

Comparative Effects of Postural Correction VS Myofascial Release Among E-Sports Players with Neck Pain and Disability

Postural
Correction VS
Myofascial
Release Among
E-Sports

Haris Bin Tariq¹, Muzna Munir², Ammar Hameed³, Zainab Hassan², Naveed Anwar² and Kehkshan Khalid²

ABSTRACT

Objective: To assess the comparative effects of posture correction vs myofascial release in e-sports players with neck pain and disability.

Study Design: A randomized controlled trial study

Place and Duration of Study: This study was conducted at the Kanaan Physiotherapy & Spine Clinic, Lahore from June 2020 till November 2020.

Materials and Methods: This trial was conducted on 50 e-sports players. Participants were selected through non-probability convenient sampling. Participants who fulfilled the inclusion/exclusion criteria were identified by an assessor and were enrolled for particular study. Informed written consent was taken by the participants and were randomly allocated to two groups. The study was single blinded. The assessor was unaware of the treatment given to both groups. Group A received the myofascial release treatment using Hawk Grips IASTM and Group B received posture correction exercises. The total no. of sessions was 12 and duration of treatment was 4 weeks (3 sessions per week).

Results: The mean age of participants was 19.28 ± 2.157 years. Non-parametric tests were performed as the data was not normally distributed. Within group comparison was done by using Wilcoxon signed rank test and it showed significant results in both groups, p -value 0.000 for both neck pain and neck disability. Between groups comparison was made by using Mann-Whitney U Test and it showed no significant changes in neck pain and neck disability, p -value 0.832 & 0.465 respectively.

Conclusion: It is concluded that the comparison between the myofascial release treatment and posture correction exercise program is insignificant however, significant improvements in neck pain and disability are seen within the participants of both groups.

Key Words: Neck Pain, Neck Disability, E-sports Players, Myofascial release technique, Posture correction

Citation of article: Tariq H, Munir M, Hameed A, Hassan Z, Anwar N, Khalid K. Comparative Effects of Postural Correction VS Myofascial Release Among E-Sports Players with Neck Pain and Disability. Med Forum 2021;32(10):185-189.

INTRODUCTION

Non-specific neck pain is known as pain in the lateral and posterior part of the neck mainly between the spinous process of the first thoracic vertebra and the superior nuchal line with no characteristics of chief

¹. Department of Physiotherapy, KKT Orthopedic and Spine Centre.

². Riphah International University, Lahore.

³. Department of Physiotherapy, Chughtai Labs

Correspondence: Naveed Anwar, Assistant Professor, Riphah International University, Lahore.

Contact No: 03218616029

Email: Naveed.anwer@riphah.edu.pk

Received: March, 2021

Accepted: August, 2021

Printed: October, 2021

structural disease and no or slight to main meddling with actions performed in daily life also without the presence of neurological signs and symptoms of precise pathologies; such as: tumor, traumatic sprain and fracture, inflammatory or infectious cervical spondylolysis, etc.¹ overall it shows around 25% of all outpatient visits to physiotherapy² with an occurrence of 12 to 70% between overall population¹, in comparison men are less expected to be affected than women.³ In terms of research conclusions, Neck pain is often labelled as a “poor cousin” of the lower back pain even after its incidence and socioeconomic values. Due to its multifactorial etiology, it is rarely diagnosed and termed as nonspecific neck pain.⁴

There has been a consistent rise in the incidence of musculoskeletal disorders among the e-sports professionals and gamers as the growing number of players in this industry.⁵ One of the key factors responsible for this situation is prolonged sitting during the gaming activities. Also, the poor postures adapted

during the gaming activities would make the neck pain worst.

