The Effect of Comprehensive Respiratory Exercise Program on Exercise Capacity in Patients with Obstructive Sleep Apnea: Preliminary Results

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Introduction

- Obstructive sleep apnea (OSA) involves recurrent upper airway collapse during sleep.
- It leads to an increase in healthcare costs and elevates risks for cardiovascular disease and dementia.
- OSA patients exhibited a reduction in maximal oxygen consumption (VO_2max).
- Therefore, this study seeks to evaluate the impact of a comprehensive respiratory exercise program on exercise capacity, respiratory muscle strength (RMS), sleepiness level, and sleep quality in OSA patients.

Methods

- Fifteen participants were enrolled in the study.

Underwent baseline assessment

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Block randomization into groups and underwent 3-months of intervention

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Intervention Group: Comprehensive Respiratory Exercise Programs	Control Group: Sleep hygiene education

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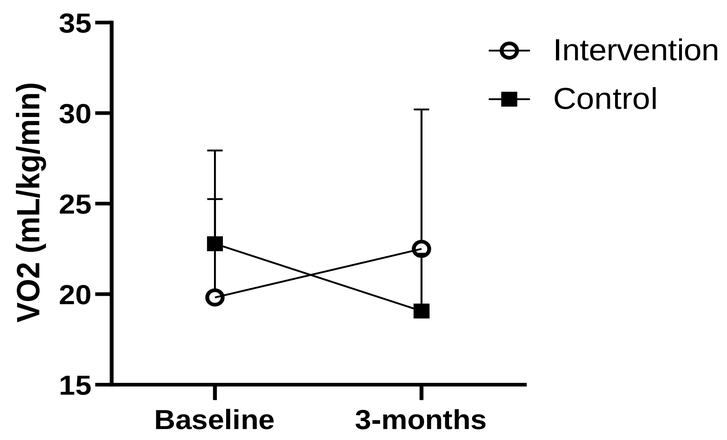
Post Assessment

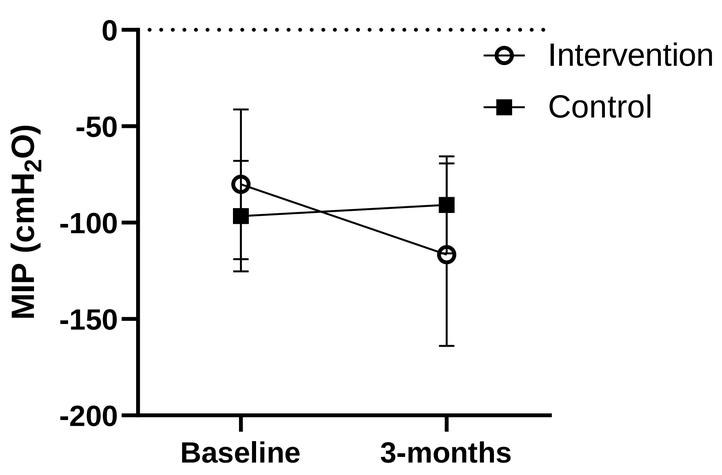
-Polysomnography (PSG)
-Exercise capacity: Cardiopulmonary Exercise Testing (CPET)
-Respiratory muscle strength (maximum inspiratory & expiratory pressure)
-Tongue strength and endurance
-Daytime sleepiness level: Epworth Sleepiness Scale (ESS)
-Sleep quality: Pittsburgh Sleep Quality Index (PSQI)

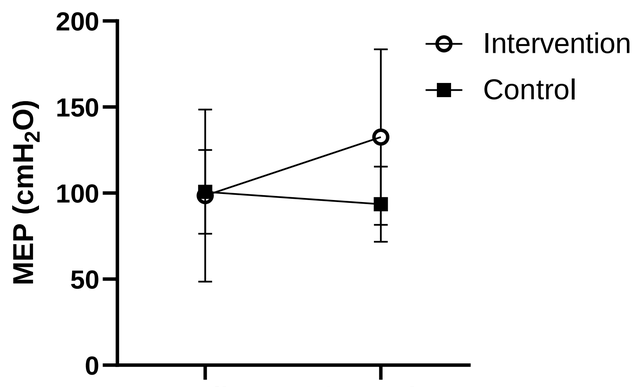
- The intervention group received a force-sensing resistor (FSR) device (as per image) along with oropharyngeal exercises, respiratory muscle training, aerobic training, and sleep education.
- FSR device supports patients in performing oropharyngeal exercises at home and enables therapists to monitor their exercise adherence.

Results

- Significant differences between groups were observed in VO_2 max, maximum workload during VO_2 max, RMS, tongue strength, and endurance, with the intervention group showing greater improvement ($p<0.05$).
- A significant decrease in stage III sleep (%) in the control group ($p<0.05$), but not in any other PSG variables in both groups.
- Compared to the baseline, the intervention group showed an improvement in the VO_2 max, sleep quality, RMS, tongue strength, and endurance ($p<0.05$).







Conclusion

After 3 months of a comprehensive respiratory exercise program, participants exhibited significant improvement in exercise capacity, RMS, and sleep quality.

Increasing VO_2 max during exercise can increase individual survival rates, underscoring the importance of improving exercise capacity in OSA patients.

30th International Conference on Health Promoting Hospitals and Health Services
"The contribution of Health Promoting Hospitals and Health Services to health equity"
(November 6-8, 2024; Hiroshima, Japan)