The immediate impact of Physiotherapy in an adult with degenerative cerebellar ataxia

- A Retrospective Case Study -

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Cerebellar ataxia comprises a diverse spectrum of motor coordination disorders resulting from structural or functional impairment of the cerebellum and its neural pathways (1). The main etiologies include hereditary factors, immune-mediated mechanisms and lifestyle-related causes (nutritional deficiencies, ethanol and drug toxicity) (2–5). The resulting cerebellar dysfunction often results in substantial deficits in limb coordination, oculomotor control, postural stability, and gait performance. These impairments may undermine functional autonomy, limit employability, increase caregiver burden, and adversely affect quality of life (1). In recent years, several studies have investigated the role of rehabilitation-based interventions in individuals with degenerative ataxia, consistently supporting the contribution of Physiotherapy to improving motor performance, adaptability, and overall functionality (6,7). However, there remains limited research examining the short-term effects of such interventions, particularly regarding their influence on functional mobility and quality of life (QoL) (6).

PURPOSE

This Case Study aims to retrospectively assess the impact of a 2-week Physiotherapy program integrating several evidence-supported modalities on gait performance, postural control, and perceived quality of life in an adult with degenerative cerebellar ataxia.

METHODS

Informed consent was obtained prior to participation.

Physiotherapy intervention period: 2 weeks.

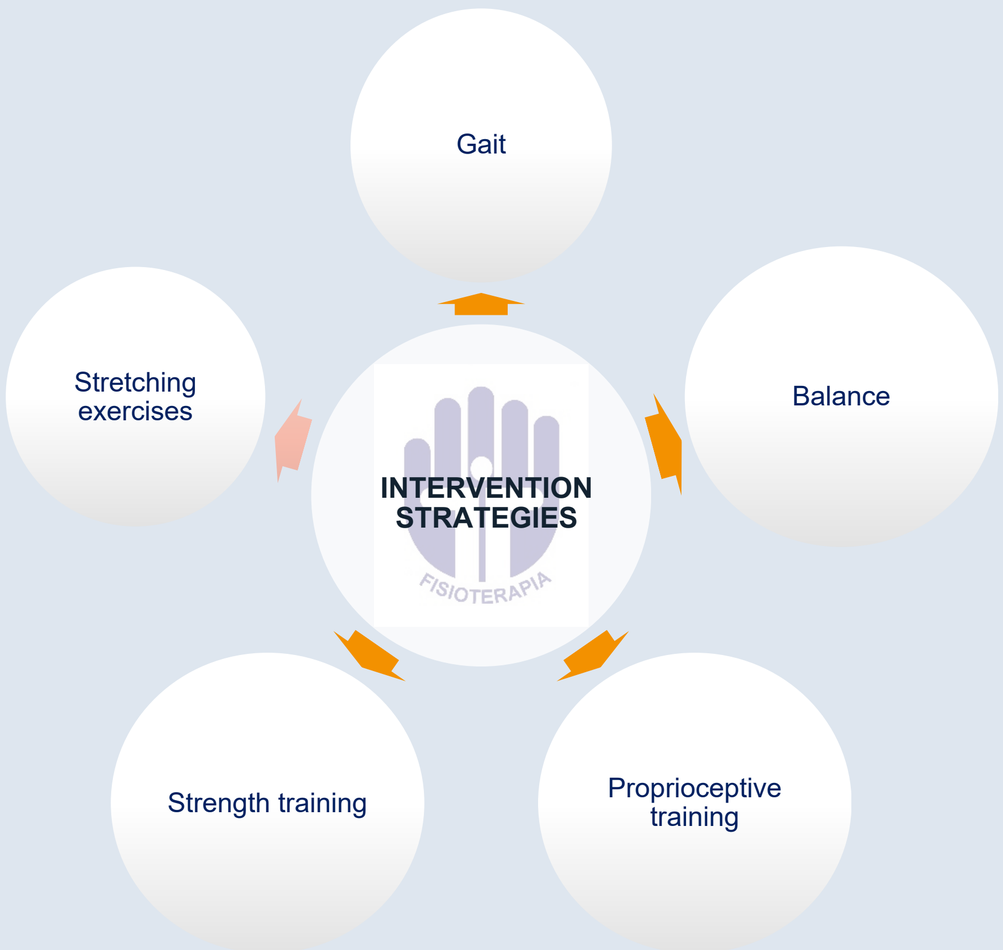
Setting: acute hospital environment.

Frequency: daily sessions (5 days/week), 30-45 minutes.

Sessions were individually adjusted according to the participant's level of fatigue, aiming for a perceived exertion of 6/10 on the modified Borg scale.

Evaluation:

- Muscle strength - Medical Research Council (MRC) scale
- Functional mobility -Timed Up and Go (TUG) test
- Balance and proprioceptive control - Fukuda stepping test
- Gait and tandem gait pattern - Qualitative observation
- Perceived impact of dizziness and imbalance on QoL - Dizziness Handicap Inventory (DHI)



RESULTS

Outcome measures	Initial assessment	Final assessment
MRC	**4/5** (hip flexors and extensors, knee flexors and extensors, ankle flexors and extensors)	**5/5** (hip flexors and extensors, knee flexors and extensors, ankle flexors and extensors)
TUG	**9.28"**	**8.51"**
Dual-task TUG	**11.02"**	**10.30"**
Fukuda stepping test	**15"**	**22.67"**
Gait and tandem gait pattern	**No dissociation** between trunk and pelvis, **variability in step length,** considerable **postural sway**	**Improvement in** trunk and pelvic **dissociation**, increased **consistency in step length, reduced postural oscillations.**
DHI	**43/10**	**42/100**

CONCLUSION

- A Physiotherapy program integrating several evidence-supported modalities appeared to promote short-term improvements in lower-limb strength, gait coordination, and postural stability in this individual.
- These functional gains suggest that task-specific interventions may facilitate neuromotor adaptation even after 2 weeks. However, no meaningful changes were observed in perceived QoL.
- Further research with larger cohorts, extended intervention durations, and longitudinal study designs is required to determine the long-term effectiveness of such rehabilitation programs.

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