

Partnered Adapted Argentine Tango Dance for Cancer Survivors: a pilot study of effect on postural control



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Introduction

Problem: Chemotherapy damages motor control for approximately 50% of individuals living with cancer (survivors).

- Persistent sensorimotor symptoms are referred to as “chemotherapy-induced neuropathy” (CIN).
- CIN is associated with pain [2,3], falls [4–8], and difficulty in walking and performing ADLs for survivors[5,6,9,10].
- Symptoms, including neuropathic pain, can persist chronically to affect long-term quality of life [3,9].
- We found, previously, that even 1 dose of chemotherapy precipitated balance decrements as measured by quantified, biomechanical outcomes [11,12].
- We found, previously, that balance decrements persisted chronically in 50% of survivors.
- No established treatment options.

Solution proposed: To address CIN, we evaluated feasibility, satisfaction, and preliminary efficacy of a novel balance training program for cancer survivors: partnered, Adapted Argentine Tango dance (Tango) [13].

ARGENTINE TANGO



Figure 1: Cancer survivors and their partners learning Tango.

Hypotheses:

- 1) mean satisfaction and attendance would meet feasibility criteria that were set *a priori*,
- 2) those who showed postural control dysfunction at baseline would demonstrate improved postural control after 8 and 16 classes
- 3) those who co-enrolled with a companion would show higher attendance.

Methods

Design: Feasibility study

Setting: Community wellness program (James Care for Life, The Ohio State University)

Participants: 22 cancer survivors.

Intervention: 16 sessions (1 hr duration) of Tango

Primary outcome measure: Attendance.

Secondary outcome measures: Satisfaction with intervention. Enrollment with a partner. Center of Pressure (CoP) based measures of postural control.

Methods: Per class we documented attendance and satisfaction (7 point Likert scale; 1 = very satisfied). At enrollment we documented number of participants who enrolled with a companion (e.g., sibling, friend, spouse). At beginning, midpoint, and end of intervention we measured postural control 30 seconds of quiet standing with eyes closed (narrow stance) using a portable force platform (Bertec Corp, Columbus, OH, US). We calculated COP measures, including postural sway area (COPa), medial-lateral amplitude (RMSx), medial-lateral velocity (COPvml)[14] and complexity (COPsei) [15].

Analysis: The impact of enrolling with a companion on attendance was evaluated (Mann-Whitney U). Change in postural control was assessed (Student's t-test, two tailed).

Results

Hypothesis 1. Feasibility criteria were met. A majority of participants (55%) attended at least half of classes offered and satisfaction with intervention was high in aggregate (mean = 1.2 (SD 0.5)), as well as when examined per class. On average, movement-to-music dose was 32.9 (3.9) minutes (min) per 1-hour class.

Hypothesis 2. Nine survivors (41%) enrolled with a companion and demonstrated higher attendance than those who did not enroll with a companion (n=13) (p = 0.011; Fig 2A).

Hypothesis 3. Baseline CoP data was recorded from 16 participants. At baseline, nine of 16 (56%) demonstrated postural control outside normative values by more than one standard deviation (>4.4mm) [15]. CIPN status was confirmed for n=6 and unknown for n=3 at baseline. At midpoint, seven participants returned for postural control testing (CIPN confirmed for n=6 of 7) and a groupwise comparison detected positive gains in RMSml (p<0.001; Fig 2), CoPa (p= 0.006), and CoPvml (p=0.006) but not in CoPsei (p=0.139). At endpoint, five participants returned for testing (CIPN confirmed for all 5) while gains were maintained relative to baseline in RMSml (p=0.048, Fig 2) and CoPa (p=0.023), no change from baseline was detected in CoPvml (p=0.286) or CoPsei (0.437).

