

(بسم الله الرحمن الرحيم)

وَأَوْفَىٰ بِالْعَهْدِ يُؤْتِي مَالَهُ يَتَزَكَّىٰ وَيُوفِّي الصَّدَاقَ وَهُوَ أَكْرَمُ الْمَخْلُوقِ

(صدق الله العظيم)

Efficacy of Kinesio taping and Postural Correction Exercises on Mechanical Neck Dysfunction

By

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Acknowledgment

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- All patients participated in this study

Introduction

Statement of the problem

Do kinesio taping and/or postural correction exercises have an effect on severity of pain, neck disability cervical spine curvature, cervical muscles activation amplitudes, and frequencies in patients with mechanical neck dysfunction?

Purpose of the study

The purpose of this study was to determine the effect of kinesio taping and postural correction exercises on neck pain level, neck disability, cervical spine curvature, cervical muscles activation amplitudes and frequencies in patients with mechanical neck dysfunction.

Hypothesis

- **There was no statistical significant effect of applying kinesio taping on pain level, function level, cervical spine curvature, cervical muscles activities in patients with mechanical neck dysfunction.**
- **There was no statistical significant effect of postural correction exercises on pain level, function level, cervical spine curvature, and cervical muscles activities in patients with mechanical neck dysfunction.**

Hypothesis

- **There was no statistical significant effect of combined kinesio taping and postural correction exercises on pain level, function level, cervical spine curvature, cervical muscles activities in patients with mechanical neck dysfunction.**

Materials And Methods

Design of the study

- A pre and post treatment test experimental study design was used.

Subjects selection

Forty five patients diagnosed by orthopedist with mechanical neck dysfunction of both sexes (35 females and 10 males) with age ranging from 20-35 years participated in this study.

Inclusion criteria:

- chronic mechanical neck pain (>3months duration)
- The neck disability index is above 15
- cervical lordotic curve less than 34°

Exclusion criteria:

cervical disc problems or cervical spondylosis, ankylosing spondylitis, osteoporosis, cervical rib, post-surgical neck conditions, and subjects allergic to kinesio tape.

After voluntarily signing a consent form, subjects were equally and randomly assigned in to 3 groups

Group A: 15 Patients received kinesio tape.

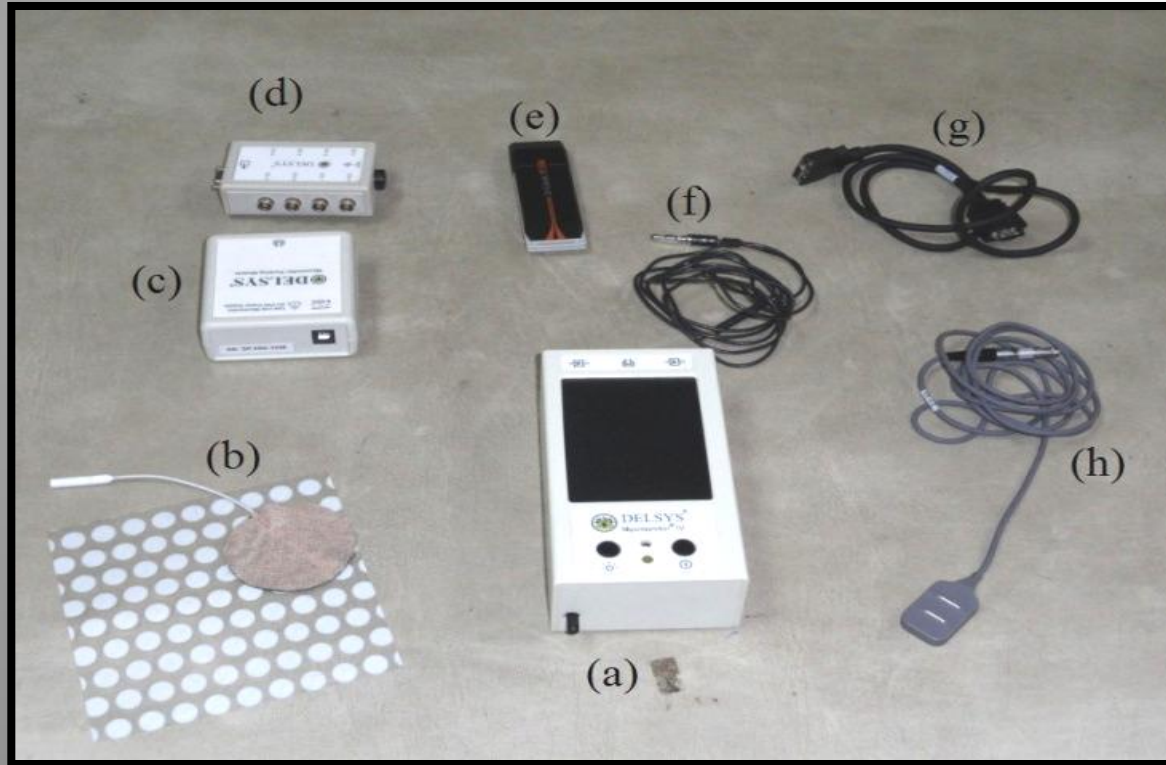
Group B: 15 Patients received postural correction exercises

Group C: 15 Patients received both kinesio tape and postural correction exercises.

Instruments and Scales Used For Assessment

- **Visual Analogue Scale (VAS)**
- **Neck Disability Index (NDI)**
- **kinesiological Electromyography (EMG)**
- **Flexible ruler (flexicurve)**

Cervical muscles activities assessment by EMG



Delsys Myomonitor Portable EMG System.