Many health problems including psychosomatic symptoms and musculoskeletal disorders happening in the early adulthood might persist later and merge into lifestyle and psychosocial factors.⁶ The most leisure activity performed by adolescents majorly includes online gaming. In recent times, gamers have preference for multiplayer online role playing games (MMORPGs)⁷, frequently related to negative consequences. A new health risk factor is identified as frequent computer-related activities⁸ related to psychosomatic and physical complaints.^{9,10} Adverse significances due to online gaming are described by one third of gamers. In specific, extreme gaming (more than five hours per day) in adolescence seems to rise these risks. Extreme gamers and those facing difficulties due to gaming have decreased life fulfilment scores and higher levels of undesirable indications such as depression and anxiety.¹¹

Posture correction exercises have been described as one of the most efficient approach for reinstating function. To enhance muscle action between force mixtures, the designated workout should highlight not only muscle power but also on providing proper ratio of muscle activity in relation to each other. Likewise, by means of the outcomes of electromyography readings could be obliging.⁽¹²⁾ Individuals having cervical complaints are shown to have improved axial and scapular muscle activation while having lower engagement of the inferior trapezius and serratus anterior. Treatment plan including different exercises was identified as the best approved by studies among the individuals throughout their intervention span.⁽¹³⁾

Myofascial release (MFR) is extensively utilized to overcome pain related with musculoskeletal injuries, and its sequences of healing effects are exploited by soothing muscles at the injury as much as possible. Moreover, MFR is usually the physical therapy of select to fuel blood flow for patients with neck pain.⁽¹⁴⁾ It also aids to encourage extreme relaxation of stressed tissues, is extensively used in primarily adjusting discomfort from musculoskeletal injuries like myofascial trigger points and myo-fibrosis and make the most of a healing effect by comforting muscles of associated lesions.⁽¹⁵⁾

In this study we aim to provide the best treatment options to e-sports players with neck disability and to guide some of the treatments which they can perform quite easily by themselves so that they can get rid of those myofascial pains and can participate in their tournaments with least muscle and postural impairments.

MATERIALS AND METHODS

A randomized controlled trial was conducted on 50 e-sports players. Participants were selected through non-

probability convenient sampling. Sample size was calculated as following:

$$n = \frac{Z_{1-\alpha/2}^2 P(1-P)}{d^2}$$

A sample size of 46 was calculated from epitools. Attrition rate of 10% was supposed so the final Sample size came out to be 50, 25 patients in each group.

Sample Selection: Participants who fulfilled the inclusion/exclusion criteria were identified by an assessor and were enrolled for particular study. Participants were selected through specific inclusion criteria which was male e-sports player between 15 to 30 years of age having neck pain and disability symptoms. Participants having any cervical fracture, recent surgery, any inflammatory diseases, neuropathies, psychological disorders or any vascular disorder were excluded from the study.

Data collection procedure: Informed written consent was taken by the participants. The study was single blinded. The assessor was hired for data collection and baseline data was collected before assigning the participants into two groups. In this way, assessor was unaware of the treatment given to both groups. Data was collected by administering questionnaire. After collecting the baseline data, participants fulfilling the inclusion criteria were randomly allocated into two groups (group A and B) by using a fish bowl method. Group A received IASTM treatment given by certified Hawk grip IASTM practitioner while Group B was treated with postural corrective exercises. The total number of sessions was 12 and duration of treatment was 4 weeks (3 sessions per week). Follow-up reading was taken after 4 weeks of intervention.

Intervention: Group A: Group A received myofascial release treatment. This treatment was given by using an instrument called Hawk Grips IASTM designed for releasing the myofascial knots and tissue resistance. This IASTM treatment was given by certified level 2 Hawk Grip IASTM practitioner. Prior to the treatment thermotherapy was given using hot pack for 10 minutes. After that instrumental assisted myofascial treatment was given for 15 minutes. After the end of the session, participants were advised to perform active cervical range of motion in all planes (flexion, extension, lateral rotation, lateral flexion) 3 times. Then, neck isometrics were performed with 3 repetitions (10 second hold). Treatment was given for 8 weeks (Three sessions per week on alternative days)

