

Effects of a 6-week manual therapy and therapeutic exercise program combined with aerobic exercise on muscular temporomandibular disorder

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Introduction

Temporomandibular disorders (TMD) are conditions that affect the masticatory muscles, leading to pain and a reduced quality of life.^{1,2} Over the past few decades, multiple strategies have been described for managing TMD, including manual therapy and therapeutic exercise.^{2,3,4,5} Due to the complexity of this condition, it is necessary to explore additional treatment approaches, such as aerobic exercise. Aerobic exercise has been demonstrated to induce hypoalgesia, which consists of a reduction in sensitivity to painful stimuli during or after 30 minutes of exercise. This is known as hypoalgesia induced by exercise (HIE).⁶⁻¹¹

The mechanisms responsible for HIE are not fully understood, but the most widely accepted hypothesis involves the activation of the endogenous opioid system during exercise, which induces the release of opioids in peripheral, spinal and/or central locations, thereby contributing to pain modulation.⁶⁻¹¹

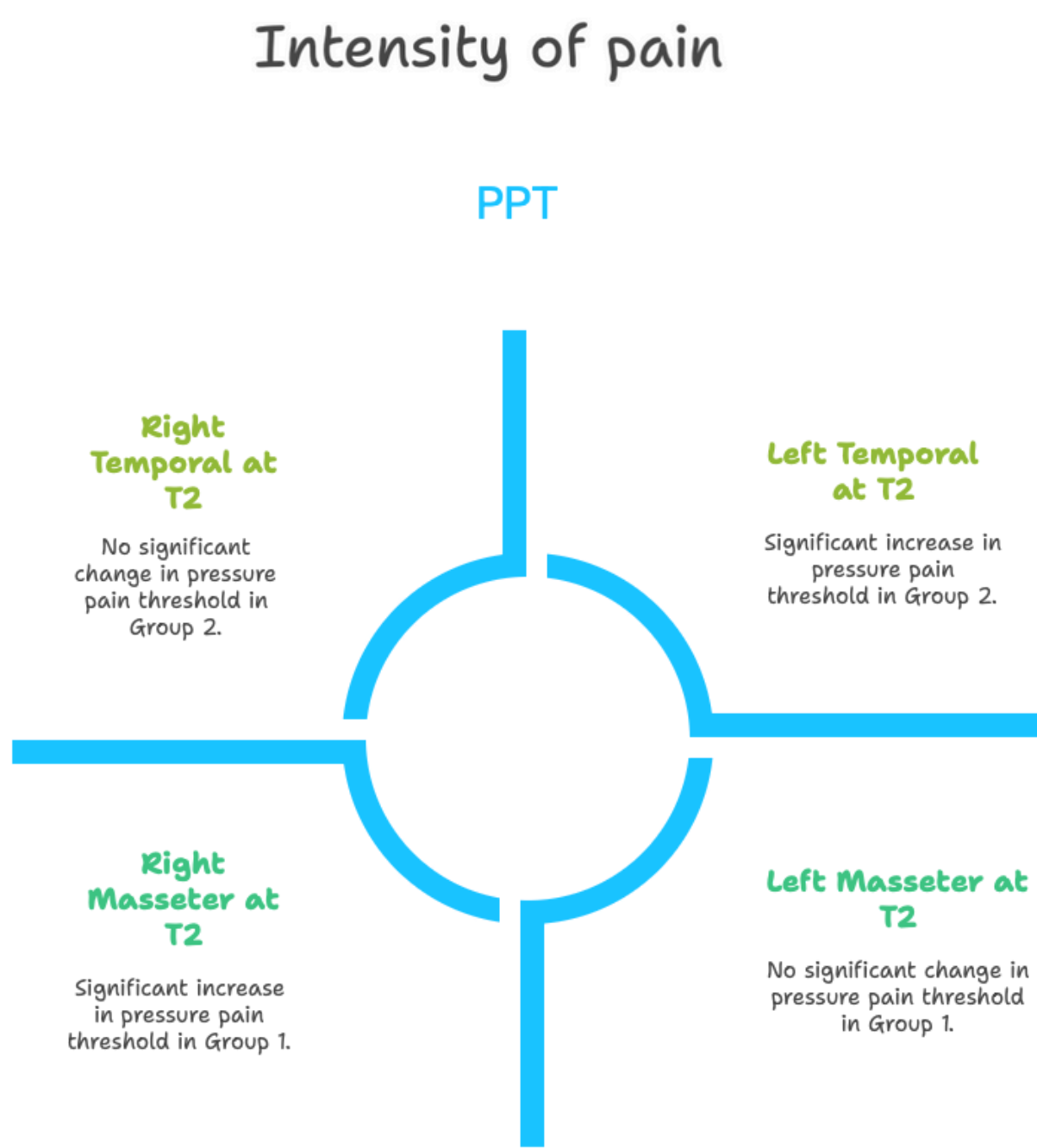
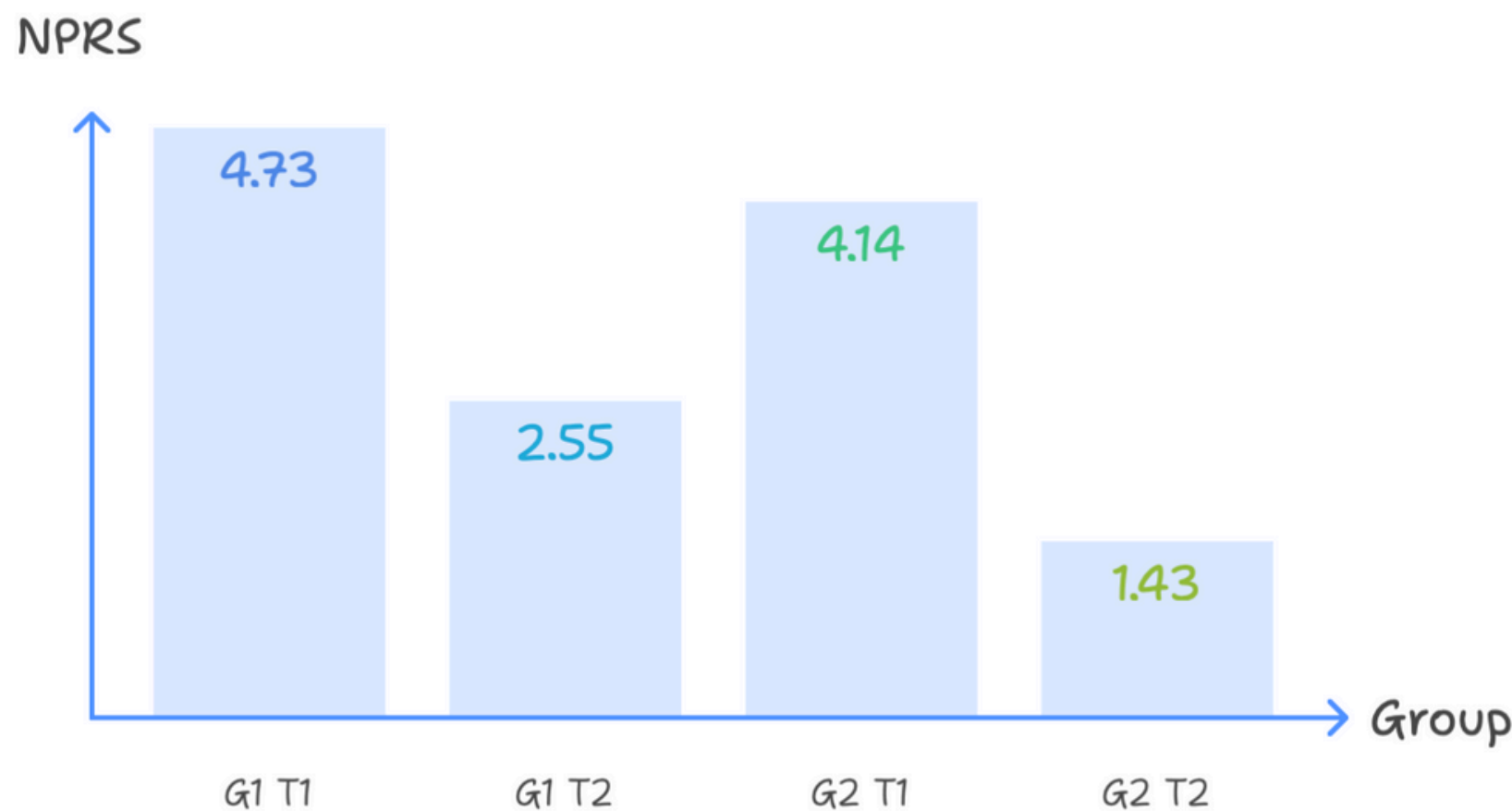
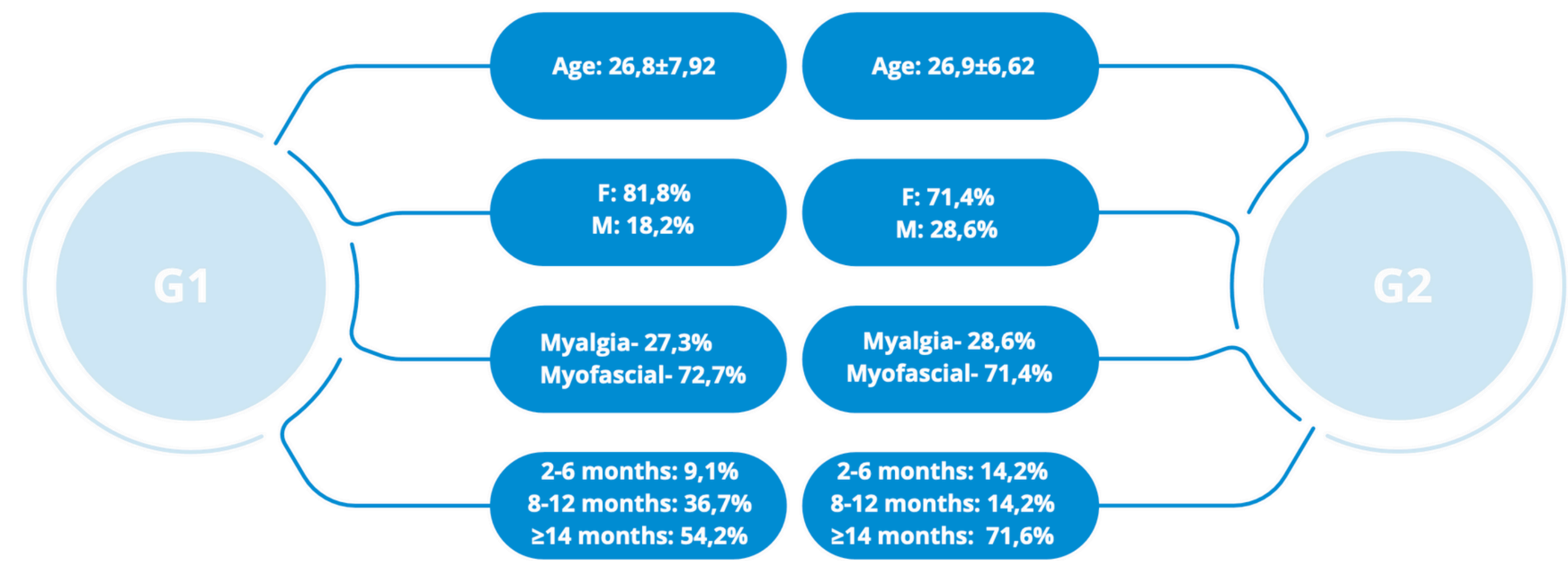
Aim

