



Manual Therapy for Radiation-Associated Trismus: A Case Series

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Importance

HNC survivors suffering from trismus can face incapacitating challenges with eating, communication, and oral care. The role of and relationship between manual therapy (MT) in this population and maximum interincisal opening (MIO) is unknown. Clinical gains anecdotally observed in MIO following MT warrant this investigation.

Objective

- (1) Estimate effect size of MT to increase oral opening in the setting of radiation-associated trismus
- (2) Compare oral opening pre- and post-initial session of MT and after the last therapy session

Design

Single institution retrospective case series

Setting

The University of Texas MD Anderson Cancer Center between 2016 and 2019

Patients

49 disease-free head and neck cancer survivors with trismus after curative-intent radiation therapy +/- neo/adjuvant therapy (Table 1)

Main Outcome and Measures

MIO measured pre- and post- initial and following serial MT sessions

Methods

- Measurements compared using paired sample t-tests
- Covariates examined to determine correlates of response to MT using independent two sample t-test with unequal variance assumption, one-way ANOVA, Bonferroni correction procedure for multiple pairwise comparisons as indicated

Table 1. Patient Demographics

	No. (%)(n=49)
N	49
All Patients	49/49 (100%)
Sex	
Male	36/49 (73%)
Female	13/49 (27%)
Age, mean years (range) 63 (34-80)	
≤ 64	24/49 (49%)
≥ 65	25/49 (51%)
HNC Site	
Oral Cavity	13/49 (27%)
Oropharynx	24/49 (49%)
Other	12/49 (24%)
Tumor Stage	
1	10/49 (20%)
2	11/49 (22%)
3	8/49 (16%)
4	14/49 (29%)
T ₀ /unknown	6/49 (12%)
Treatment Combination	
Chemoradiation	23/49 (47%)
Radiation alone	6/49 (12%)
Surgery + PORT/Concurrent	20/49 (41%)
Time Post-Radiation	
≤ 12 months (14)	14/49 (29%)
>12 months - ≤2 years (9)	9/49 (18%)
>2 - ≤5 years f	5/49 (10%)
>5+ years (21)	21/49 (43%)
Recurrence	
No	27/49 (55%)
Yes	22/49 (45%)
Osteoradionecrosis	
No	32/49 (65%)
Yes	17/49 (35%)
Home Exercise Compliance (HEP)	
Non-Compliant	2/49 (4%)
Partial Compliance	8/49 (16%)
Full compliance	18/49 (37%)
Not Applicable ¹	21/49 (43%)

¹Not applicable: did not receive HEP due to single MT session, did not return for follow up training, or not clinically indicated

Intervention

Intraoral (+/- external head and neck) MT for trismus targeting the muscles of mastication implemented according to the MOTOR protocol (Table 2)