Group B: Group B received postural correction program. Prior to this program, thermotherapy was given using hot pack for 10 minutes. After that, patient performed active cervical range of motion in all planes (flexion, extension, lateral rotation, lateral flexion) 3 times. Then, neck isometrics was performed with 3 repetitions (10 seconds hold). Then, postural correction program was started. In this program, different methods were used. Mirror therapy was used in which

participants were asked to maintain their body in a correct posture by visualizing their selves in the mirror. After that, participants were asked to stand straight by the wall and they were asked to hold their neck and flatten their shoulder for 30 seconds. This was performed 3 times. After that, stretches of the anterior chest muscles (pectoralis major and minor) were given in sitting position. Stretches were given 3 times (30 seconds hold). Treatment was given for 8 weeks (Three sessions per week on alternative days)

Statistical Analysis: Data was analyzed on SPSS Version 21.0 (Statistical Package of Social Sciences) Software. Normality assessed by Shapiro Wilk Test. Standard deviation and mean of quantitative variables were measured. Pre and Post-tests values were measured after 4 weeks of treatment by using non parametric tests (Mann Whitney U test and Wilcoxon signed ranked test) according to the given data.

RESULTS

During the trial, patients were selected randomly and allocated into two groups. The mean age of participants

was 19.28 ± 2.157 years. Non-parametric tests were performed as the data was not normally distributed. Within group comparison was done by using Wilcoxon signed rank test and it showed significant results in both groups, *p*-value 0.000 for both neck pain and neck disability. Between groups comparison was made by using Mann-Whitney U Test and it showed no significant changes in neck pain and neck disability, *p*-value 0.832 & 0.465 respectively.

Table No.1: shows the descriptive statistics of Age (n=50)

Study Group		N	Mean+ Std. Deviation	P-value
Group A (IASTM)	Age of Participants	25	18.96±2.010	0.151
Group B (Postural Correction)	Age of Participants	25	19.60±2.291	0.065

Table No.2: Shows within group comparison in which Pre & Post mean \pm S.D score of NPRS & NDI among Group A (IASTM) and Group B (Posture Correction) were mentioned.

Study variables	Groups	Pre-treatment Mean \pm SD	Post-treatment Mean \pm SD	Mean Difference	P value
NPRS	A	3.44±1.121	1.56±1.083	1.88	0.000
	B	3.12±1.092	1.64±1.150	1.48	
NDI	A	15.58±5.173	12.76±4.755	2.82	0.000
	B	16.68±3.881	11.68±3.288	5.00	

*** (P < 0.000); there is a significant difference within all groups.

Table No.3: Shows between group comparison in which Pre & Post mean \pm S.D score of NPRS & NDI among Group A (IASTM) and Group B (Posture Correction) were mentioned.

Study variables	Groups	Pre-treatment Mean \pm SD	Post-treatment Mean \pm SD	Mean Ranks Pre-treatment	Mean Ranks Post-treatment	P value
NPRS	A	3.44±1.121	1.56±1.083	27.56	25.08	0.832
	B	3.12±1.092	1.64±1.150	23.44	25.92	
NDI	A	15.58±5.173	12.76±4.755	23.70	27.00	0.465
	B	16.68±3.881	11.68±3.288	27.30	24.00	

DISCUSSION

The present study analysed the comparison of the efficacy of myofascial release and posture correction program. In this study, within group results showed that there were significant improvements in neck pain and disability while there was no difference in the efficacy of both treatments when between group comparison was made.

Cho S. et al. explained that Active trigger points (ATrP) may be triggered by acute factors such as muscle sprains, or gradually by chronic overloads such as faulty posture. ATrP induces myofascial pain syndrome, which can cause reduced joint range, muscle weakness, and sleep ailments. Their results presented

that the treatment of MFR efficiently decreases ATrP in the suboccipital muscle region, which can lead to the improvement of neck function and sleep quality.⁽¹⁶⁾ The findings of this study correlated with the above research as there was significant improvement within myofascial release group, however targeted population in this study was e-sports players.