Compare the effects of a manual therapy and therapeutic exercise programme with a similar programme combined with aerobic exercise over six weeks on pain intensity, maximum mouth opening, pressure pain threshold, anxiety and oral health-related quality of life in individuals with muscular TMD.

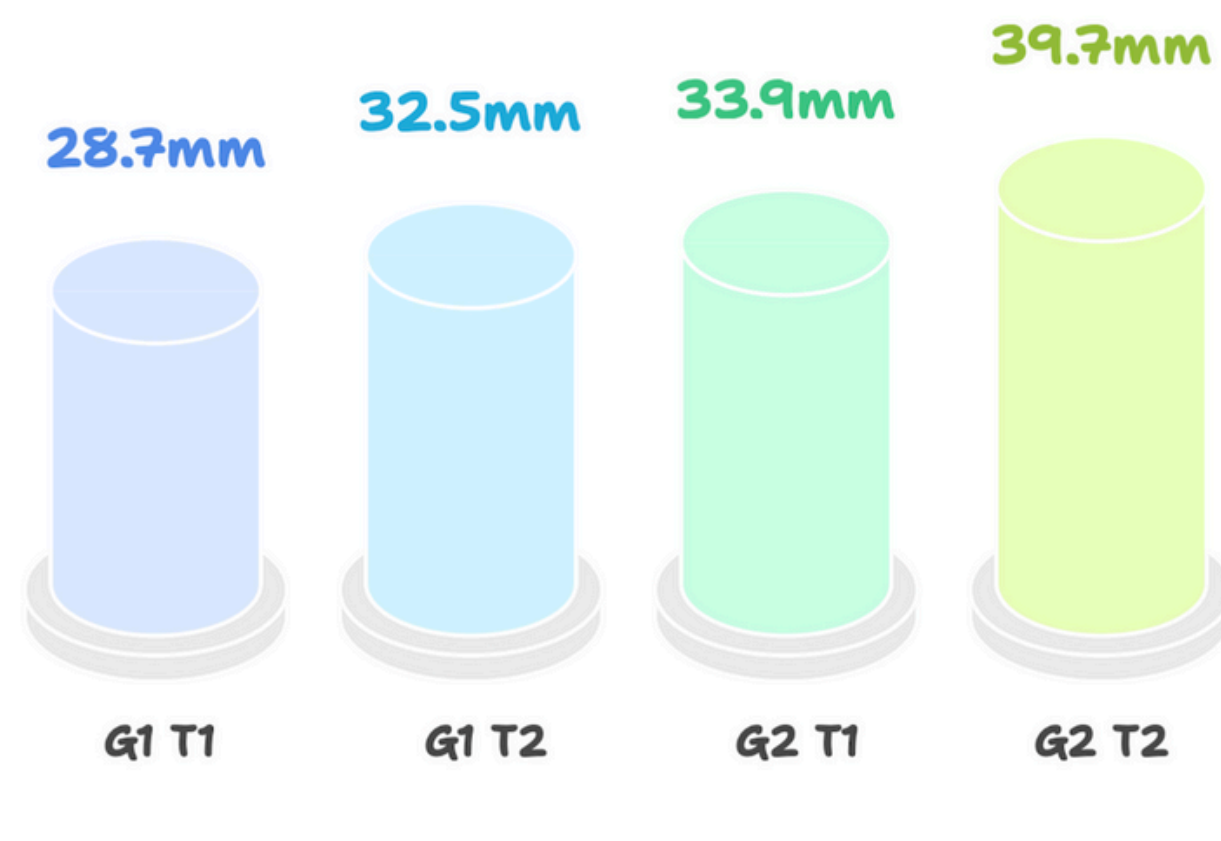
Materials and Methods

This is a controlled clinical trial involving 18 participants diagnosed with muscular TMD according to the Diagnostic Criteria for Temporomandibular Disorders (DC-TMD). Participants were divided into two groups: G1 (average age 26.8 years, SD 7.92), consisting of 11 participants who underwent a manual therapy and therapeutic exercise programme (30 minutes, once a week), and G2 (average age 26.9 years, SD 6.62), consisting of seven participants who underwent the same programme as G1 (30 minutes, once a week) combined with moderate-intensity (50% of heart rate reserve (HRR)) aerobic exercise (30 minutes, twice a week). Pain intensity was assessed using the Numeric Pain Rating Scale (NPRS) and pressure pain threshold (PPT) was measured using an algometer. Maximum comfortable mouth opening (MCO) and forced mouth opening (MFO) were measured using a calliper. Anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7) and oral health-related quality of life (OHRQoL) was assessed using the Oral Health Impact Profile-14 (OHIP-14). The first assessment (T1) was conducted before the intervention and the second (T2) 48 hours after completing the six-week programme. Significant decreases in NPRS scores and significant increases in MFO, MCO and OHIP-14 scores were observed in both G1 and G2 between T1 and T2.

