

# EFFECT OF PHYSICAL THERAPY WITH AND WITHOUT DALFAMPRIDINE ON GAIT IN PEOPLE WITH MULTIPLE SCLEROSIS

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## RATIONALE

- Dalfampridine (DER) is a drug that improves gait speed in some people with MS<sup>1</sup>
- Physical Therapy (PT) gait training also improves walking in this population<sup>2,3</sup>
- No studies have compared the interventions or examined the combined effects

## OBJECTIVE

To compare the effect of physical therapy with and without dalfampridine on gait speed and perceived walking ability in people with MS

## METHODS

### Participants

- 6 people with MS with self-reported walking difficulty
- 3 patients were about to start taking DER, 3 were not taking DER
- All had a relapsing form of MS at the time of participation

### PT Intervention:

- One-on-one multicomponent exercise and gait training with a physical therapist, 2x/week for 6 weeks, 40 mins per session
- Functional strengthening, balance, gait (treadmill and overground), and dual task training

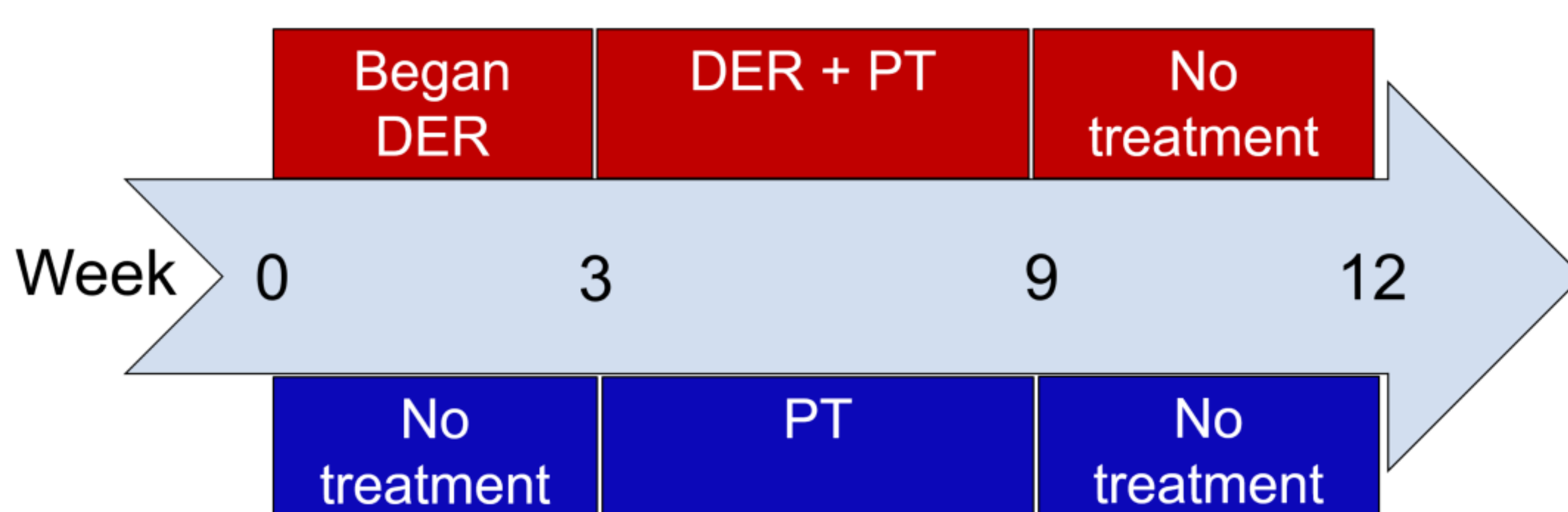
### DER Intervention:

- 10 mg twice per day, as prescribed

### Outcome Measures:

1. Timed 25 Foot Walk Test (T25FW): fastest safe speed
2. Single task gait speed: self-selected speed
3. Dual task gait speed: self-selected speed while performing clock task
4. MSWS-12: self-perceived walking ability