Arshadi et al. elaborated that eight-week corrective exercise are effective in diminishing activity of sternocleidomastoid and upper trapezius muscles, upper trapezius/serratus anterior and upper trapezius/lower trapezius ratio, increasing activity of serratus anterior and lower trapezius. With respect to concluding large effect size it can be quantified corrective exercise (stretching, strengthening, and stabilization exercises) is

a harmless and low-cost means to improve the muscles of the upper quadrant. Corrective exercises can be recommended as a fruitful treatment to restore and preserve balanced muscle activity in individuals with upper cross syndrome.⁽¹⁷⁾ The above-mentioned study showed similar results to this study as posture correction group showed significant improvements in pain reduction. However, target population was not same in both researches as this research aimed to find the effects of corrective exercises in e-sports players.

Toprak Celenay et al. the goal of the study was to look into and evaluate the quick benefits of interventions including balance exercises with manual treatment, rather than balance exercises solely on mobility, discomfort, range of motion and standards of living in subjects with mechanical neck pain. At four weeks, the investigation presented the particular results, when compared to balance exercises individually, stabilization exercises along with manual treatment reduced impairment, severity of pain at night, neck rotation mobility and life quality. Pressure pain threshold improved solely in stabilization exercises and manual techniques group. Improved extension and lateral flexion mobility as well as reduced pain in resting position and severity of pain in activity were not easily comparable in stabilization exercises and manual therapy group in comparison to the stabilization exercises individually in subjects with chronic mechanical neck pain.⁽¹⁸⁾ The above-mentioned study conflicted with this study as posture correction exercises showed significant improvements in their neck pain and disability without any manual therapy technique. There was a difference of target population as well so changes in results may be due to the difference in target population. This study also showed no statistically significant difference in the efficacy of posture correction group and myofascial release group.

Falla, D. et al.⁽¹⁹⁾ investigated the acute effects of precise exercise for individuals with chronic neck pain. In addition to evaluating the efficacy on pain and supposed disability, the study assessed the effect on the specificity of neck muscle control. The results illustrate that an 8-week specific exercise programme is efficient for improving the directional specificity of neck muscle movement and dropping pain in the immediate term. Future studies were related to assess whether this type of exercise has further helped such as a decrease in neck pain reappearance in the long run. The findings of the above-mentioned study also coincided with the results of this study as posture correction group also showed significant improvements in alleviating neck pain and disability. However, the program designed in this study was for 4 weeks only as compared to 8-week program mentioned in above study.

CONCLUSION

It is concluded that the comparison between the myofascial release treatment and posture correction exercise program is insignificant however, significant improvements in neck pain and disability are seen within the participants of both groups.

Limitations:

- Study was only single blinded.
- Long term follow up reading was not recorded.
- Other confounding factors like poor sleep and nutrition were not investigated.

Recommendations: Further studies should be conducted on participants with all age groups, with different musculoskeletal disorders such as upper cross syndrome, cervicalgia and cervical spondylosis. Studies should be conducted on a larger scale to gather more information.

Author's Contribution:

Concept & Design of Study:	Haris Bin Tariq Muzna Munir, Ammar Hameed
Drafting:	
Data Analysis:	Zainab Hassan, Naveed Anwar, Kehkshan Khalid
Revisiting Critically:	Haris Bin Tariq, Muzna Munir
Final Approval of version:	Haris Bin Tariq

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Lau HMC, Chiu TTW, Lam T-H. The effectiveness of thoracic manipulation on patients with chronic mechanical neck pain—a randomized controlled trial. *Manual therapy* 2011;16(2):141-7.
2. Vincent K, Maigne J-Y, Fischhoff C, Lanlo O, Dagenais S. Systematic review of manual therapies for nonspecific neck pain. *Joint Bone Spine* 2013;80(5):508-15.
3. Madson TJ, Cieslak KR, Gay RE. Joint mobilization vs massage for chronic mechanical neck pain: a pilot study to assess recruitment strategies and estimate outcome measure variability. *J Manipulative Physiological Therapeutics* 2010;33(9):644-51.
4. Nagrale AV, Glynn P, Joshi A, Ramteke G. The efficacy of an integrated neuromuscular inhibition technique on upper trapezius trigger points in subjects with non-specific neck pain: a randomized controlled trial. *J Manual Manipulative Therapy* 2010;18(1):37-43.
5. Martín Luján CE. Ergonomics and videogames: Habits, diseases and health perception of gamers 2016.
6. Prins Y, Crous L, Louw Q. A systematic review of posture and psychosocial factors as contributors to