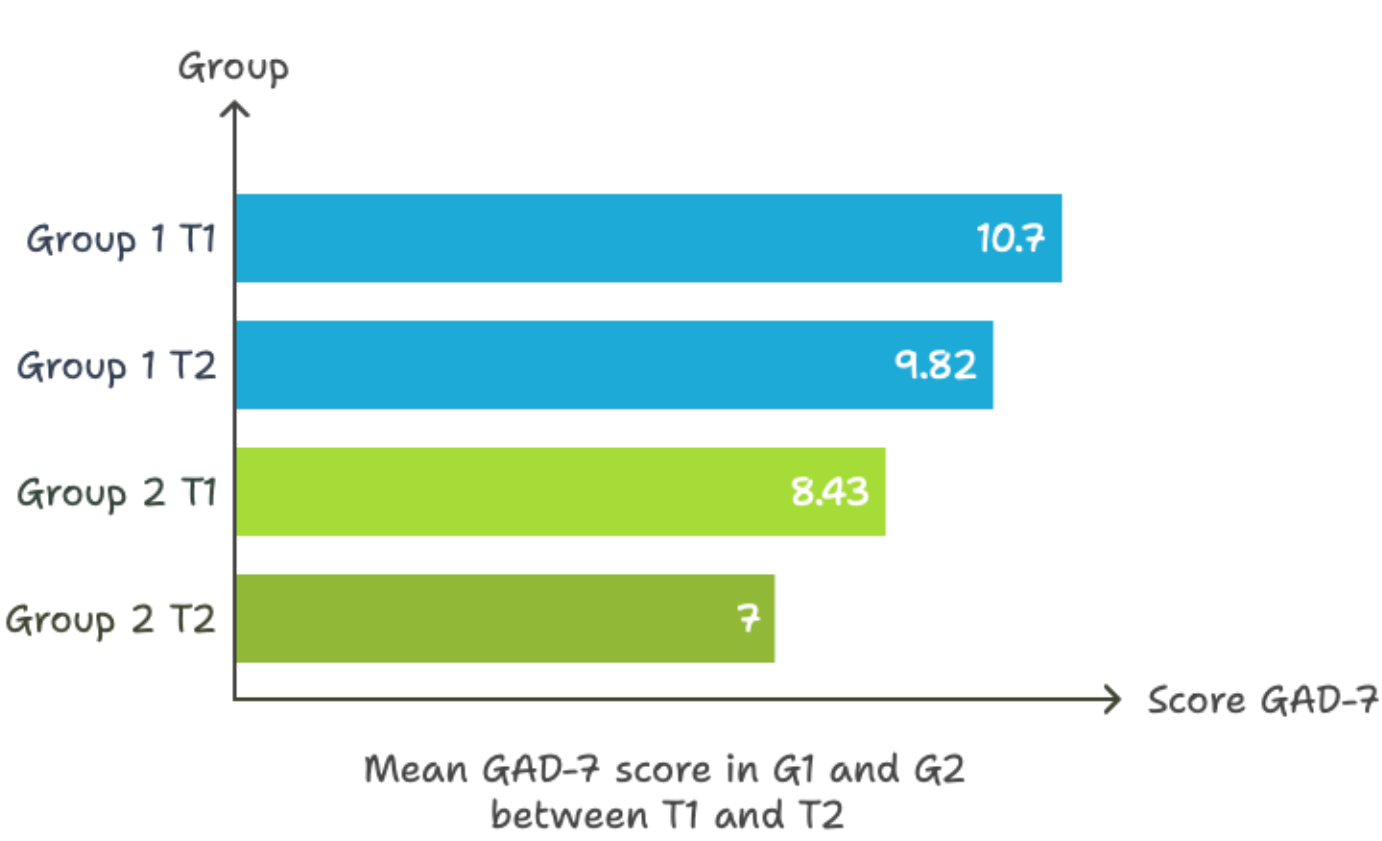
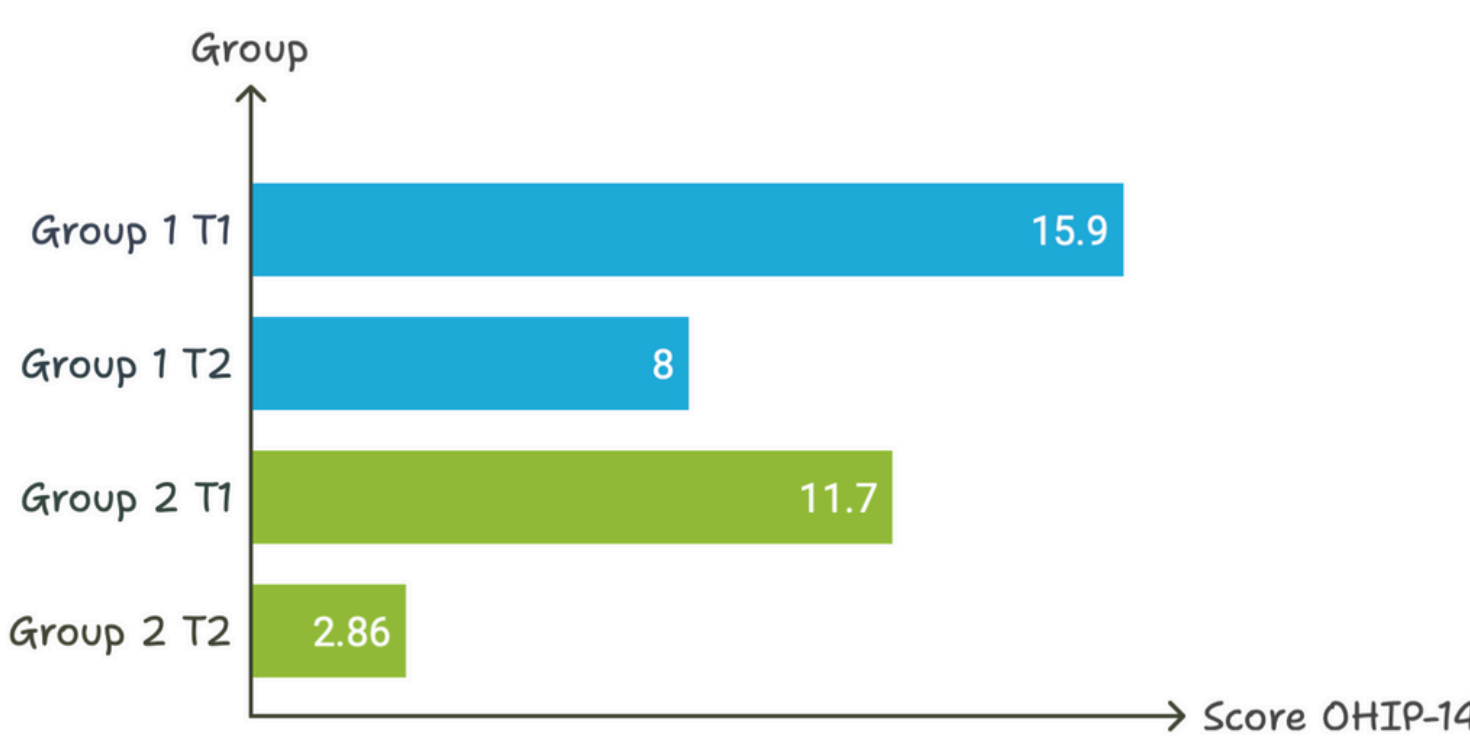
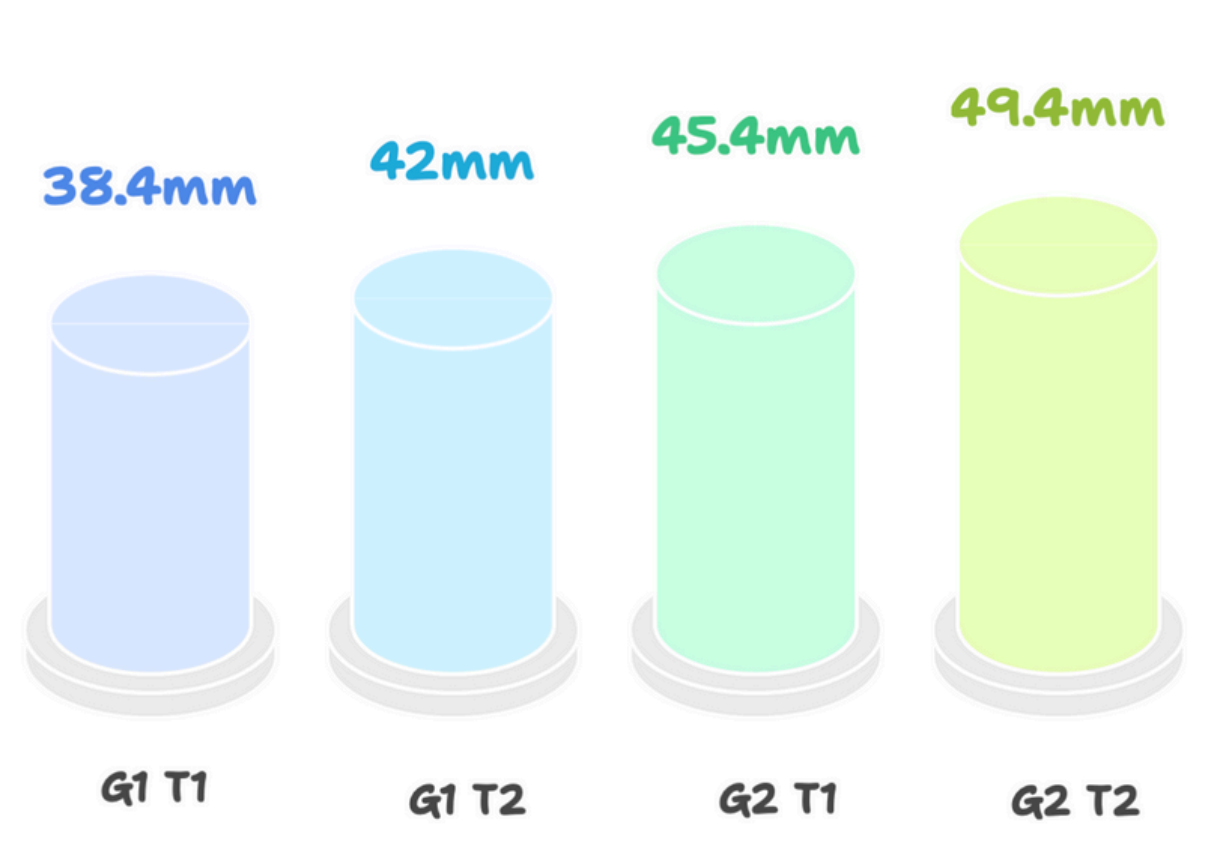
Results & Discussion



Comparison of the Increase in MCO Between Groups



Comparison of the Increase in MFO Between Groups



Conclusion

Both the manual therapy and therapeutic exercise program and the manual therapy and therapeutic exercise program combined with aerobic exercise led to a reduction in pain, an increase in mouth opening amplitude, and an improvement in quality of life after six weeks of intervention. The program that included aerobic exercise promoted a greater increase in the pressure pain threshold, suggesting an additional benefit of this combined approach.

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