observational Gait Analysis (OGA).

RESULTS:

Participants improved significantly on aerobic endurance (p=0.004), strength (30sCS: p=0.032 and 5xCS: p=0.022), balance (FRT:p=0.019, TUG:p=0.043, static balance: p=0.019), and gait (CWS: p=0.004 and OGA: p=0.002).

CONCLUSIONS:

The 12-week remote PT-based exercise program significantly improved aerobic endurance, strength, balance, and gait in individuals with Ds, demonstrating the potential of telehealth to increase access and reach of effective exercise programs for individuals with Ds.

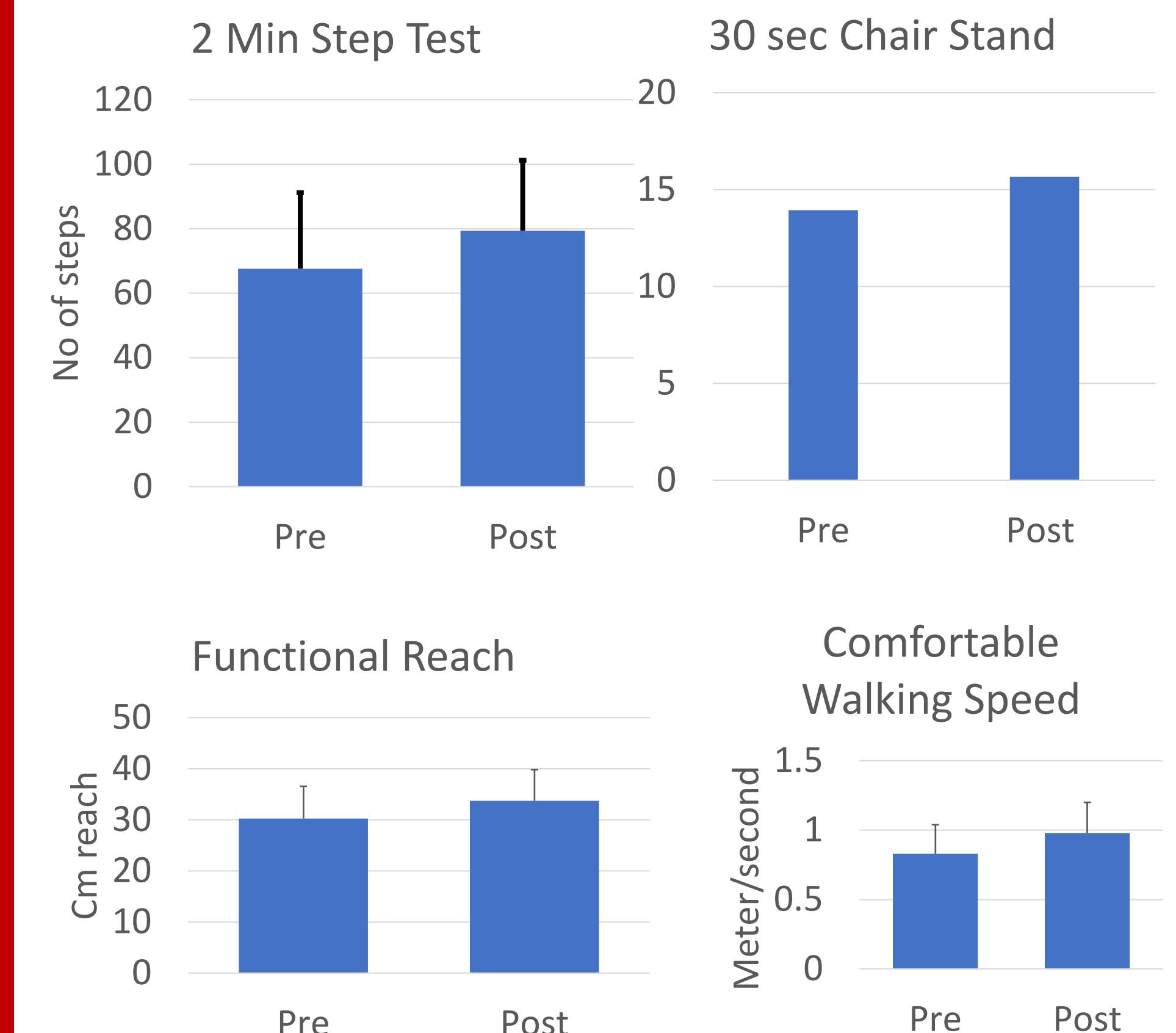
Remote PT-based Exercise Program Improves Fitness and Gait in Adults with Down Syndrome

Outcome	Pre-test	Post-test	P-value
Aerobic Endurance			
2 Min Step Test (# steps)	67.6±23.6	79.4±21.8	<0.01*
Strength			
30sec Chair Stand (# stands)	13.9±4.2	15.7±4.1	0.032*
5x Chair Stand (sec)	12.8±4.7	11.0±3.7	0.014*
Balance			
TUG (sec)	9.1±2.7	8.7±4.2	0.043*
FICSIT-4 (points)	24.2±2.9	25.4±2.68	0.019*
FRT (cm)	27.8±6.8	31.0±5.1	0.030*
Gait			
CWS (m/s)	0.82±0.21	0.98±0.22	0.004*
# Gait Deviations OGA	79.9±25.0	58.2±27.1	0.003*

Remote Mann Method PT Program

- 12 wks, 3x/wk, 1-hr Zoom Sessions
- Jan 2021-April 2021
- Focus on:
 - Strength: Multi-Joint Foundational Exercises and Hip Strengthening
 - Balance: Vestibular and Balance exercises that target the visual-vestibular system
 - Aerobic capacity: 20 min between 50-65% first, later >65% of max heart rate
- 93% attendance, >20 min HR 60% or higher

Descriptives	Mean (SD)
Sex	5 females, 14 males
Age	25.4 (4.8) years
Height	157 (11) cm
Weight	72.5 (14.6) kg



This research was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (4R00HD092606-04).

