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Pilot Study Report: University Hospital Lewisham 6-Week Neurophysiotherapy Dance Programme

Neurological Physiotherapy Outpatient Service, University Hospital Lewisham

5 November 2024 – 10 December 2024

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1. Introduction

A six-week dance intervention to improve balance and confidence among participants was implemented in an outpatient neurophysiotherapy unit at University Hospital Lewisham. The programme was conducted from 12 November to 10 December 2024, with sessions led by Trinity Laban Dance Artist Stella Howard, supported by a dance teaching assistant and members of the hospital's physiotherapy team. Dance-based movement was used as a therapeutic approach to support balance, coordination, and confidence-building in neurorehabilitation.

The study aimed to assess changes in balance confidence using pre- and post-intervention assessments, weekly progress tracking, and observational data. Understanding the role of dance in clinical and community-based neurorehabilitation can provide insight into its potential application in hospital settings and beyond.

2. Methods

Participants

The participants included eight outpatients attending neurophysiotherapy sessions, of whom six completed both the baseline (Week 3) and follow-up (Week 6) questionnaires. Additionally, three of the participants completed weekly questionnaires over the four weeks from the baseline to the follow-up.

Intervention

The intervention included weekly one-hour dance sessions following a structured format:

- The warm-up consisted of seated exercises incorporating self-massage, guided imagery such as "painting" or "spirograph" movements, and mobility exercises to prepare participants for movement.
- The main part of the session utilised a combination of standing and barre-based exercises designed to enhance balance, coordination, social engagement, and multidirectional movement patterns.
- The session progressed to choreographed movement, including a "Romeo and Juliet" inspired dance, partner-based exercises including supported calf raises, duet work and creative dance. One example of the creative section was moving toward one another with dramatic, proud postures.
- The session concluded with a cool-down that included seated relaxation techniques.
- Following the session, participants were asked to complete questionnaires, including the Adapted Activities-specific Balance Confidence Scale (ABC-12) and the Adapted Activities-specific Balance Confidence Scale (ABC-3).

Design, Instruments, & Analysis

The baseline data collection commenced in Week 3 to accommodate development of the pilot evaluation with practical observations in Weeks 1-2. The follow-up questionnaire was distributed in Week 6, with four weeks of data collected between the baseline and follow-up. Three instruments were utilised during this study, as follows:

1. The Adapted Activities-specific Balance Confidence Scale (ABC-12, Appendix A) questionnaire was administered at baseline and follow-up in Weeks 3 and 6. The original ABC-16 questionnaire was developed by Powell and Myers (1995) as a validated self-report measure of an individual's confidence in maintaining balance during daily activities. The questionnaire prompts participants to reflect on how confident they feel about their balance while engaging in various activities, such as walking up or down stairs, using a scale

from 1 to 10. For this study, the ABC-16 was adapted into the ABC-12 by removing four activity-related questions to improve accessibility and better suit the class population. The average score across the 12 items provided a single measure of balance confidence. The ABC-12 therefore offered a retrospective measure of balance confidence over the previous week, making it useful for tracking changes over time.

2. The Adapted Activities-specific Balance Confidence Scale (ABC-3, Appendix B) was also employed as a weekly assessment tool. The ABC-3 is a shortened adaptation of the ABC-12 consisting of three activity-based questions, designed to capture immediate changes in balance confidence following each session. The average score across the 3 items provided a single, weekly measure of balance confidence. Utilising both the ABC-12 and the ABC-3 enabled the study to describe both longer-term trends in balance confidence and immediate post-session changes.
3. A naturalistic observation log was maintained by the dance assistant to capture qualitative insights on participant engagement, movement adaptation, and social interaction. This was captured as an unstructured log, documenting aspects such as class structure, participants' physical and social engagement with tasks, and any comments or feedback they shared during the sessions.

Thematic analysis and descriptive statistics were used to analyse the observational and questionnaire data in this small-scale pilot study.