(a) Main unit, (b) Reference electrode, (c) Docking module, (d) Input module, (e) wireless USB adaptor, (f) reference electrode cable, (g) Input module cable & (h) Sensor (active electrode)



electrodes positions

Assessment of the maximum voluntary isometric contraction (MVIC) of UT & LV

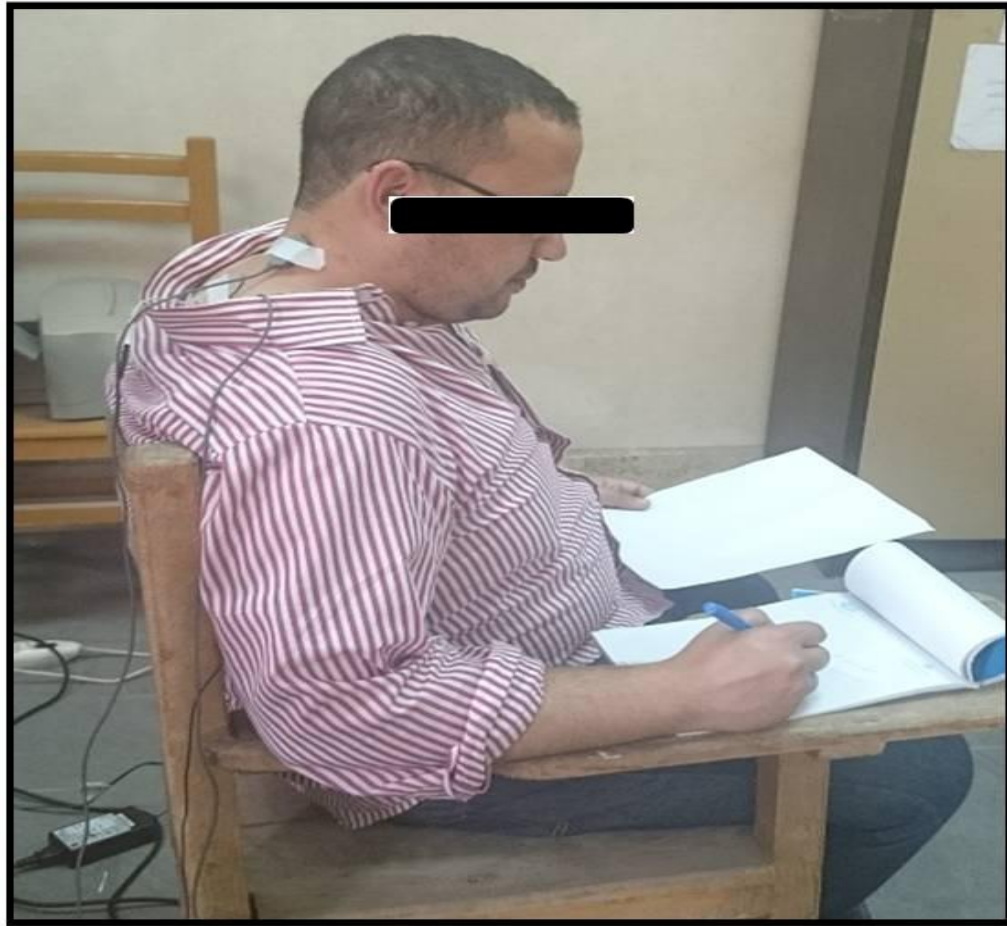


Assessment of MVIC of RT upper trapezius



Assessment of MVIC of RT levator scapula

Writing task and analysis of EMG data



writing task

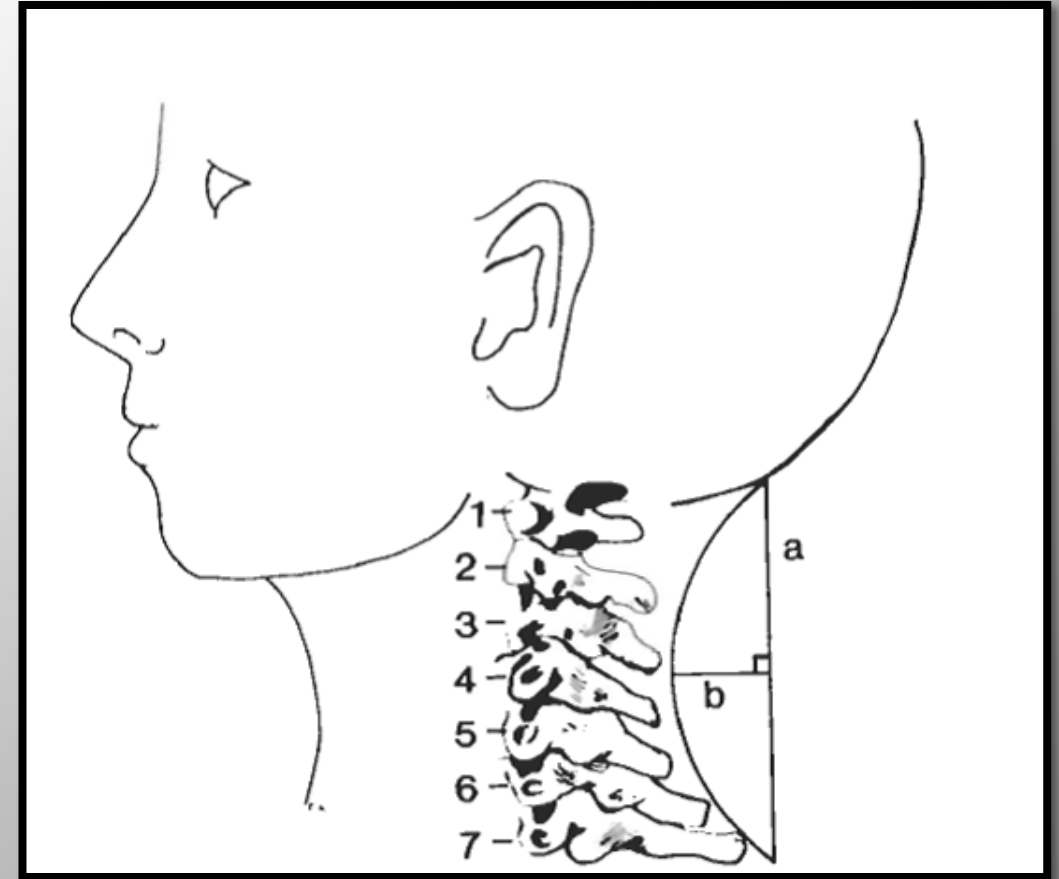
Analysis of EMG data:

