

Too Much or Too Little?: A Systematic Review of Post-Paretic Synkinesis Treatment

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INTRODUCTION

- ❖ Facial synkinesis is a potentially life-altering sequela of facial nerve injury. Aberrant regeneration of the facial nerve after injury can result in involuntary movements that have a detrimental impact on function and quality of life.
- ❖ Despite the necessity of effective treatment, there is significant controversy among clinicians about the optimal treatment modality, characteristics of therapy, and how to report treatment outcomes.
- ❖ The goals of this study were to comprehensively summarize and evaluate the quality of the current synkinesis literature, and to compare the effectiveness of common synkinesis treatment modalities.

METHODS

- ❖ A medical librarian performed a literature search of Embase, Ovid Medline, Scopus, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, and clinicaltrials.gov in February 2018 for relevant concept terms.
- ❖ Full-text English language articles describing prospective and retrospective cohort studies or randomized controlled trials investigating treatments for synkinesis were eligible for inclusion.
- ❖ Reviews, comments, experimental studies, and animal studies were excluded.
- ❖ Two authors (JBL and JCYL) independently reviewed articles and extracted data.
- ❖ Quality was assessed by the Newcastle-Ottawa scale (cohort studies) and the Cochrane Collaboration tool (RCTs).

RESULTS

Figure 1. Flow diagram of studies in systematic review.