Figure 1: Flow of study interventions and outcome time points



## OUTCOMES

Figure 2: T25FW

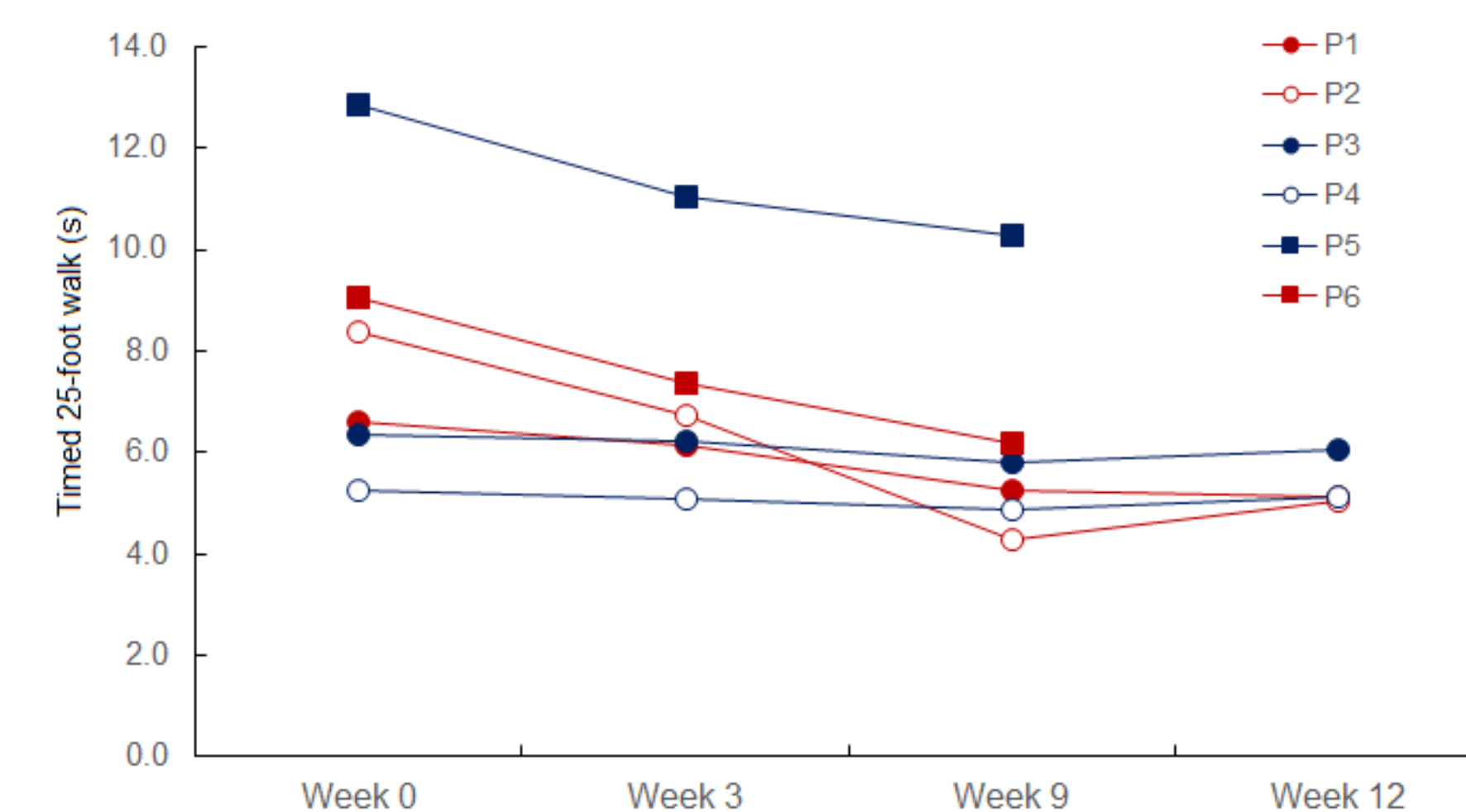
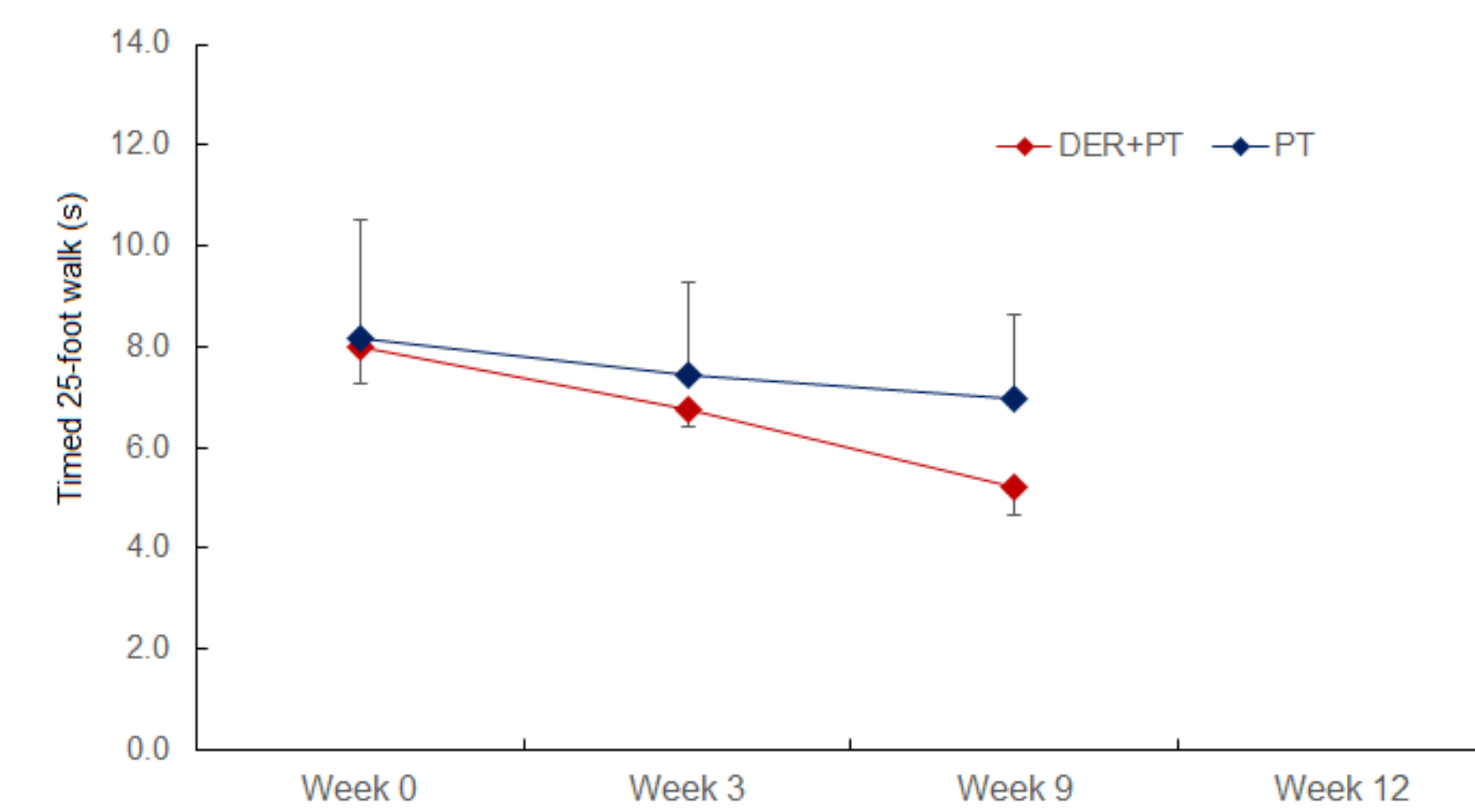