- **Normalized RMS $\% = \text{EMG amplitude during writing task} / (\text{average of the 3 trials EMG}_{\text{MAX}}) * 100$**
- **Median frequency was calculated from the raw EMG signal.**

Measurement of cervical spine curvature by flexible ruler (flexicurve)



flexible ruler against patient's cervical spine

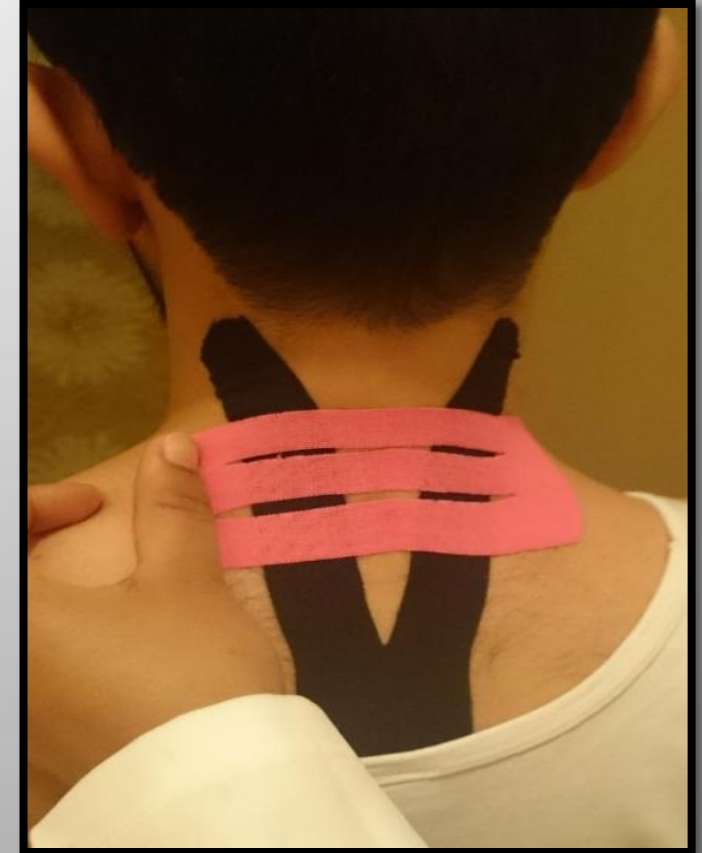


Measurement of cervical curve:

