



Myofunctional therapy to treat obstructive sleep apnea : a literature review

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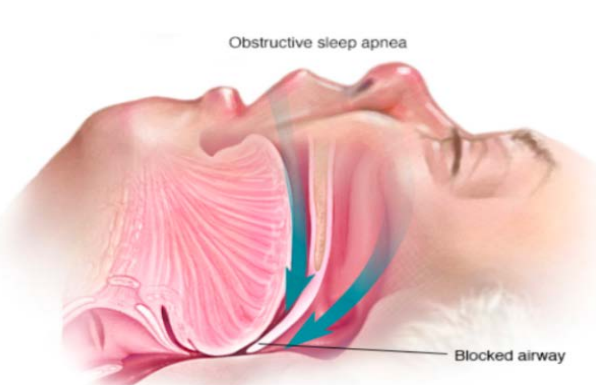
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Background

- Obstructive sleep apnea (OSA) is a syndrome characterized by episodes of apnea or hypopnea during sleep. OSA is associated with heart disease, hypertension, endocrine diseases and many other diseases.
- Myofunctional therapy is one of the newest treatments for OSA, which is a training technique for patients with OSA involving isotonic and isometric exercises of the upper airway muscles involved in OSA designed to strengthen upper airway myofunction and improve patients' symptoms.

Aims

- The aim of this review is to summarize the effect and limitation of MT to treat OSA and to discuss effective use of MT.



Methods

❖ Search terms

- "sleep apnea" in combination with "myofunctional therapy"

❖ Database

- PubMed, EMBASE, CINAHL, Cochrane library, RISS, KISS

❖ Inclusion criteria

1) PICO-SD

- P** Patient with OSA
- I** Myofunctional therapy
- C** No restriction
- O** Polysomnographic outcomes, subjective data
- SD** Experimental study, quasi-experimental study