- upper quadrant musculoskeletal pain in children and adolescents. *Physiotherapy Theory Practice* 2008;24(4):221-42.
7. Jackson LA, Von Eye A, Fitzgerald HE, Witt EA, Zhao Y. Internet use, videogame playing and cell phone use as predictors of children's body mass index (BMI), body weight, academic performance, and social and overall self-esteem. *Computers in Human Behavior* 2011;27(1):599-604.
 8. Rehbein F, Psych G, Kleimann M, Mediasci G, Mößle T. Prevalence and risk factors of video game dependency in adolescence: results of a German nationwide survey. *Cyberpsychology, Behavior, and Social Networking* 2010;13(3):269-77.
 9. Hakala PT, Saarni LA, Punamäki RL, Wallenius MA, Nygård CH, Rimpelä AH. Musculoskeletal symptoms and computer use among Finnish adolescents-pain intensity and inconvenience to everyday life: a cross-sectional study. *BMC Musculoskeletal Disorders* 2012;13(1):1-7.
 10. King DL, Delfabbro PH. Internet gaming disorder treatment: a review of definitions of diagnosis and treatment outcome. *J Clin Psychol* 2014;70(10):942-55.
 11. Mentzoni RA, Brunborg GS, Molde H, Myrseth H, Skouverøe KJM, Hetland J, et al. Problematic video game use: estimated prevalence and associations with mental and physical health. *Cyberpsychology, behavior, and Social Networking* 2011;14(10):591-6.
 12. Armijo-Olivo S. A new paradigm shift in musculoskeletal rehabilitation: why we should exercise the brain? *Brazilian J Physical Therapy* 2018;22(2):95.
 13. Yesil H, Hepguler S, Dundar U, Taravati S, Isleten B. Does the use of electrotherapies increase the effectiveness of neck stabilization exercises for improving pain, disability, mood, and quality of life in chronic neck pain? A randomized, controlled, single-blind study. *Spine* 2018;43(20):E1174-E83.
 14. Park YK, Hyun SW, Seo HK. The effectiveness of joint mobilization and myofascial release on the neck. *J Korean Academy Orthopedic Manual Physical Therapy* 2009;15(2):69-79.
 15. Kim J, Kim S, Shim J, Kim H, Moon S, Lee N, et al. Effects of McKenzie exercise, Kinesio taping, and myofascial release on the forward head posture. *Journal of physical therapy science*. 2018;30(8):1103-7.
 16. Cho S. Effects of Myofascial Release and Posture Correction Exercise on the Neck Movement and the Quality of Sleep in Patients with Chronic Tension-Type Headaches. *J Int Academy Physical Therapy Research* 2019;10(4):1897-902.
 17. Arshadi R, Ghasemi GA, Samadi H. Effects of an 8-week selective corrective exercises program on electromyography activity of scapular and neck muscles in persons with upper crossed syndrome: Randomized controlled trial. *Physical Therapy Sport* 2019;37:113-9.
 18. Toprak Çelenay Ş, Akbayrak T, Özer Kaya D. A Comparison of the Effects of Stabilization Exercises Plus Manual Therapy to Those of Stabilization Exercises Alone in Patients With Nonspecific Mechanical Neck Pain: A Randomized Clinical Trial 2016.
 19. Falla D, Lindstrøm R, Rechter L, Boudreau S, Petzke F. Effectiveness of an 8 week exercise programme on pain and specificity of neck muscle activity in patients with chronic neck pain: A randomized controlled study. *Eur J Pain* 2013;17(10):1517-28.