Figure 3: Single-task gait speed

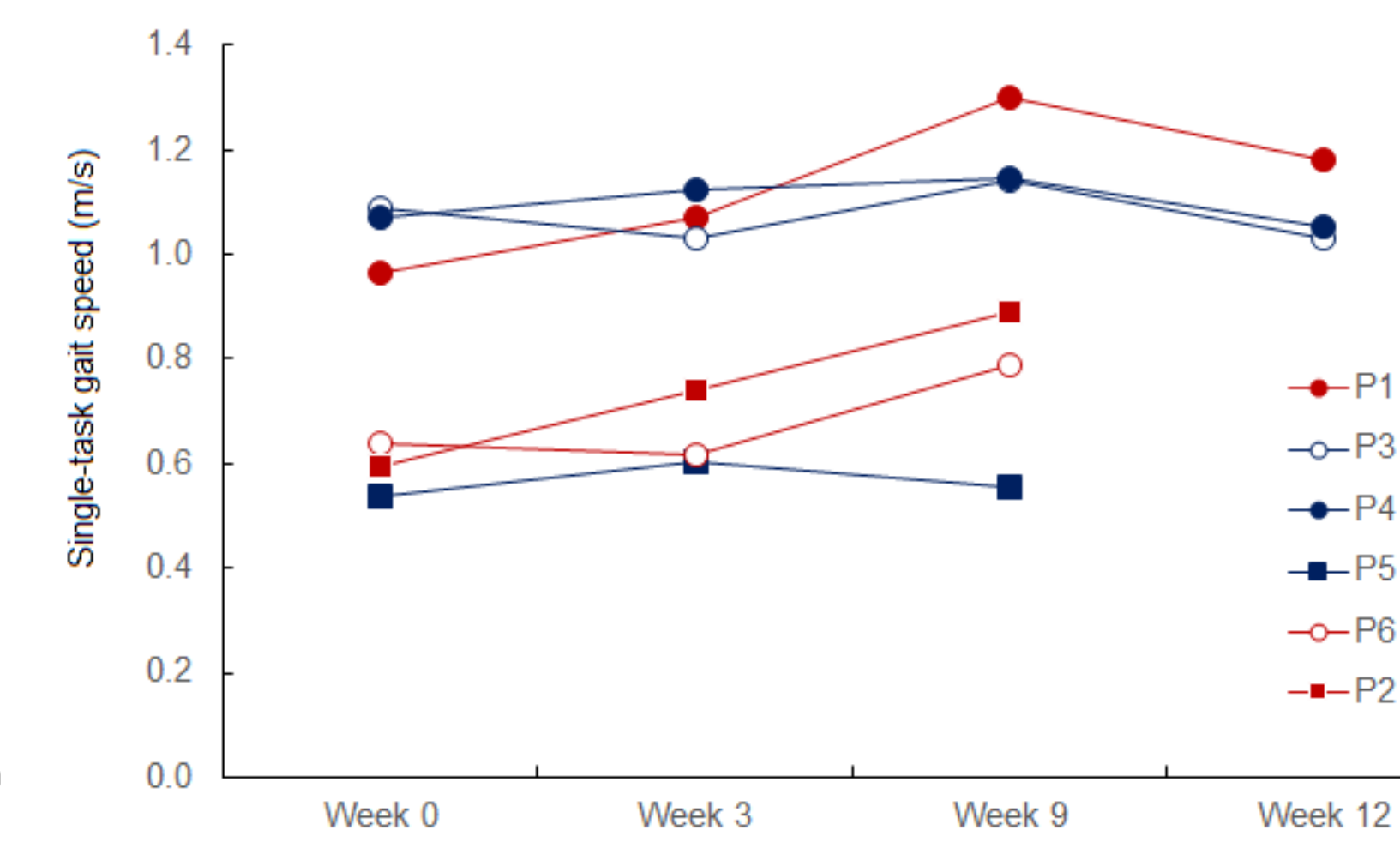
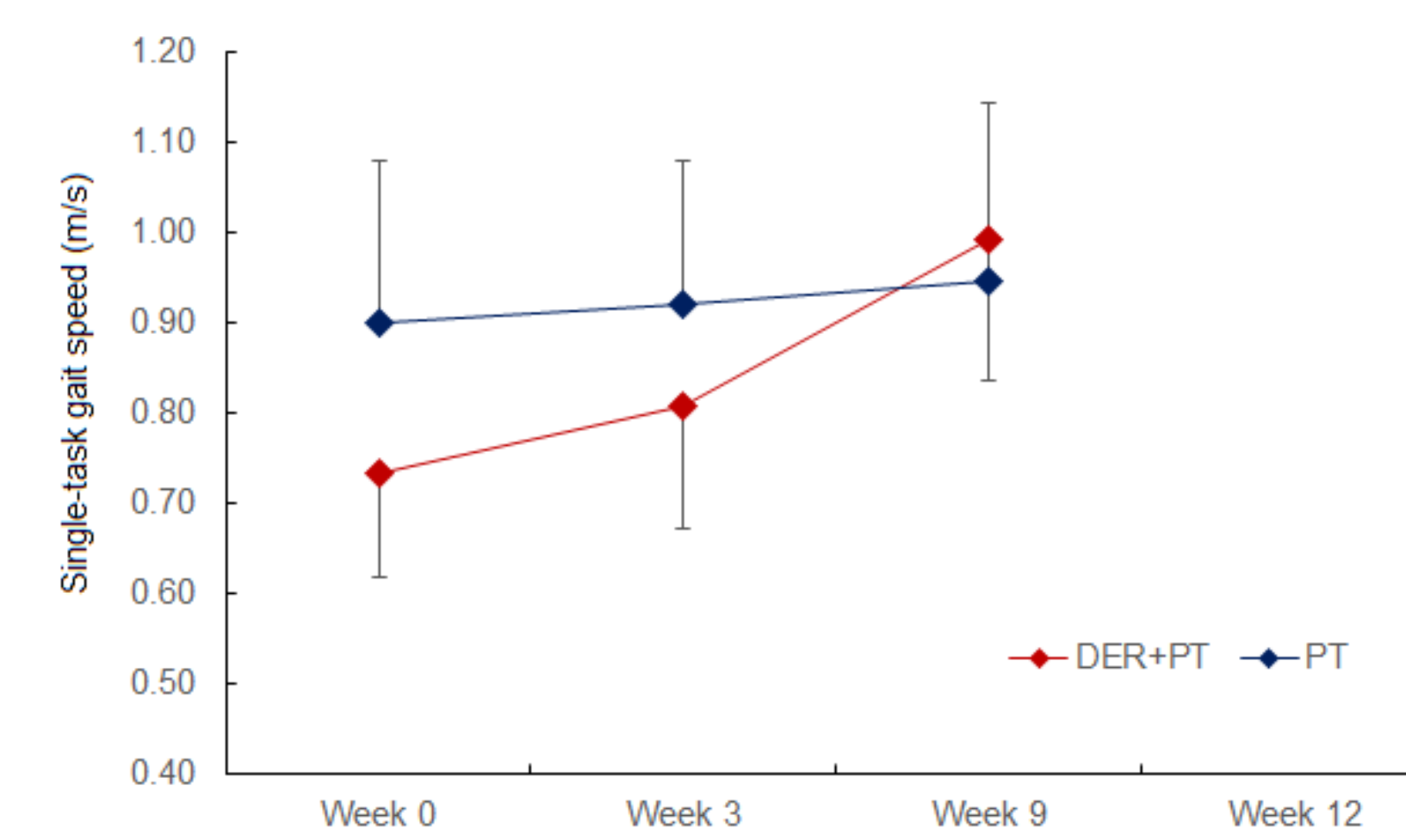