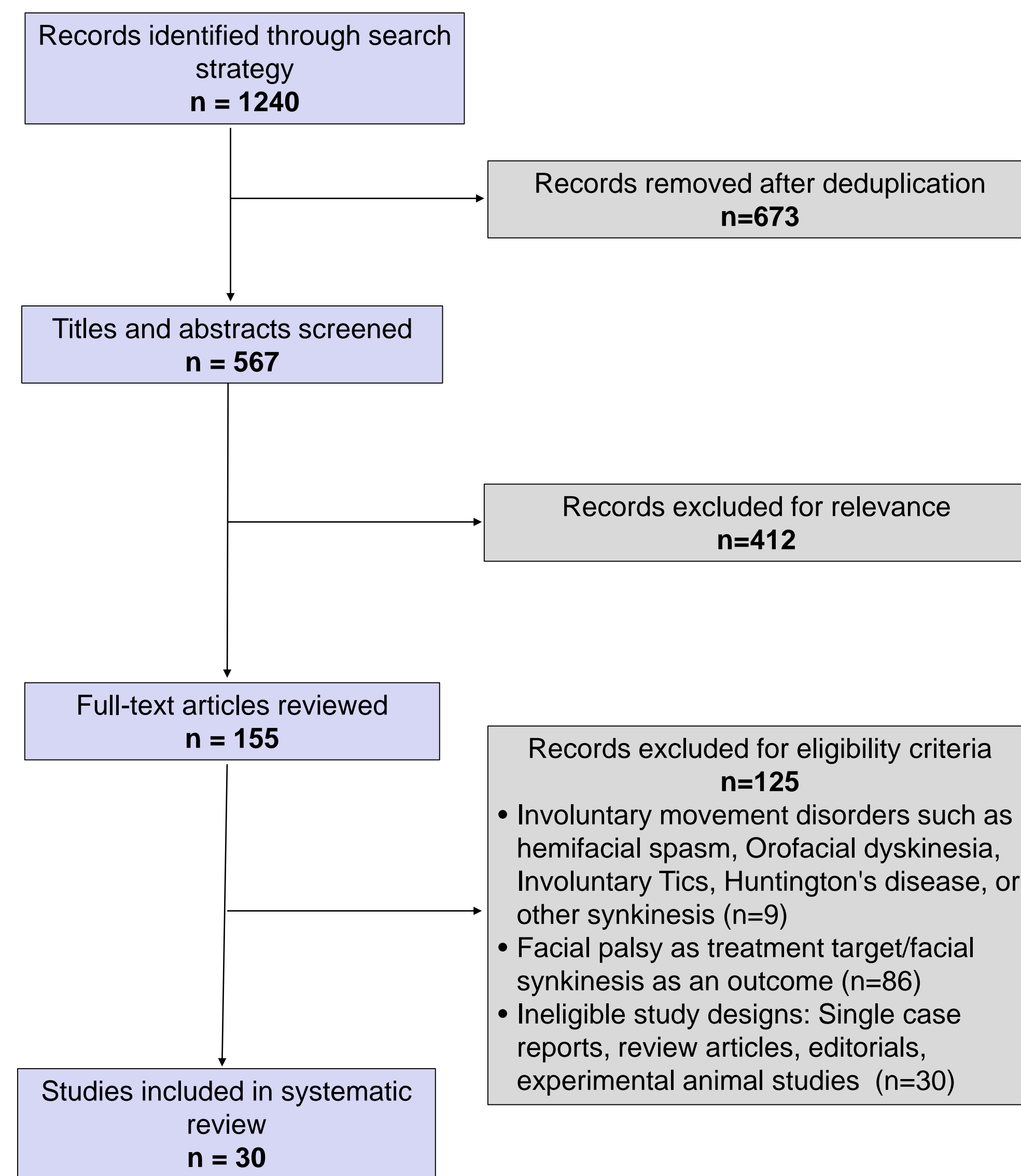


Figure 2. Characteristics of included studies.

Treatment type	Author	Year	Nationality	Study Design	Patient number	Primary Outcome
Chemodenervation	Borojerdi ²²	1998	Germany	Retrospective	10	Five point scale
Chemodenervation	Cecini ¹⁶	2013	Italy	Prospective	29	Sunnybrook Facial Grading System
Chemodenervation	Choi ¹⁹	2013	Korea	Prospective	42	Sunnybrook Facial Grading System
Chemodenervation	Couch ¹⁵	2014	U.S.A.	Retrospective	9	Sunnybrook Facial Grading System
Chemodenervation	Dall'Angelo ¹⁷	2014	Italy	Retrospective	45	Sunnybrook Facial Grading System
Chemodenervation	Filipo ¹⁸	2012	Italy	Prospective	41	Sunnybrook Facial Grading System
Chemodenervation	Neville ²⁰	2017	U.K.	Prospective	51	Synkinesis Assessment Questionnaire (SAQ)
Chemodenervation	Toffola ²¹	2010	Italy	Prospective	30	Sunnybrook Facial Grading System
Physical Therapy	Brach ³⁵	1997	U.S.A.	Retrospective	14	Movement of points on lip
Physical Therapy	Cronin ³⁷	2003	U.S.A.	Retrospective	24	May Facial Grading Scale
Physical Therapy	Fujiwara ³⁴	2017	Japan	Retrospective	37	Sunnybrook Facial Grading System
Physical Therapy	Kasahara ³⁸	2017	Japan	Retrospective	12	Revised Sunnybrook Facial Grading System
Physical Therapy	Van Swearingen ³⁶	2003	U.S.A.	Retrospective	66	Sunnybrook Facial Grading System
Surgery	Bigoli ³⁹	2017	Italy	Retrospective	18	Modified House-Brackmann score
Surgery	Guerrissi ⁴⁰	1991	Argentina	Retrospective	14	Disappearance of synkinesis
Surgery	Henstrom ⁴²	2011	U.S.A.	Prospective	24	Facial Clinimetric Evaluation
Surgery	Hohman ⁴⁴	2013	U.S.A.	Retrospective	3	Facegram
Surgery	Yoshioka ⁴¹	2015	Japan	Retrospective	11	Sunnybrook Facial Grading System
Surgery	Zhang ⁴³	2010	China	Retrospective	11	(Sunnybrook) Toronto Facial Grading System
Chemodenervation + PT	Azuma ²³	2012	Japan	Prospective	13	Percent Eye Opening
Chemodenervation + PT	Mandirni ²⁴	2016	Italy	Retrospective	27	Sunnybrook Facial Grading System
Chemodenervation + PT	Maria ²⁵	2017	Korea	Prospective	142	Sunnybrook Facial Grading System
Chemodenervation + PT	Monini ²⁶	2011	Italy	Randomized Control	20	Sunnybrook Facial Grading System
Chemodenervation + PT	Pournomeny ²⁷	2015	Iran	Randomized Control	34	Sunnybrook Facial Grading System
Chemodenervation + PT	Rogers ²⁸	2007	U.S.A.	Retrospective	8	Sunnybrook Facial Grading System
Chemodenervation + PT	Wei ²⁹	2015	U.S.A.	Retrospective	42	Sunnybrook Facial Grading System
Surgery +/- Chemodenervation	Bran ³⁰	2014	Netherlands	Retrospective	11	Questionnaire, Visual Analog Scale
Surgery +/- PT and Chemodenervation	Chuang ³³	2015	Taiwan	Retrospective	70	Synkinesis Grading System
Surgery +/- PT and Chemodenervation	Terzi ³²	2012	U.S.A.	Retrospective	11 (pediatric)	Facial Grading System
Surgery +/- PT and Chemodenervation	Terzi ³¹	2012	U.S.A.	Retrospective	29 (adult)	Facial Grading System

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Figure 3. Description of patients by treatment modality.