2) Language

- English or Korean

❖ Exclusion criteria

- Conference abstract, Case study

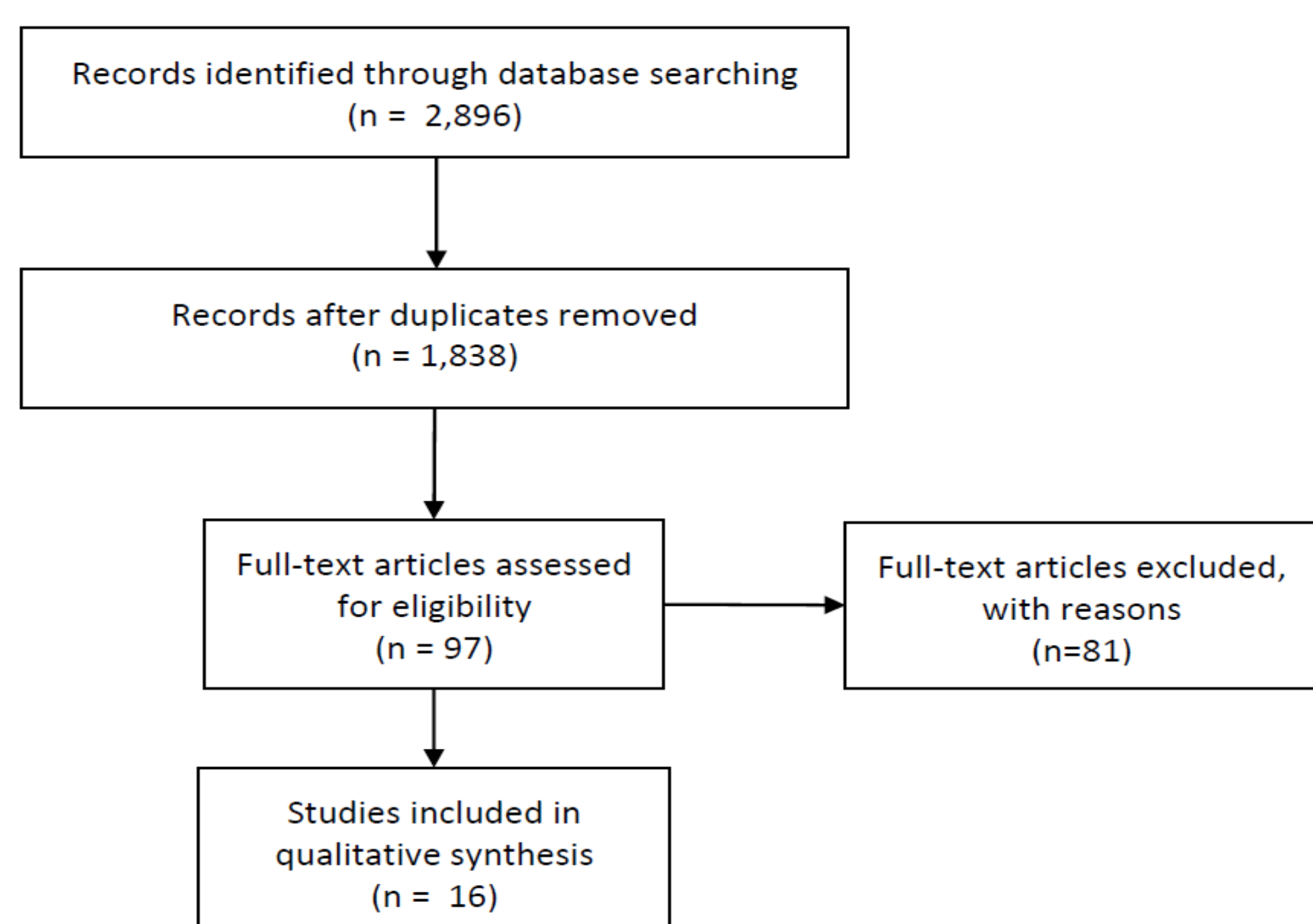


Figure1. Flow diagram of review

Conclusions

- Most trials demonstrated a beneficial impact of nursing interventions in patients with OSA.
- However, in order to use MT more effectively, it is necessary to develop effective programs to increase MT adherence and manage performance accuracy of MT with objective and scientific data.

Keywords

Obstructive sleep apnea; Myofunctional therapy; Sleep; Literature review

Results

- The review included 16 studies. 670 OSA patients. Characteristics and outcomes of included studies were described in table below.

Table1. Characteristics and outcomes of included studies. (N=16)

Author (year)	Severity of OSA	Duration	Effect of intervention (p-value)				Dropout rate in EG (%)	How to check exercise performance
			AHI	SaO2	Daytime sleepiness	Sleep quality		
Guimaraes et al. (2009)	moderate	3 months	.007	-	.006	.001	8/24 (33.3)	self-report diary
Elmorsy (2012)	mild-moderate	3 months	<.001	<.001	<.001	-	-	-
Guilleminault et al. (2013)	Normal (post op state)	-	.001	.01	-	-	13/24 (54.2)	-
Ieto et al. (2015)	mild-moderate	3 months	NS	NS	.04	NS	0/19 (0.0)	self-report diary
Villa et al. (2015)	mild	2 months	.004	-	-	-	2/16 (12.5)	self-report diary
Verma et al. (2016)	mild-moderate	3 months	NS	.007	<.001	-	14/34 (41.2)	phone-call
Diaferia et al. (2017)	mild-severe	3 months	<.001	NS	<.001	-	40/140 (28.6)	self-report diary
Mohamed et al. (2017)	moderate-severe	3 months	<.001	<.001	<.001	-	6/21 (25.0)	self-report diary
Villa et al. (2017)	mild-moderate	2 months	-	<.0001	-	-	0/18 (0.0)	-
Neumannova et al. (2018)	moderate-severe	6 weeks	NS	NS	NS	-	5/20 (25.0)	-
Chen et al. (2018)	moderate	6 weeks	<.05	<.05	<.05	<.05	0/25 (0.0)	-
Huang et al. (2019)	mild-severe	6 months	.015	NS	-	-	31/54 (57.4)	supervised by parents
Kim et al. (2020)	mild-severe	3 months	.039	NS	.028	NS	2/16 (12.5)	self-report diary
O'Connor-Reina et al. (2020)	severe	3 months	.001	.003	<.001	NS	2/20 (10.0)	Online storage
Cakmakci et al. (2021)	moderate-severe	3 months	-	-	NS	.013	1/20 (5.0)	self-report diary
Suzuki et al. (2021)	moderate-severe	6 months	.03	NS	<.01	-	8/40 (20.0)	self-report diary

EG=Experience group; NS=Not significant.