$$Q = 4 \text{ arc tan } (2 b/a)$$

Treatment procedures

Kinesio taping



Application of kinesio tape

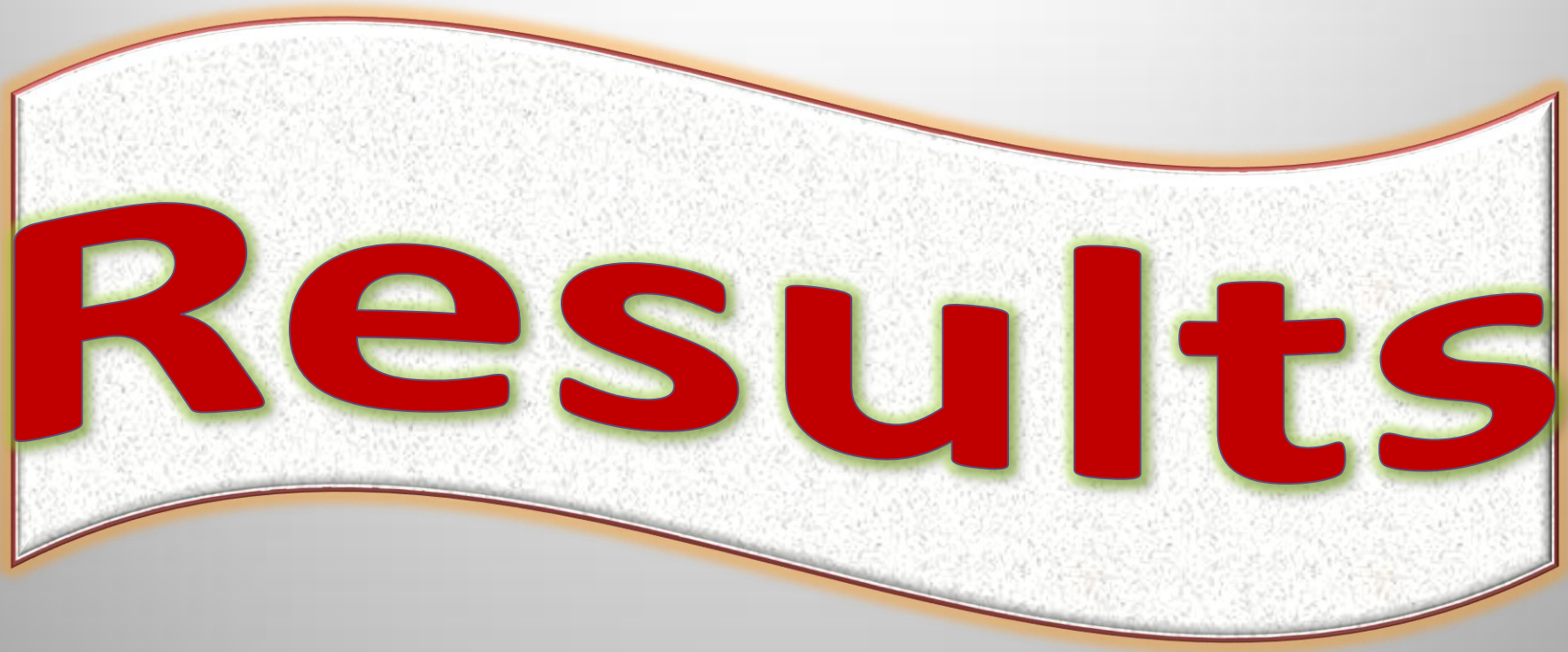
Postural correction exercises



Cervical Retraction Exercise