Figure 4: Dual-task gait speed

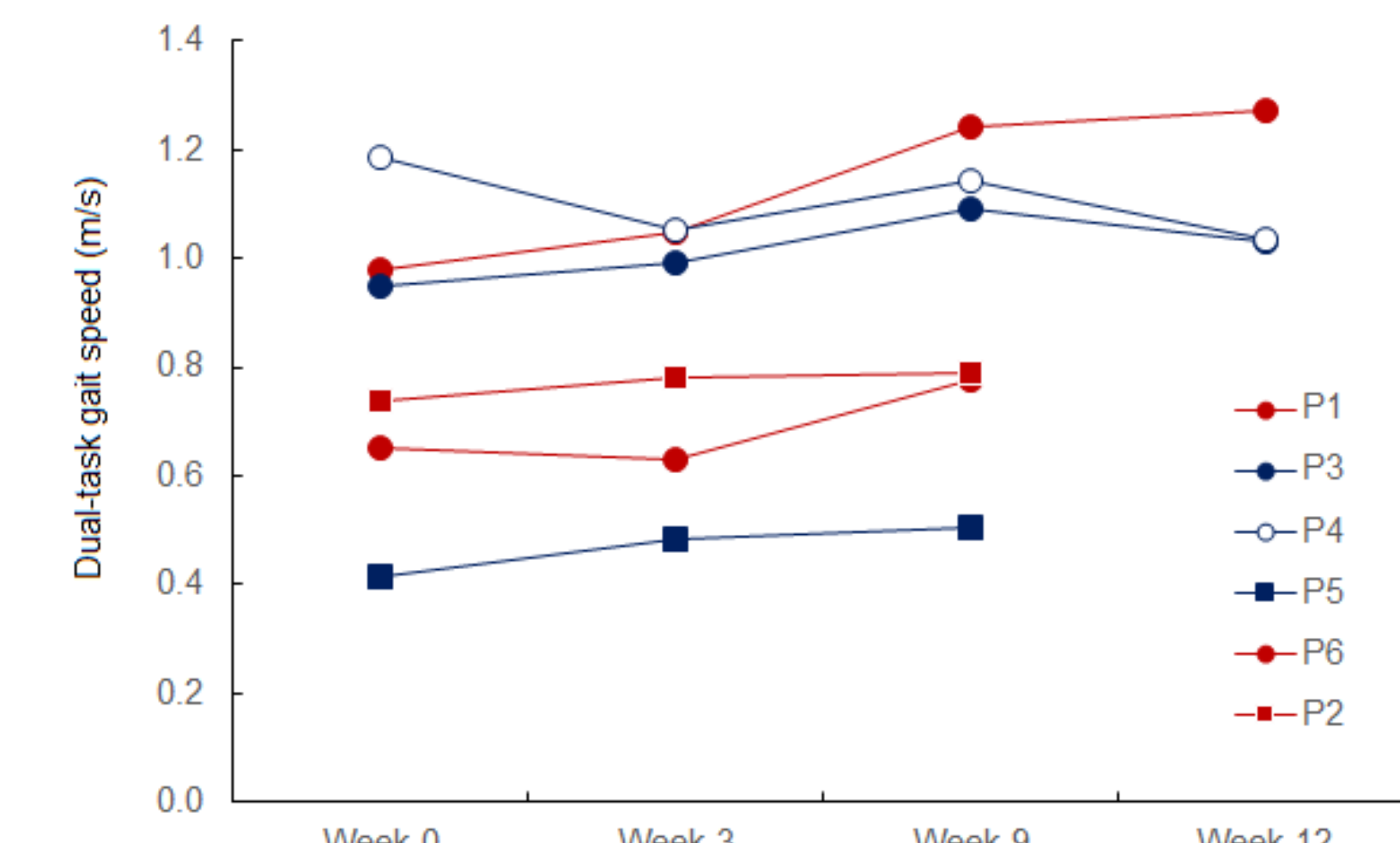