① Severity of OSA

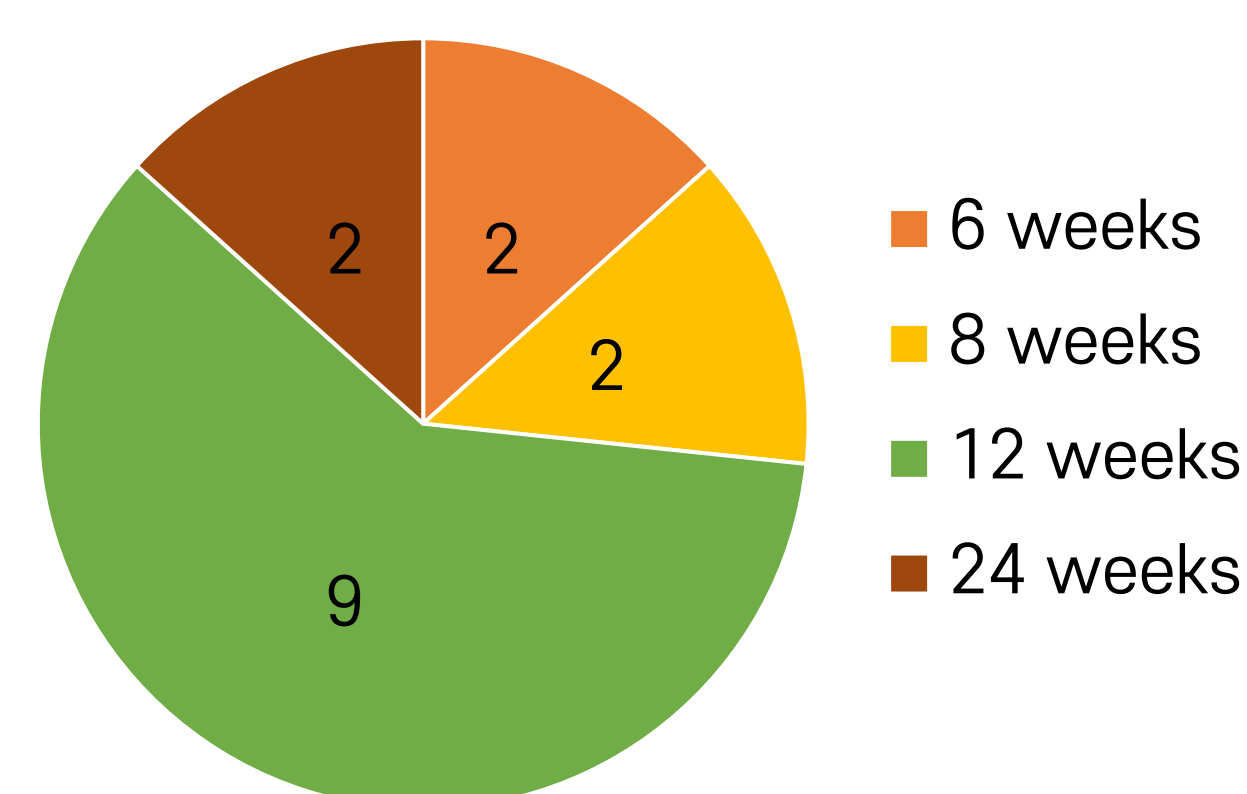
- 'Mild-moderate' severity of OSA were most participants of included study