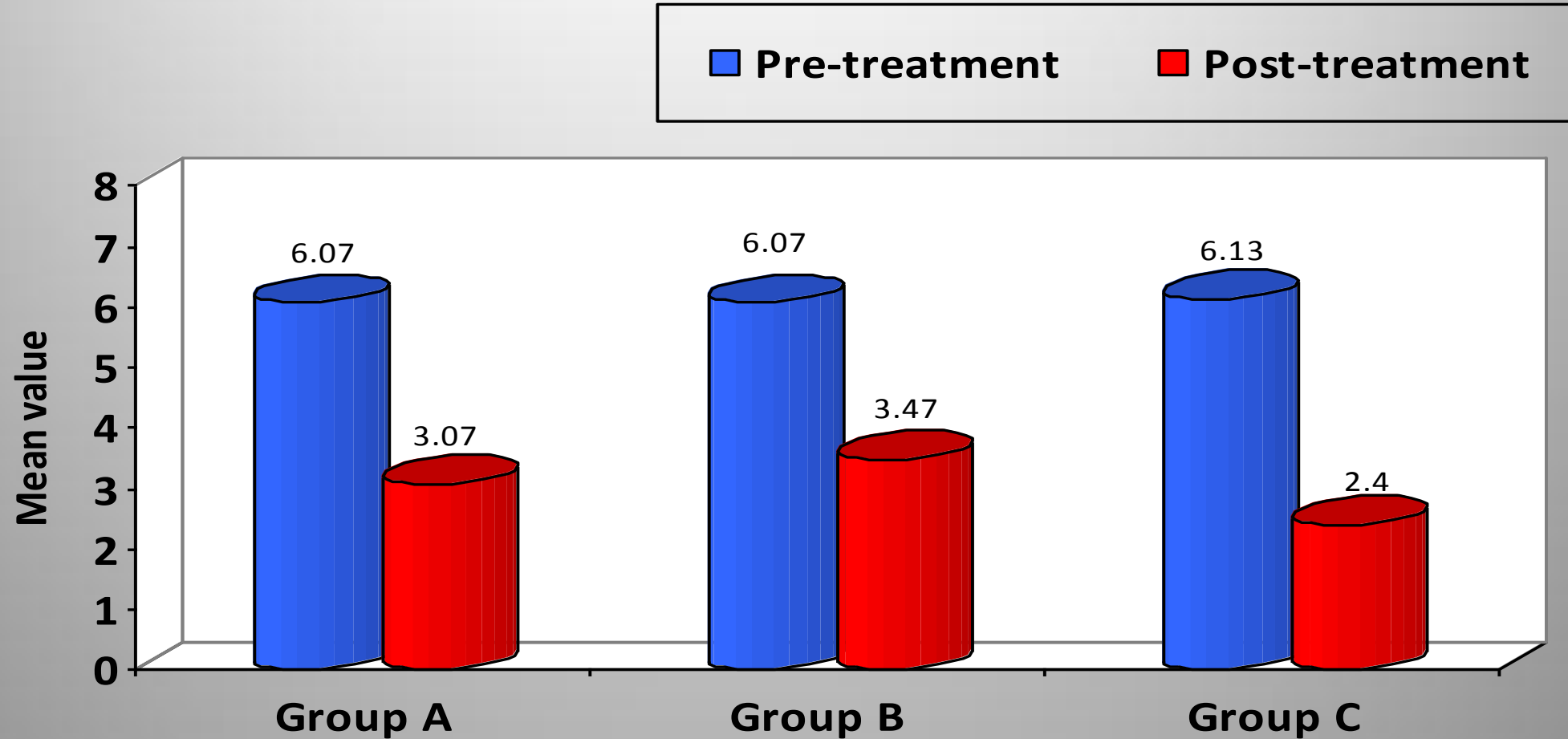


Scapular Retraction Exercise

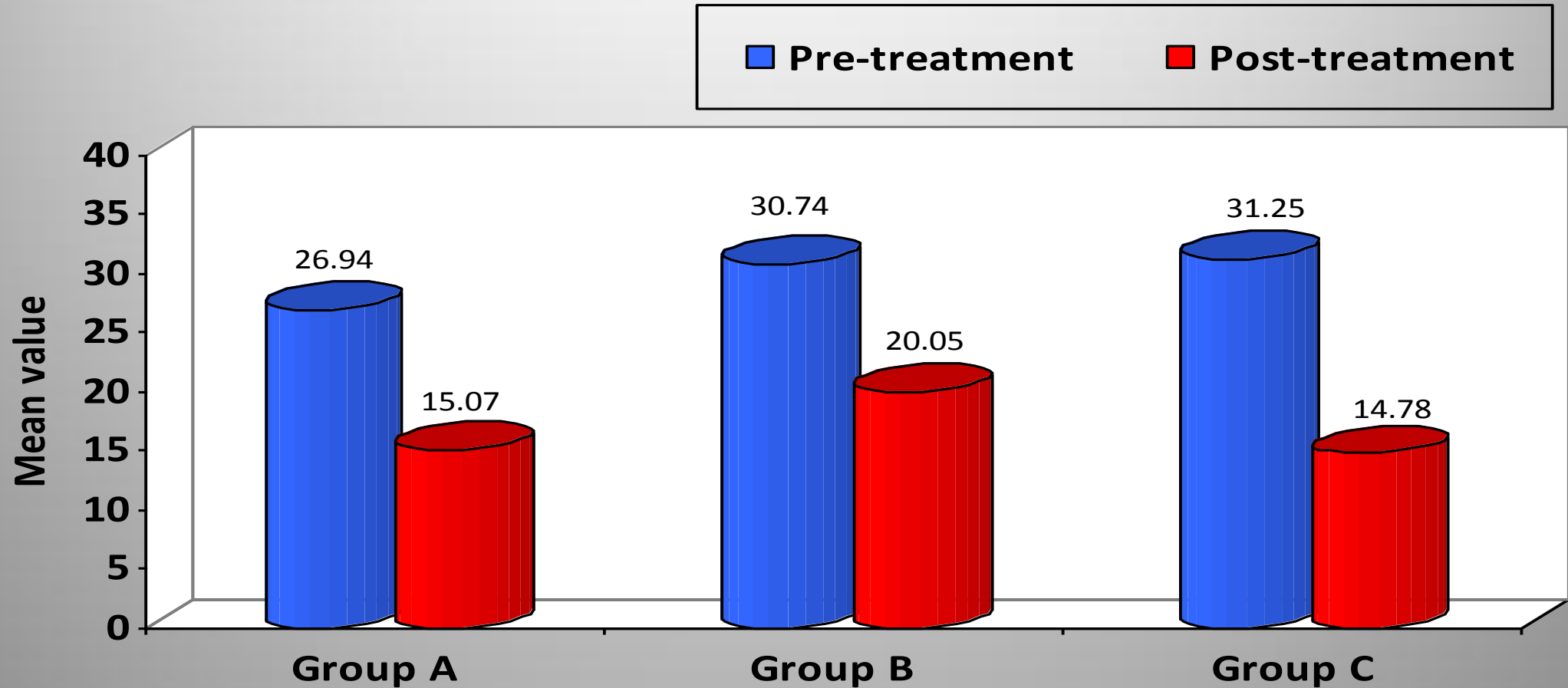


Results

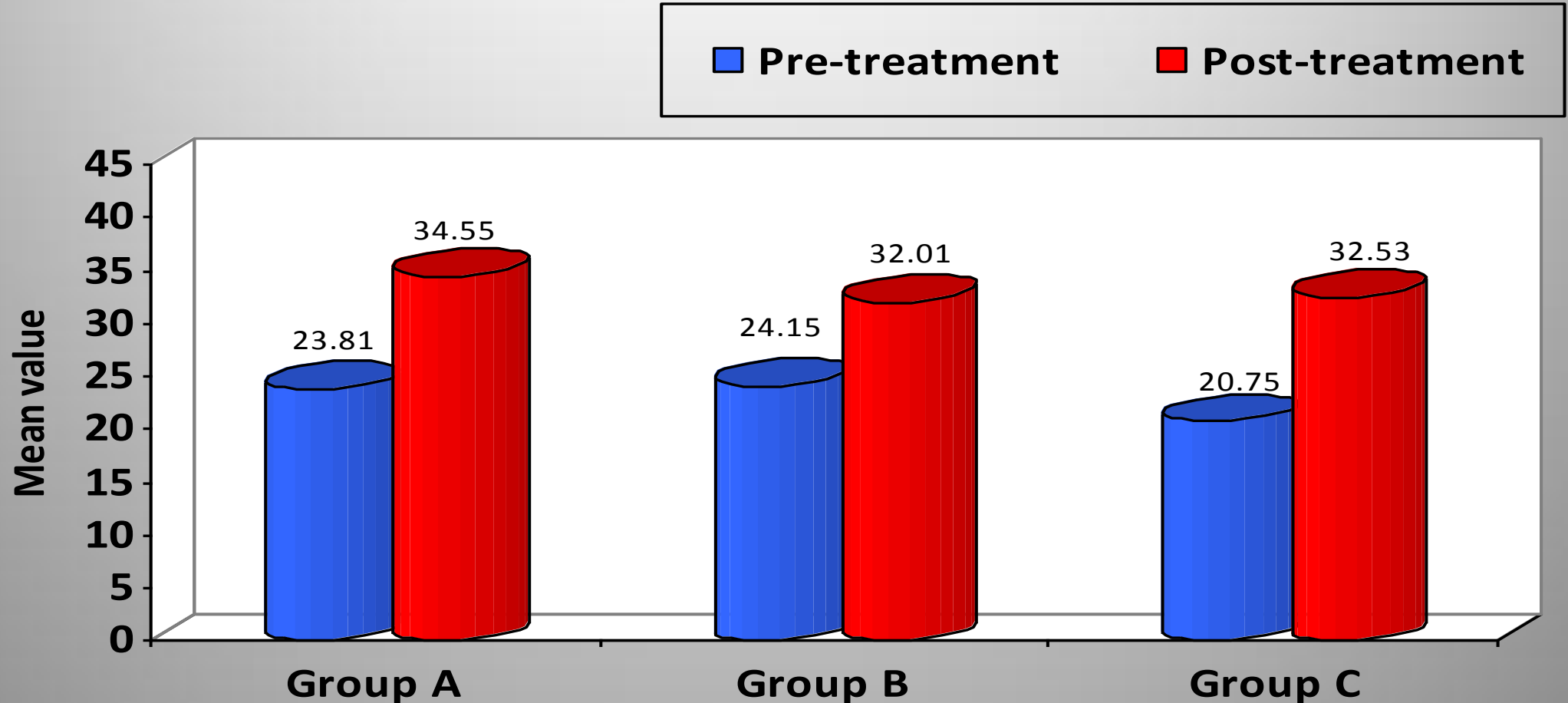
mean values of VAS in the three studied groups measured pre- and post-treatment.