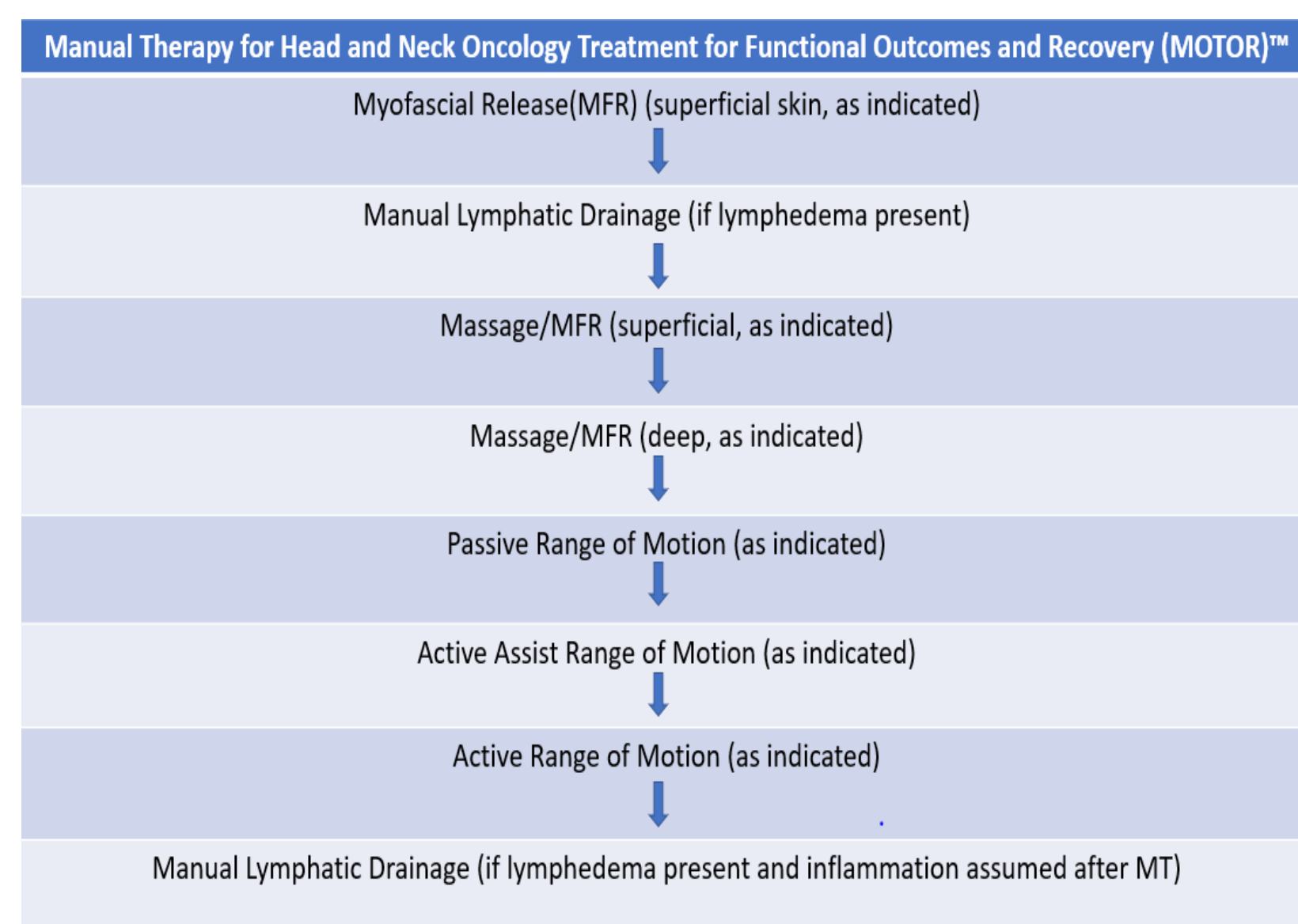


Table 2. MOTOR Protocol for Manual Therapy in Head and Neck Cancer (McMillan).