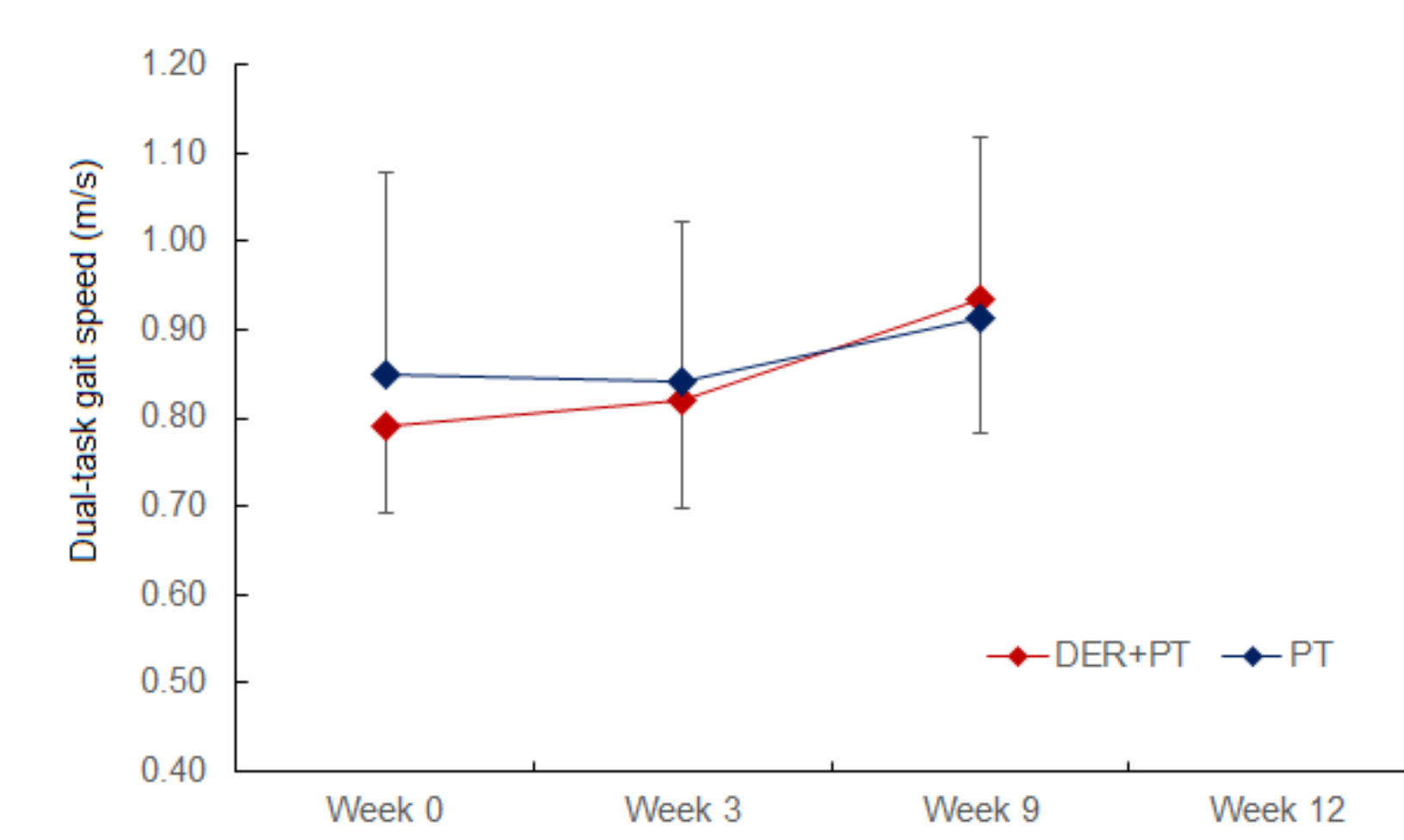