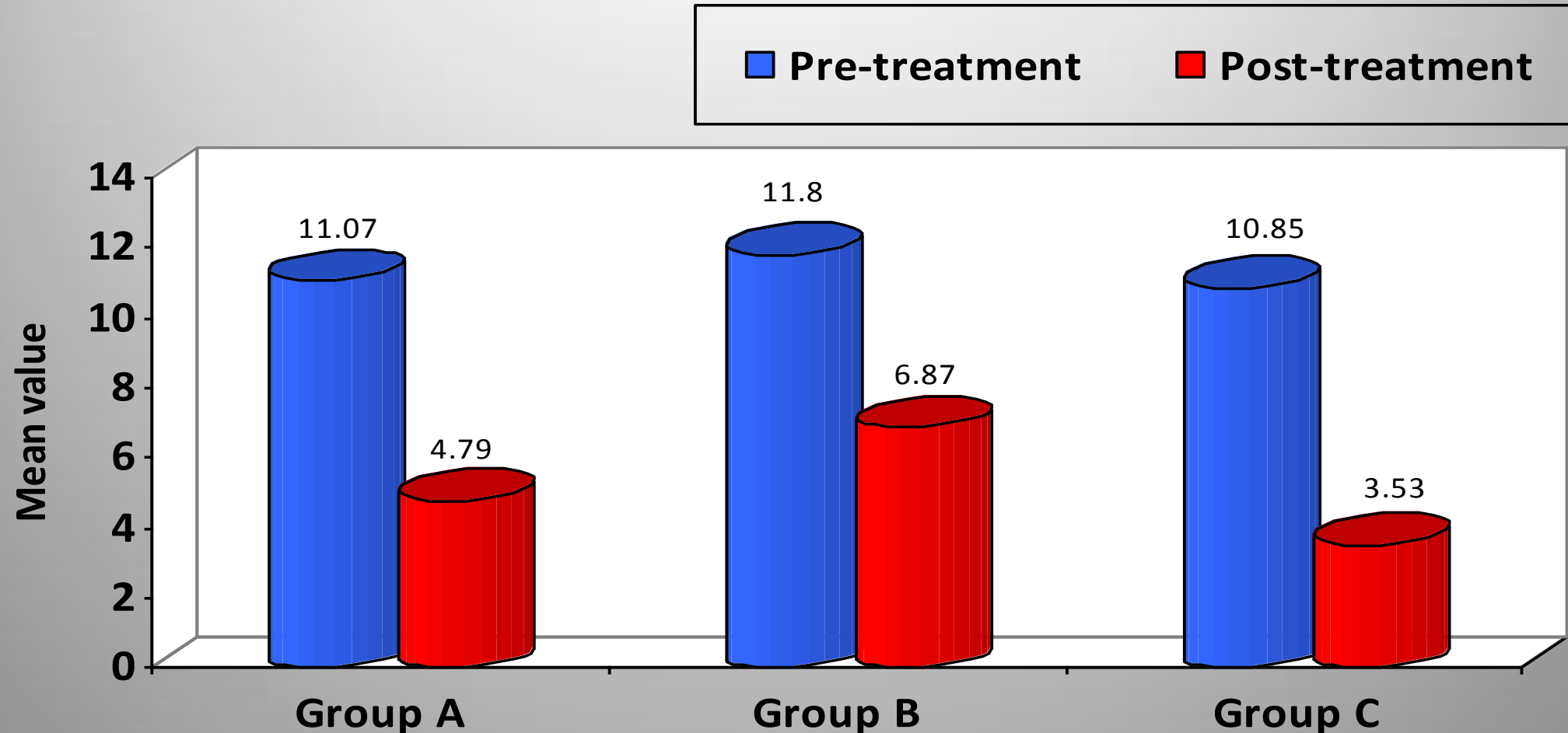
mean values of NDI in the three studied groups measured pre- and post-treatment.