Maximum Interincisal Opening (MIO) Across Time

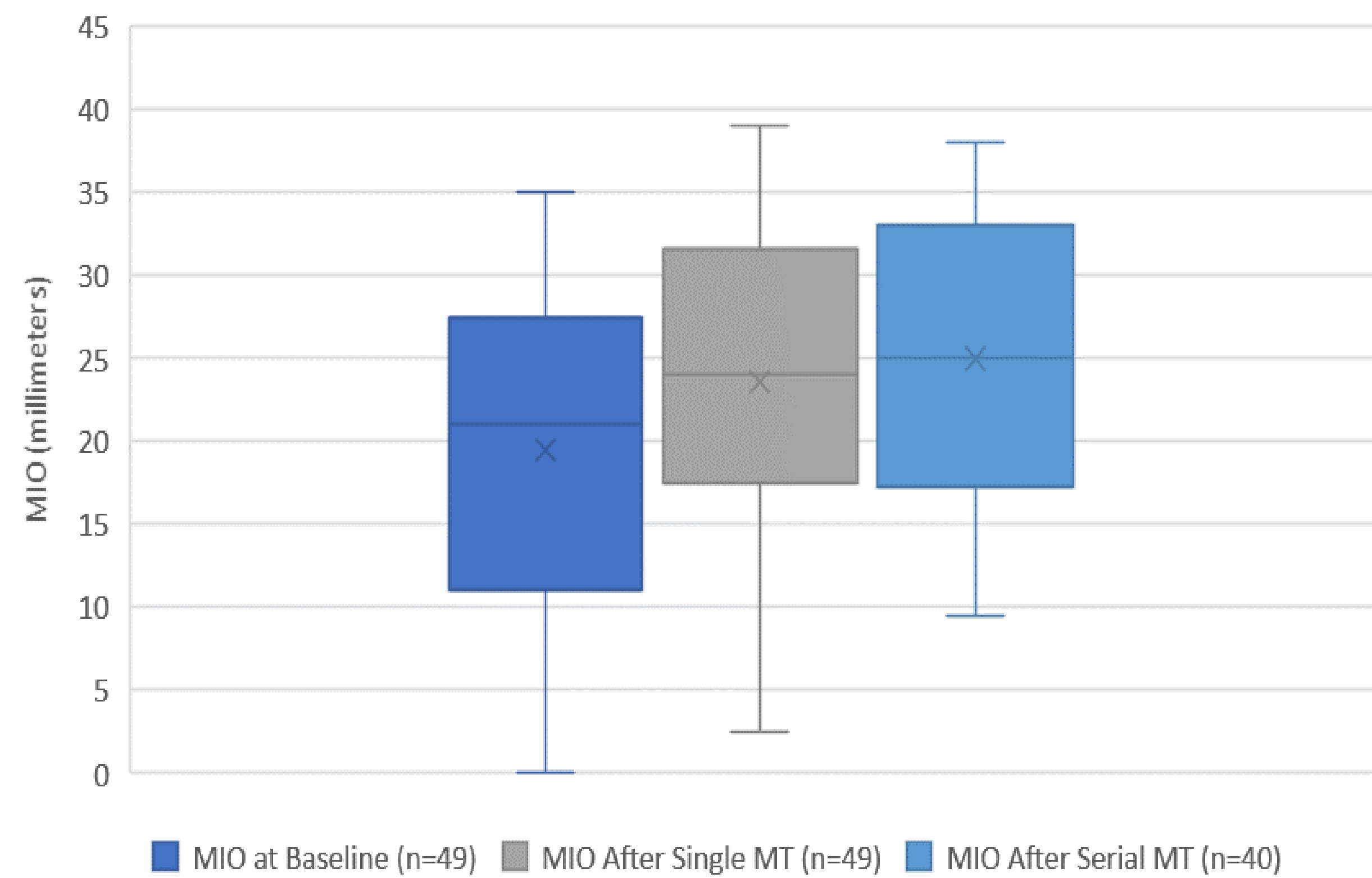


Fig 2. Maximum Interincisal Opening (MIO) at Baseline, After Single and Serial Manual Therapy (MT) Sessions.

Change in Oral Opening Following Manual Therapy (MT)