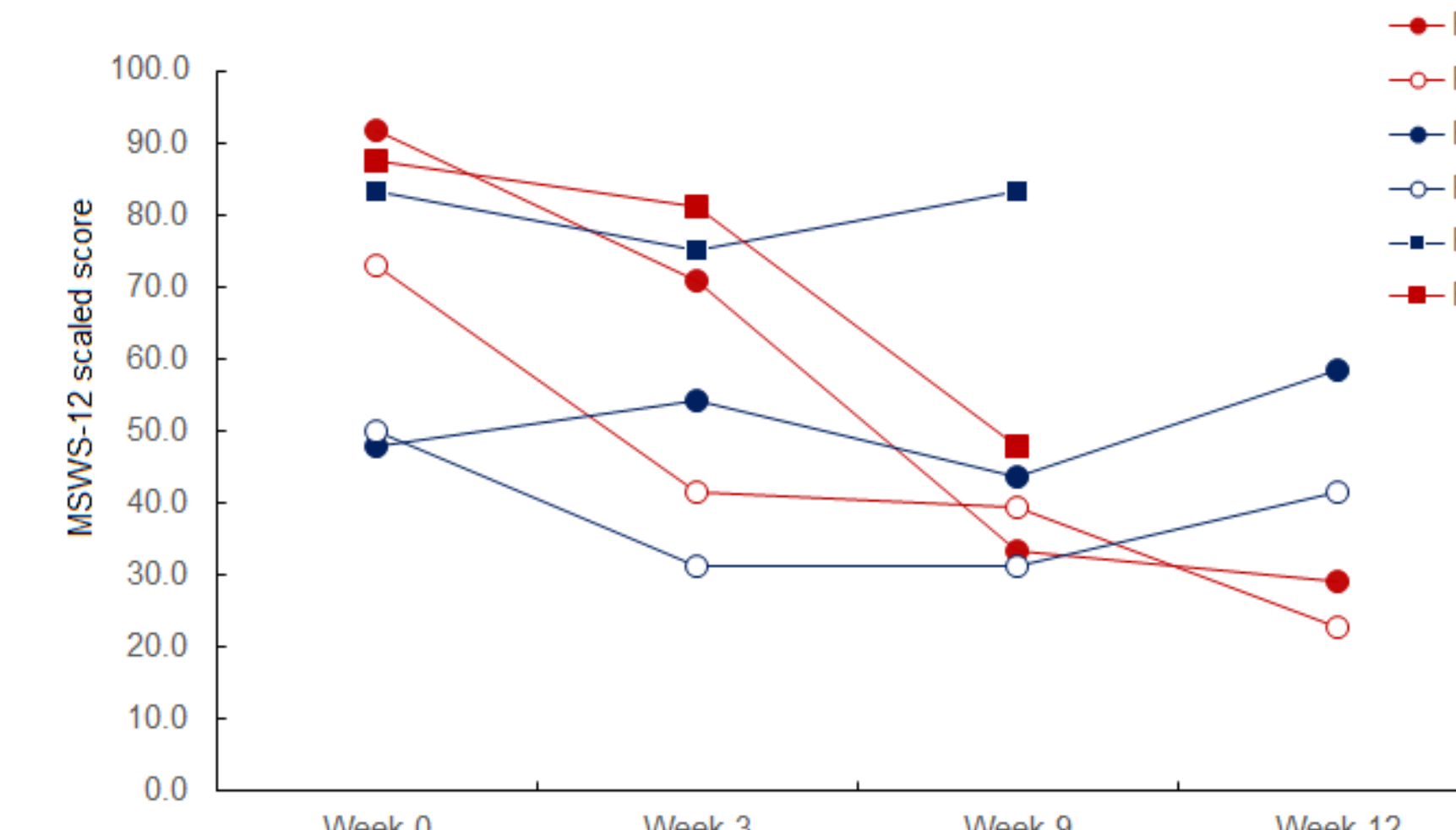
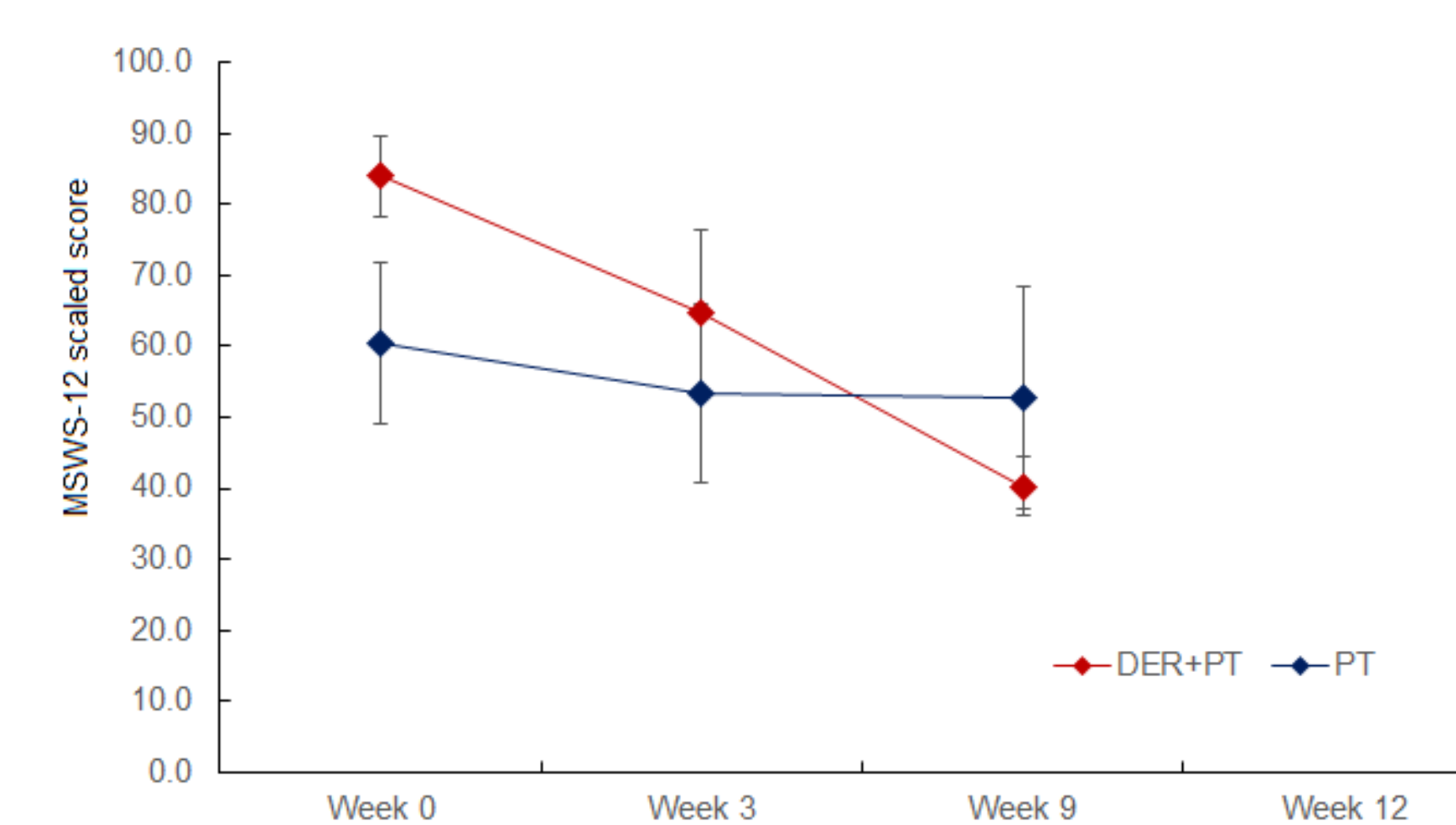