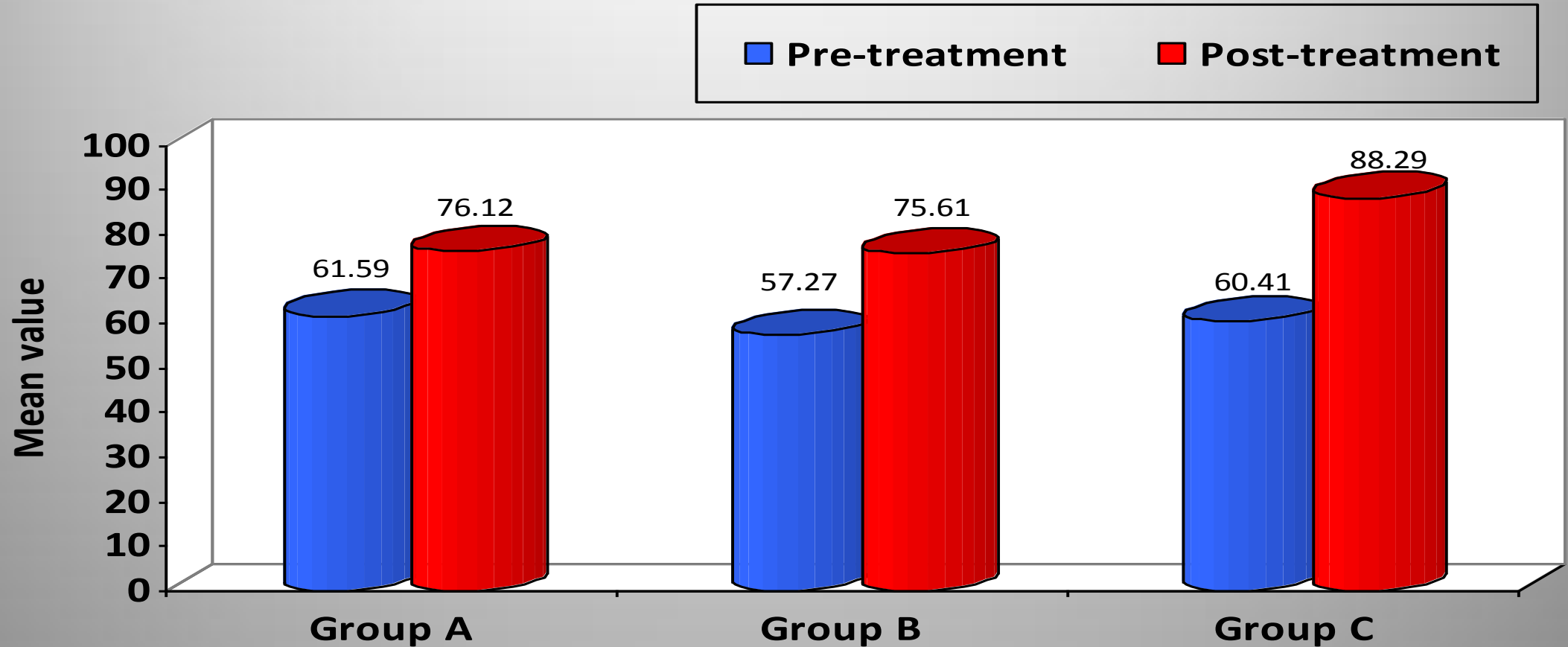
mean values of cervical curve in the three studied groups measured pre- and post-treatment.



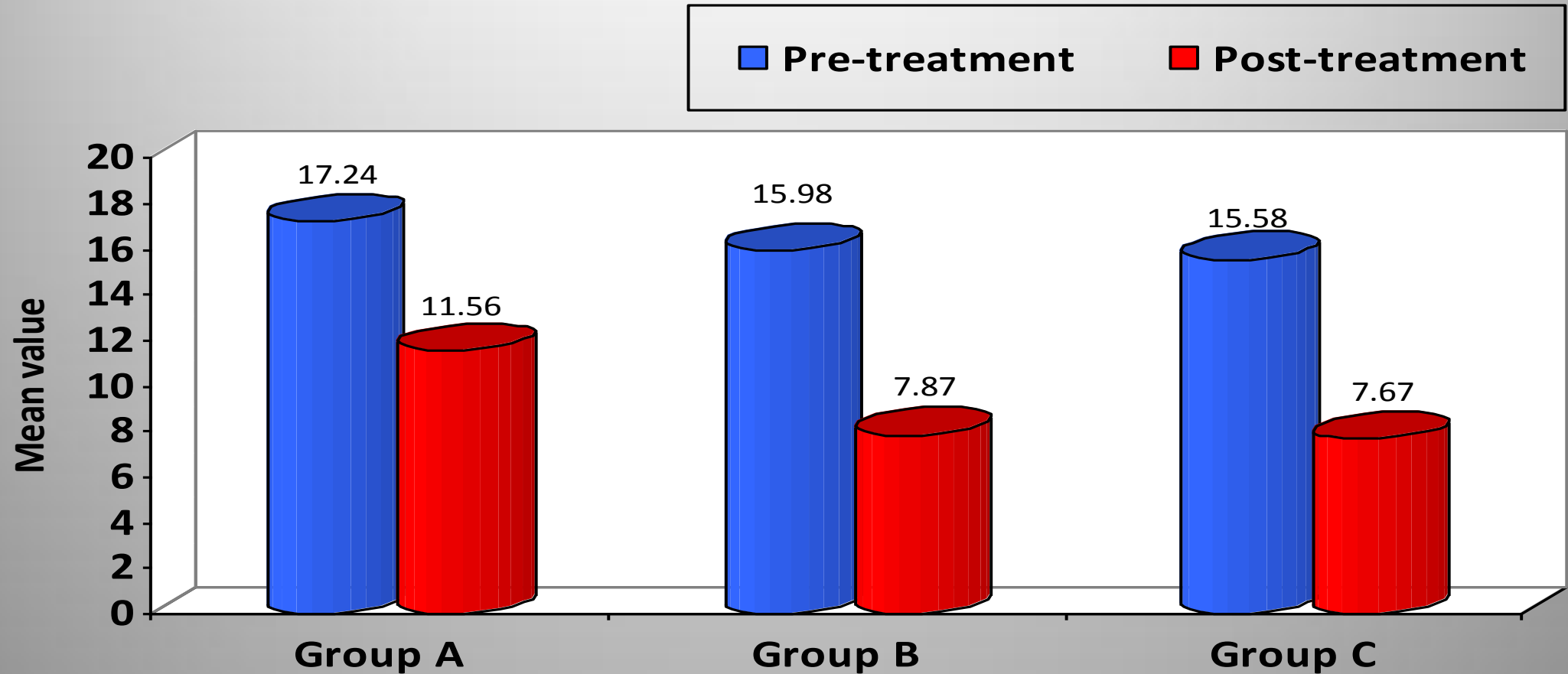
mean values of upper trapezius normalized RMS in the three studied groups measured pre- and post-treatment.