② Duration of intervention

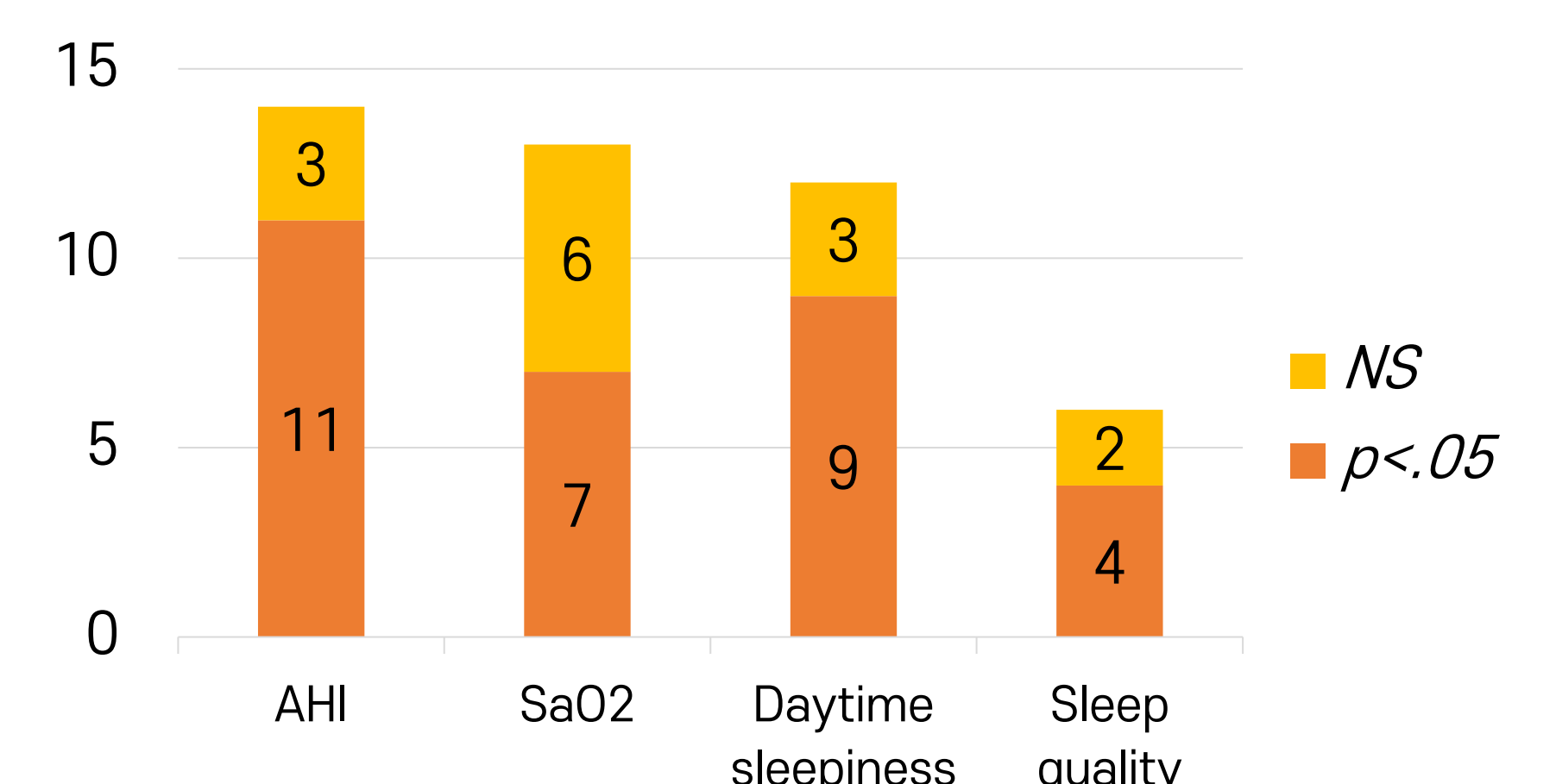
- Range of duration: 6 weeks ~ 24 weeks
- Most of studies performed 12 weeks of MT intervention

③ Effect of intervention

- AHI:** 11 of 14 studies (78.6%) were statistically significant
- SaO2:** 7 of 13 studies (53.8%) were statistically significant
- Daytime sleepiness:** 9 of 12 studies (75.0%) were statistically significant
- Sleep quality:** 4 of 6 studies (66.7%) were statistically significant



[Figure2. Duration of intervention]



[Figure3. Effect of intervention]

④ Dropout rate

- Dropout rate range: 0~57.4%
- Average of dropout rate: 26.9%

⑤ How to check exercise performance

- Self-report diary (8 studies), phone-call (1 study), supervised by parents (1 study), online storage (1 study), not reported (5 studies)
- It is hard to trust an accuracy of patient's performance because most of studies used self-report diary

Limitation of included studies