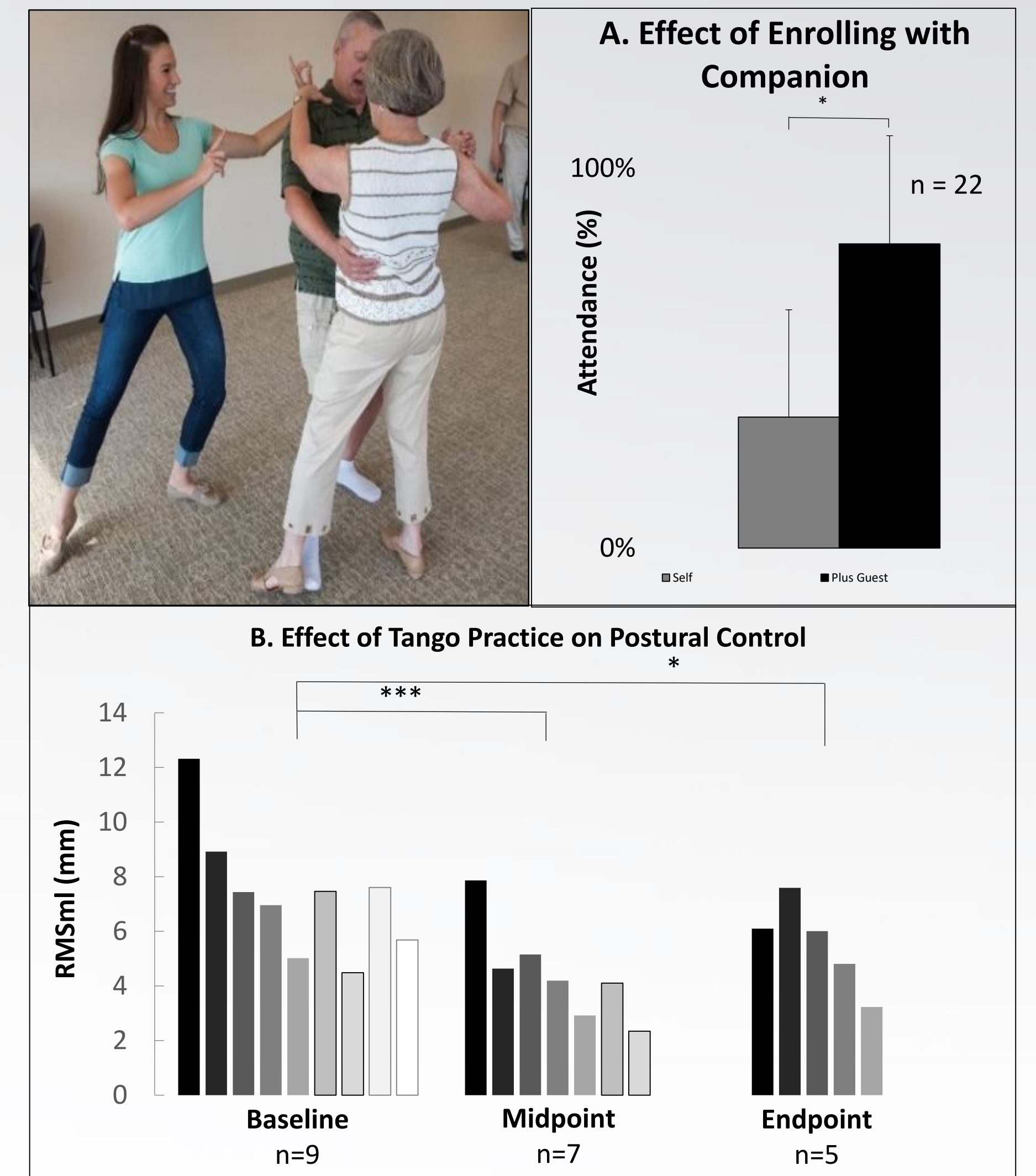


Figure 2: Depiction of 2 cancer survivors learning partnered Tango (upper left). A) Effect of enrolling with a companion on attendance. B) Effect of Tango practice on postural control for n=9 with suboptimal balance at baseline. *p<0.05; ***p<0.001.

Summary

- The community-based practice of partnered, Adapted Argentine Tango [14] is feasible, enjoyable, and possibly efficacious as a balance treatment for cancer survivors.
- Attending with a companion (e.g., life partner, family member, friend) was associated with greater.
- These data provide initial support for the idea that postural control function is recoverable among cancer survivors through community-based activities such as partnered Tango.

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