	Chemodenervation	Physical Therapy	Surgery	Combined Therapy	Total Number
Gender	Male	67	29	21	132 (30%)
	Female	190	58	60	265 (70%)
Etiology	Bell's palsy	108	60	43	166 (48.2%)
	Surgical (Tumor resection, iatrogenic)	49	41	13	66 (21.6%)
Etiology	Nonsurgical Trauma	17	15	10	53 (12.1%)
	Infectious (Viral, Ramsay Hunt)	30	33	11	55 (16.5%)
Etiology	Others (Degenerative, Congenital)	2	4	1	4 (1.4%)

Figure 4. Interval of post-operative assessment.

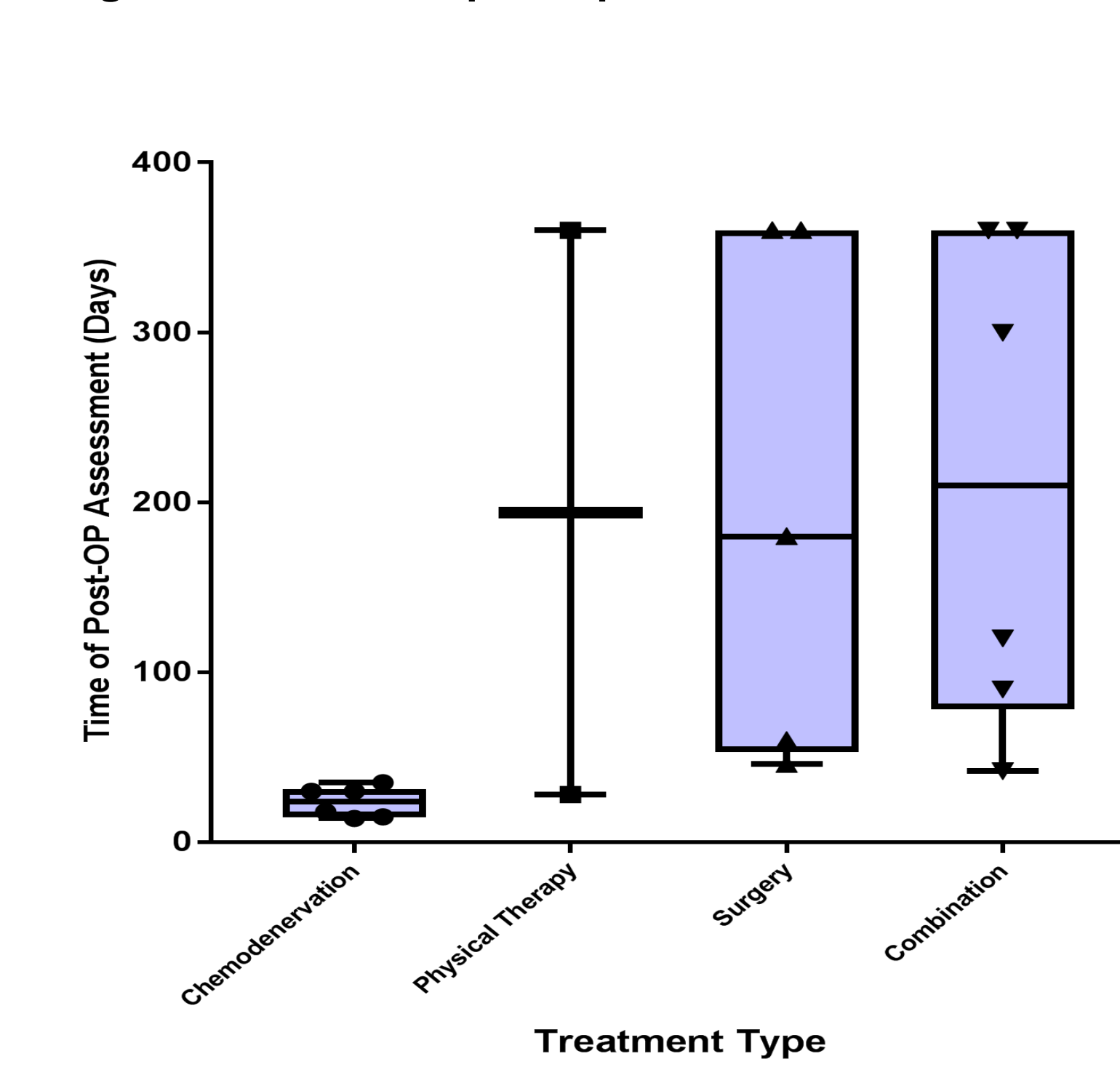
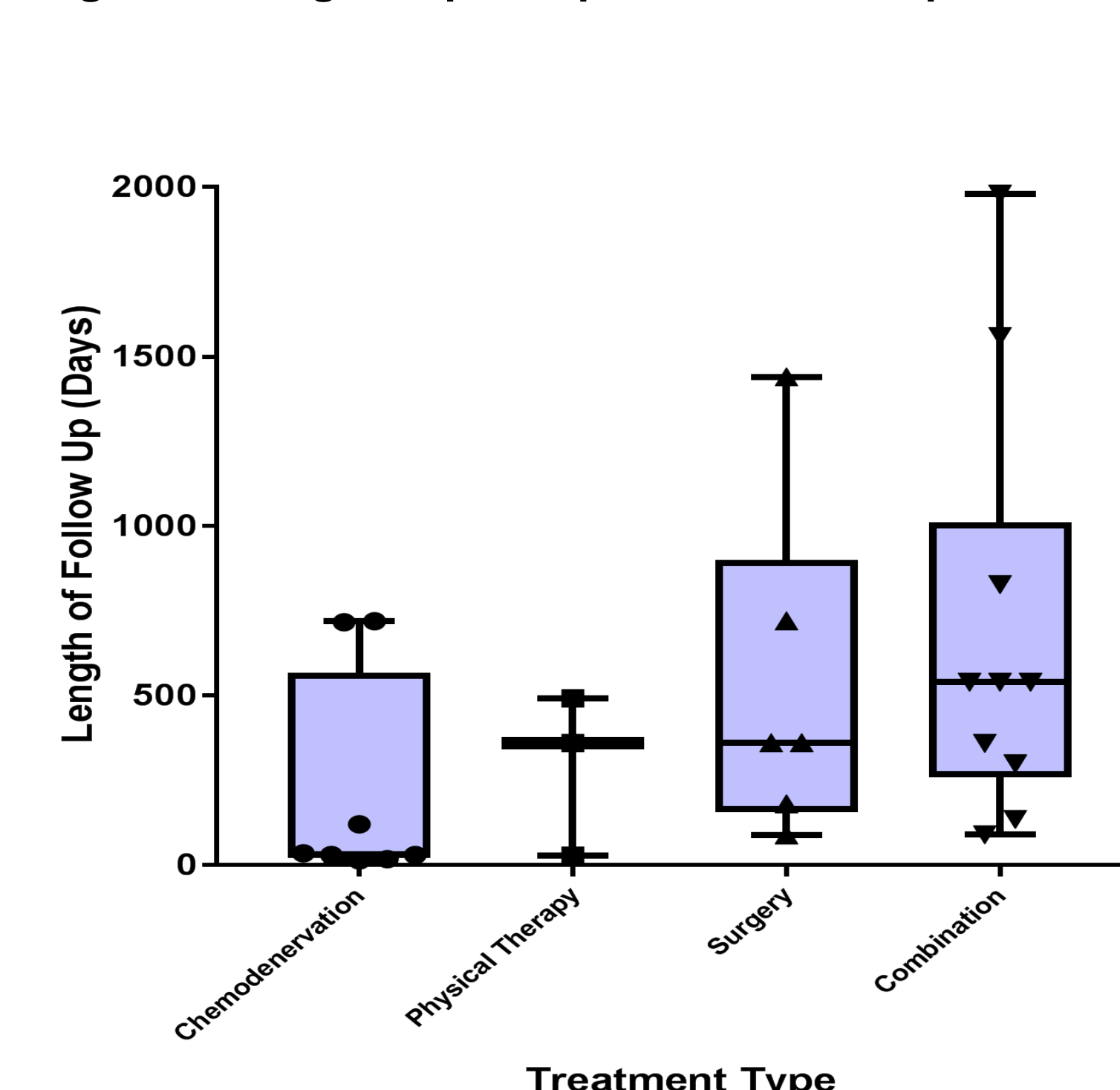


Figure 5. Length of post-operative follow-up time.



DISCUSSION

- ❖ Currently, there is no gold standard treatment or outcome reporting measure for facial synkinesis.
- ❖ Despite the sufficient availability of studies, the high heterogeneity, low quality, and overall scientific rigor demonstrated in the current literature does not allow adequate comparisons of effectiveness.
- ❖ Sunnybrook Facial Grading System was the most frequently used outcome measure (17 studies, 56.7%).
- ❖ According to the Newcastle-Ottawa Scale conversion to AHRQ standards, 28 studies were of poor quality (93.3%).
- ❖ Adoption of standardized patient evaluation and outcome reporting methods are necessary for robust comparative effectiveness studies in this area.