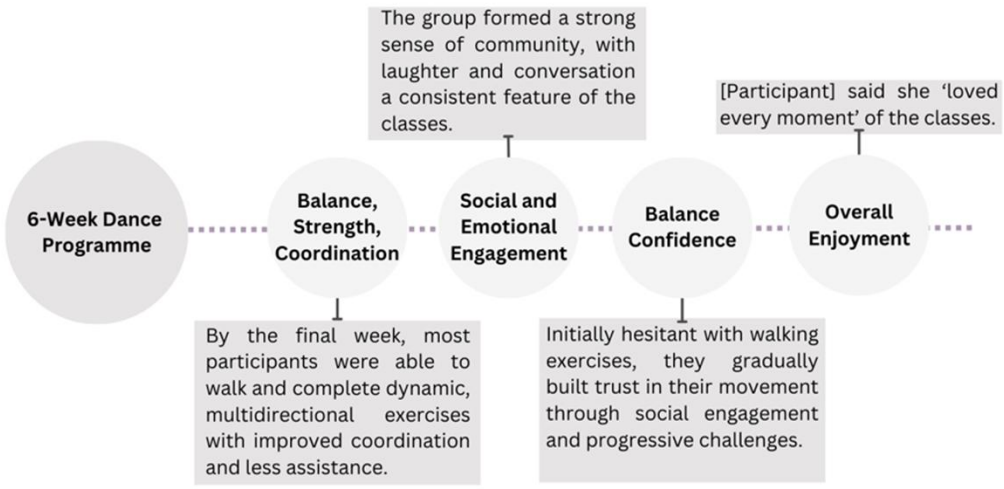
3. Summary of Findings

Observational Log

Over the course of the programme, participants showed notable, steady improvements in both balance abilities and confidence. Progressing through calf raises, paced walking, and lunges, some gained the ability to complete these movements unsupported by Week 6. While faster footwork remained challenging, by Week 4, the facilitator observed noticeable improvements in walking pace, rhythm, and group synchronicity. Initially, participants showed hesitancy to stand and walk, often maintaining hunched positions with their gaze directed downward. However, as the programme progressed, they gained confidence and demonstrated a growing sense of physical control, gaining trust through social engagement and progressive challenges. By the programme's end, they embraced multidirectional movement, one-leg balances, and partner choreography with greater ease and enjoyment.

Figure 1

Observed Outcomes of the 6-Week Dance Programme

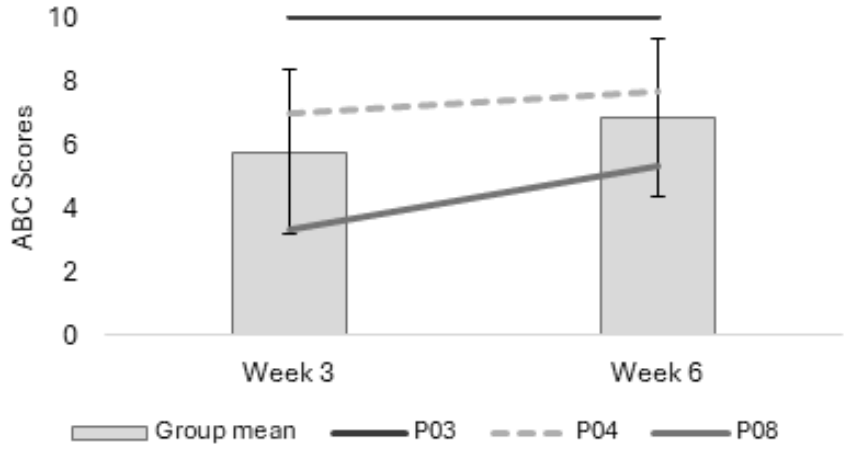


Activities-specific Balance Confidence

The findings of the intervention indicate an overall improvement in participants' balance confidence. On average, participants reported feeling more secure in their ability to maintain balance during daily activities by the end of the programme. This was reflected in a descriptive increase in the mean ABC-12 score from 5.78 at baseline to 6.86 at follow-up (Figure 2). All participants demonstrated higher ABC-12 scores in follow-up compared with baseline, with improvements ranging from 0.3 to 1.7 on the 10-point scale. For the three participants who completed the weekly ABC-3, stable or positive changes in balance confidence were observed (see individual regression trends in Figure 2). Participant 3 reported consistently high balance confidence across all four weeks, whereas Participants 4 and 8 demonstrated a general increase over time of approximately two scale points. These findings suggest that participants beginning with lower levels of confidence may experience greater improvements through dance participation. Alongside these self-reported gains, observational findings, including increased ease in weight transfers, walking pace, and multidirectional movement, further supported the quantitative findings.

Figure 2

Baseline and Follow-up Activities-specific Balance Confidence Scores with Individual Weekly Trends



Note: The bars represent the group average scores from the baseline and follow-up ABC-12 questionnaire completed by six participants. The lines represent regression trends derived from weekly ABC-3 questionnaire scores for three selected participants.

4. Discussion

As described above, this study suggests that dance-based interventions can offer benefits beyond physical improvements. Participants not only developed strength and coordination but also experienced increased confidence and social engagement. The structured yet creative nature of the sessions provided a space for personal growth, allowing individuals to explore movement with greater ease and self-assurance. Many participants expressed a desire to continue with future dance classes, citing enjoyment and perceived progress, though some noted practical barriers such as transport limitations. To further illustrate the impact of the programme, the following case descriptions highlight individual participant journeys and the ways in which physical, emotional, and social factors intertwined in their experiences.