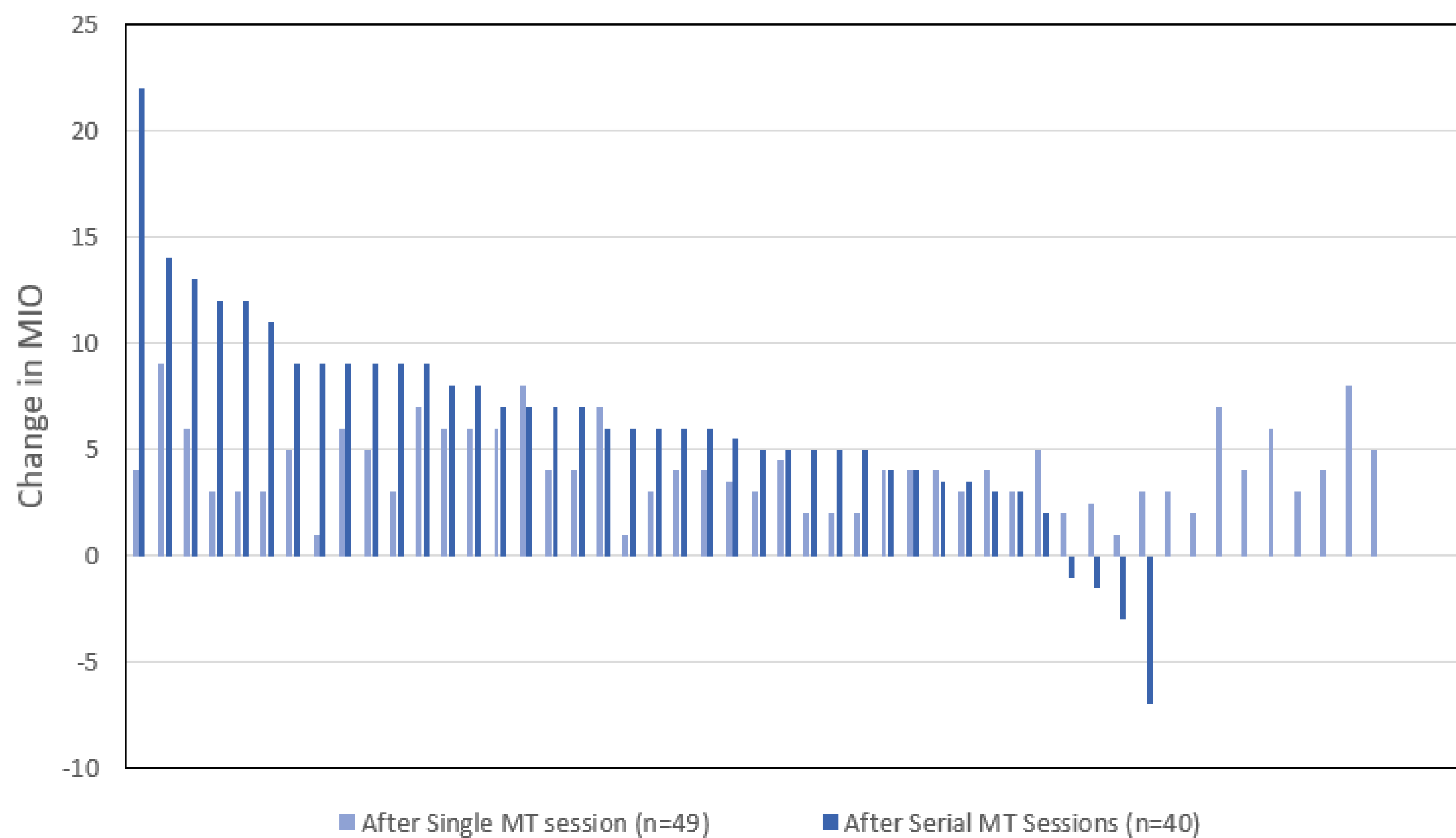


Fig 1. Change in Oral Opening (ΔMIO) Following Manual Therapy.

