

# The Effect of Physical Therapy on Individuals with Degenerative Cerebellar Ataxia: A Systemic Review and Meta-analysis

Hsiao-Chu Yang, Ya-Ju Chang, Wen-Yu Liu

Department of Physical Therapy, Chang Gung University, Taoyuan, Taiwan



## Introduction

- Physical therapy (PT) is one of the non-pharmacologic treatment to degenerative cerebellar ataxia, one kind of rare disease.
- Previous studies suggest that PT be beneficial to this kind of cases (Fonteyn 2014, Milne 2017). However, the optimal treatment dosage remains not clear.
- The purpose of this study is to identify the optimal dosage of duration of PT intervention to the degenerative cerebellar ataxia subjects.

## Method

- Articles were extracted from four databases : PubMed, Scopus, ProQuest, and Cochrane until May 2020.
- Searching was performed with keywords including “cerebellar ataxia” OR “cerebellar degeneration” OR “spinocerebellar ataxia” combined with “physiotherapy” OR “physical therapy”.

- P: degenerative cerebellar ataxia

I: physical therapy

C: comparing to control group

O: Score of scale for the assessment and rating of ataxia (SARA) as the primary outcome measure

- Reviewing quality of each study by Physiotherapy Evidence Database scale (PEDro scale) and classified the level by the Oxford Centre for Evidence-Based Medicine (CEBM) level of evidence.

## Results

- There were 16 articles enrolled in the study and 13 paper performed meta-analysis.
- The optimal duration for PT is 4-week treatment.

## Discussion

- PT is benefit to degenerative cerebellar ataxia clients at the domain of ataxia, balance, and function.
- The meta-analysis of this study shows moderate strength of evidence to improve degenerative cerebellar ataxia subjects.
- According to heterogeneity of subject groups, it would be unable to generalize to the whole population.

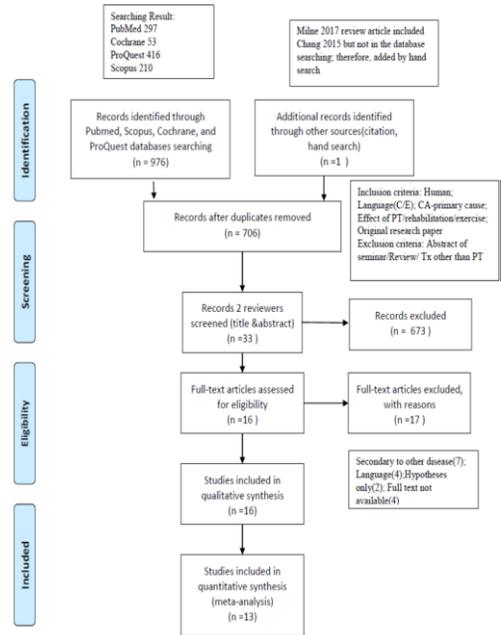


Figure 1 The flow chart for reviewing process

Table 1 The quality of articles measured by PEDro scale

Question	PEDro Score										
	2	3	4	5	6	7	8	9	10	11	Total
Wang 2018	Y	N	Y	N	N	Y	Y	Y	Y	Y	7
Miyai 2012	Y	Y	Y	N	N	N	Y	Y	Y	Y	7
Chang 2015	Y	N	Y	N	N	N	Y	Y	Y	Y	6
Burn 2014	N	N	Y	N	N	N	Y	Y	Y	Y	5
Rodriguez-Diaz 2018	Y	Y	Y	N	N	Y	Y	Y	Y	Y	8
Barbato 2020	Y	N	Y	N	N	N	Y	Y	Y	Y	6
Total Yes Ratings	5 of 6	2 of 6	6 of 6	0 of 6	0 of 6	2 of 6	6 of 6	6 of 6	6 of 6	6 of 6	

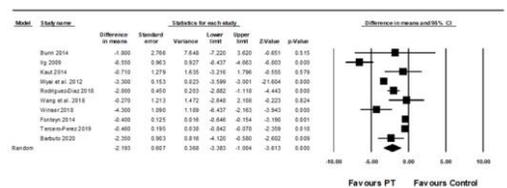


Figure 2 Forest plot shows the effect of physical therapy compared with no treatment measured with SARA

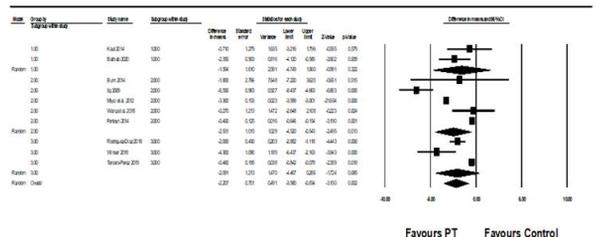


Figure 3 Forest plot shows the 4-week duration is the optimal dosage effect of PT

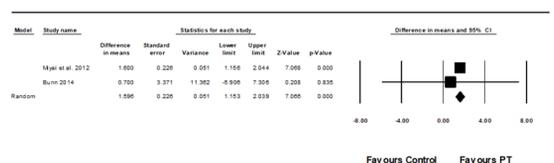


Figure 4 Forest plot shows the function improved after PT examined by functional independence measure (FIM)