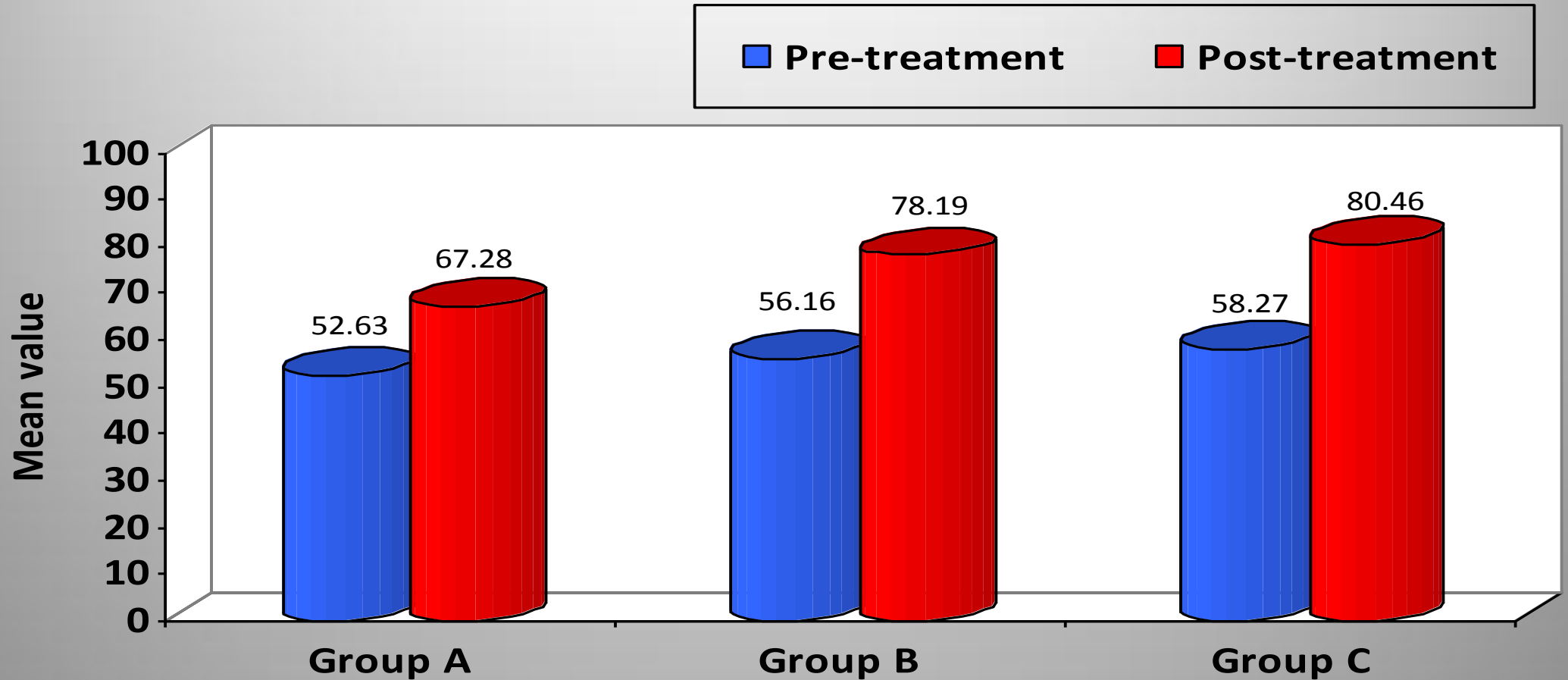
mean values of upper trapezius MDF in the three studied groups measured pre- and post-treatment.



mean values of levator scapula normalized RMS in the three studied groups measured pre- and post-treatment.



mean values of levator scapula MDF in the three studied groups measured pre- and post-treatment.





Conclusion

Kinesio taping is an effective treatment modality for MND.

Postural correction exercises program is an effective treatment modality for MND.

Combination of kinesio taping and postural correction exercises program has better effect than application of each modality alone



Recommendations

comparing between kinesio taping and other types of tapes

Replication of the study for evaluating the long term effect of all groups

investigating combination of KT and other treatment modalities

Investigating combination of postural correction exercises and other treatment modalities