MIO Severity

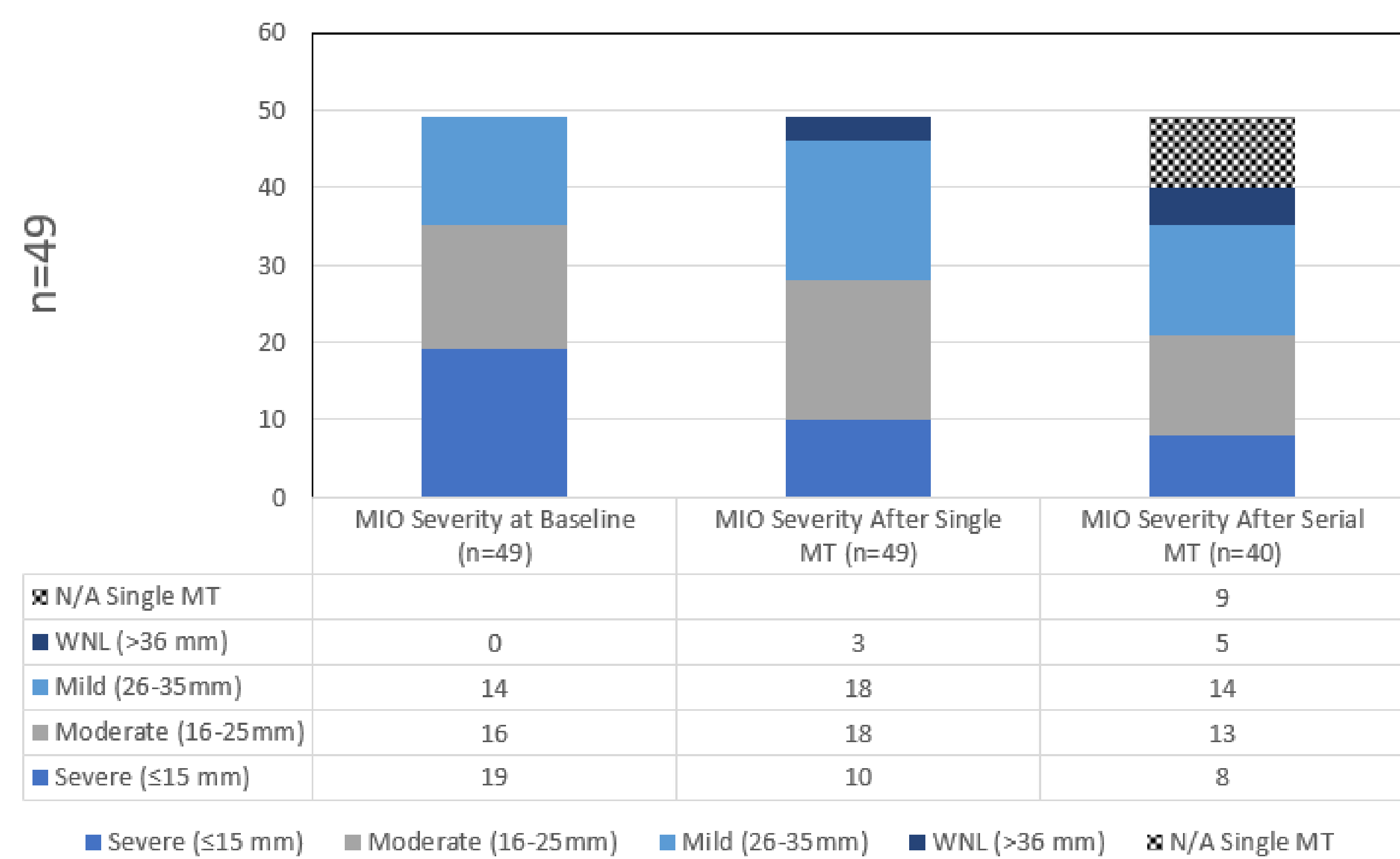


Fig .3. Trismus Severity Grading Prior to, Post Single Session, and After Serial Manual Therapy Sessions.

Results

- 9/49 HNC survivors completed a single MT session
- 40/49 completed multiple sessions (range 2-48, mean 6, median 3)
- Statistically significant change observed in MIO (Figs 1-3)
 - After single MT session (n=49) average increase 4.1 mm (1.9 SD), effect size 0.45
 - After serial MT sessions (n=40) average increase 6.3 mm (4.9 SD), effect size 0.72
- No covariates significantly correlated with MIO improvement following MT

Conclusions & Relevance

- MIO significantly increased after MT. Immediate increase in MIO following even a single session may suggest MT to be a beneficial frontline or adjuvant treatment in combination with traditional stretching therapy.
- No covariates were found to significantly correlate with MIO improvement following MT indicating that patients often assumed to be treatment refractory of 5+ years post-treatment with coexisting morbidities, advanced disease, and/or received aggressive oncology treatment have the potential to benefit from MT.
- A functional increase in MIO has the potential to improve swallow function, speech, pain, and quality of life.
- Further studies are needed to determine the role and impact of MT as a frontline or adjuvant treatment of trismus.

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