One participant showed a 1.50-point increase in balance confidence from Week 3 to Week 6 (ABC-12: 2.75 to 4.25). Initially unable to stand up or walk unsupported**,** they progressed to independently transitioning from sitting to standing using sweeping arm motions by Week 4. This participant continued to engage in supported versions of traveling and barre exercises, with noticeable improvements in weight transfer and walking ability. Their journey demonstrated not only physical improvement but also a growing sense of confidence in their own abilities.

Another participant's balance confidence increased by 1.67 points (ABC-12: 4.83 to 6.50). This improvement was likely influenced by the programme's social and emotional benefits. Initially, this participant displayed lower energy and confidence levels, opting for movement regressions throughout the programme. However, their enthusiasm and verbal engagement steadily grew, and they began to report greater enjoyment during the exercises. Observation notes from the facilitator noted that this participant was "much chattier today," reflecting an increase in social interaction and emotional ease. This participant's progress highlights the significance of the supportive, social environment in fostering a sense of ease and trust in movement.

Overall, these case descriptions underscore the programme's ability to promote both physical and emotional growth. Participants not only gained improved balance and coordination but also developed greater confidence and social connections. These findings suggest that targeted movement-based interventions can be effective in improving both physical and mental components of balance. Future studies involving larger groups and longer follow-up periods could further confirm the effectiveness of these interventions and explore their long-term impact.

5. Methodological Challenges

Participants demonstrated engagement and progression throughout the study, highlighting the potential value of dance within neurophysiotherapy. As this was a pilot study, Weeks 1–2 were used to refine and inform the study design prior to data collection. Consequently, data collection was limited to Weeks 3–6, reducing the ability to capture early-stage changes. Incomplete questionnaire responses and transport barriers limited the generalisability and consistency of findings. Additionally, the absence of a comparison group and the small sample size, which prevented inferential statistical analysis, limited the strength of the conclusions that could be drawn. Future research should include larger sample sizes, qualitative interviews and focus groups for deeper insights to participants' experience, and comparative analyses with other physiotherapy-based interventions. Despite these limitations, the findings support the feasibility of dance as a therapeutic tool within neurophysiotherapy settings.

6. Conclusion

The findings of this six-week dance intervention at University Hospital Lewisham highlight the potential benefit of dance-based movement on balance confidence, physical ability, and social engagement in neurorehabilitation patients. The improvements in ABC-12 and ABC-3 scores, measuring confidence in balance during everyday tasks, alongside observed increases in walking pace, weight transfers, and single leg balances reinforce the value of integrating creative movement into clinical settings. Beyond physical benefits, participants developed confidence, social connection, and enjoyment in movement, indicating broader well-being outcomes.

Despite logistical challenges, including transport barriers for participants and limited sample size, the positive response from participants underscores the potential for this and other dance-based interventions in outpatient settings. These findings support further investment in creative health initiatives as innovative, cost-effective, and community-building approaches to rehabilitation. To further develop this work, increased funding and institutional support will be essential. Future programmes could benefit from improved accessibility measures, extended study durations, and further interdisciplinary collaboration between dance practitioners, healthcare teams, and researchers. This pilot project provides promising preliminary evidence for the role of dance in enhancing patient outcomes and advancing holistic models of care.

Research Team

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Appendix A

Adapted Activities-specific Balance Confidence Scale (ABC-12) Questionnaire

The Activities-specific Balance Confidence (ABC) scale

This questionnaire asks you to rate how confident you feel with balance while performing different daily tasks. **Answer each question by choosing just one answer**. If you are unsure of an answer, try and imagine yourself doing the task and imagine how confident you would feel in terms of balance. The scale of 1-10 represents percentages from 10%-100%, for example, 1 is 10%, 2 is 20% et cetera.

Name:_____ **Date:**_____
Age:_____

Have you had a fall in the past? Yes / No
How long ago was the fall? _____

In the past week, circle how confident you feel with balance when you were:

1. **Walking around the house?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

2. **Walking up or down stairs?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

3. **Bending over to pick up a slipper off the floor?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

4. **Reaching for a small can off a shelf at eye level?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

5. **Standing on your tiptoes to reach for something above your head?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

6. **Standing on a chair to reach for something?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

7. **Sweeping the floor?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

8. **Walking outside to a parked car in the driveway?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

9. **Getting into or out of a car?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

10. **Walking across a parking lot to the mall?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

11. **Walking up or down a ramp?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

12. **Walking in a crowded mall where people rapidly walk past you?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

Appendix B

Adapted Activities-specific Balance Confidence Scale (ABC-3) Questionnaire

Name:_____ **Date:**_____

Currently, circle how confident you feel with balance when thinking of these tasks :

1. **Standing on your tiptoes to reach for something above your head?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

2. **Walking outside to a parked car in the driveway?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident

3. **Getting into or out of a car?**

1 2 3 4 5 6 7 8 9 10

Not Confident Very confident