Figure 5: Self-perceived walking ability



Figures 2-5 illustrate average group results (error bars are SE) and individual results for the gait outcomes at each time point. Data for the follow-up assessment were only available for 4 of the 6 participants, so the means are not shown for this time point.

## SUMMARY

### Key Findings:

- All DER participants were “non-responders” to DER based (<20% increase in fast gait speed)<sup>4</sup>
- Mean T25FW improvement of **15.8%** after 3 weeks of DER only
- At 9 weeks: DER+PT group improved by an additional **22.4%**, for a total improvement of **34.7%** which exceeds “responder” threshold criterion
- PT group improved their T25FW by **6%** after PT

### Bottom line:

- PT may enhance the effects of DER on gait speed as well as the perception of disease impact on walking, especially in people with MS who do not reach the responder threshold for a meaningful improvement on DER alone
- 2x/weekly physical therapy alone did not appear to substantially impact gait speed or participant perception of gait or disease impact after 6 weeks
- There was large variation between participants, so larger studies are needed to obtain more precise estimates of treatment effects



## REFERENCES

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2. Plummer *Int J MS Care* 2016;18:105-115
3. Vaney et al. *Neurorehabil Neural Repair* 2012;26:212-221
4. Goodman et al. *Neurology* 2008;71:1134-1141

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