FISIO MU

Mirawati, Dita & Gati, N.W
Fisiomu. 2026, Vol 7(2):1-8
DOI : 10.23917/fisiomu.v7i2.16731

The Effect of Tendon-Nerve Mobilization on Pain Relief in Carpal Tunnel Syndrome at Indriati Hospital

Dita Mirawati[1*], Norman Wijaya Gati[2]
[1]DIV Fisioterapi, Fakultas Ilmu Kesehatan, Universitas 'Aisyiyah Surakarta, Indonesia
[2]Sarjana Keperawatan, Fakultas Ilmu Kesehatan, Universitas 'Aisyiyah Surakarta, Indonesia
Email: dita@unisa-surakarta.ac.id
Submitted : 2026-03-17; Accepted : 2026-05-29; Published : 2026-06-01

ABSTRACT

Introduction: Carpal Tunnel Syndrome (CTS) is a neuropathy caused by median nerve compression that often causes pain and impaired hand function. This study aims to determine the effect of tendon nerve mobilization intervention on pain reduction in CTS patients at Indriati Hospital. **Methods:** The study used a quasi-experimental design with a one-group pre-test and post-test approach without control group. A total of 28 participants with mild to moderate CTS symptoms participated in the intervention program for 3 weeks (3 times a week). Pain was assessed using a Visual Analogue Scale (VAS), data analysis in this study used paired sample t-test. **Results:** The findings showed a significant decrease in pain scores from an average of 6.5 (pre-test) to 3.4 (post-test) with a significance value of p = 0.018. **Conclusion:** These findings indicate that tendon nerve mobilization is effective in reducing pain in CTS patients. This exercise is also easy to perform and has the potential to be a safe and efficient conservative intervention. Further research with a control group and a larger sample size is needed to strengthen the scientific evidence.

Keywords: *Carpal Tunnel Syndrome, Pain, Physiotherapy, Tendon Nerve Mobilization, Exercise*

ISSN 2722 – 9610
E –ISSN 2722 - 9629

INTRODUCTION

Musculoskeletal Disorders (MSDs) are the most common occupational health problems in the 27 European Union countries according to the International Labour Organization (ILO)'s Prevention of Occupational Diseases Plan. CTS accounted for 59% of all MSDs recognized by the European Office for Occupational Disease Statistics in 2005. The Occupational Safety and Health Administration (OSHA) states that factors related to the work itself are risk factors for MSDs, such as body posture during work, vibration and temperature, repetitive movements, environmental characteristics, and the tools used (Putra et al., 2021).

Carpal Tunnel Syndrome (CTS) is defined as compression of the median nerve at the wrist, followed by decreased nerve function. CTS is the most expensive upper extremity musculoskeletal disorder in the United States, costing more than $2 billion annually. In the United States, CTS has an incidence of 5.8% and a prevalence of 7% to 19%, with higher rates seen in industrial workers, women, and the elderly (Wright & Atkinson, 2019).

This research in its integrative approach to tendon and nerve mobilization as a specific and targeted physiotherapy intervention for managing pain in Carpal Tunnel Syndrome. Unlike previous studies that generally focused on only one technique, such as nerve gliding or tendon gliding, this study examines the synergistic effect of combining the two on pain reduction mechanisms. Another novelty lies in exploring the relationship between peripheral tissue mobility and pain modulation through increased intraneural flow and reduced mechanical pressure on the median nerve. Furthermore, this study has the potential to enrich evidence-based practice in neuromuscular physiotherapy by providing a more effective, measurable, and applicable non-invasive intervention approach in clinical settings. Thus, this study not only fills the literature gap regarding the effectiveness of combined mobilization techniques but also opens up opportunities for the development of more

ISSN 2722 – 9610
E –ISSN 2722 - 9629

comprehensive therapy protocols for pain management in CTS patients.

In carpal tunnel, nerve and tendon gliding exercises are a mechanical intervention that can increase median nerve vascularization and promote soft tissue regeneration. Edema can be reduced, median nerve activity can be increased by reducing tension on the surrounding connective tissue, and nociception can be improved by decreasing the concentration of inflammatory substances and increasing the sensitivity of the peripheral nervous system through active nerve and tendon gliding exercises (Sekaringtyas et al., 2021).

Several hand and wrist movements are involved in nerve and tendon gliding exercises. The primary goal of these exercises is to relieve symptoms, designed to minimize pressure on the median nerve in the wrist. Additionally, these exercises can help reposition the tendons, thereby increasing the joint's range of motion and extending the range of motion in CTS sufferers (Putri, 2019).

Nerve and tendon gliding exercises can improve the recovery process from median nerve compression in the carpal tunnel and the symptoms it causes. These exercises reshape and stretch the tenosynovium surrounding the carpal tunnel. This potentially reduces compression and adhesions in the carpal tunnel. This means that these exercises can progressively alleviate symptoms by returning anatomical structures to their original position, thereby reducing compression and adhesions in the carpal tunnel and gradually relieving symptoms. Furthermore, these effects can increase venous return from the median nerve, which in turn reduces pressure (Putri, 2019).

Nerve and tendon gliding exercises, when performed on individuals with CTS, can allow the nerve to travel through its maximum range. There may be a redistribution of the points of maximal compression on the median nerve within the carpal tunnel by exposing various points of the nerve to the area of maximal compression beneath the transverse carpal ligament. This "milking" effect will increase venous return from the median nerve and may restore a linear relationship between the median nerve and the flexor tendon displacements (VAIDYA & NARIYA, 2020).

Based on research (Asmoro & Pristianto, 2022), nerve and tendon gliding exercises can relieve pain and paresthesia in carpal tunnel syndrome after three repetitions. Each position is held for five seconds and repeated five times. This exercise requires maintaining the fingers and hand in six different positions for six minutes (Razali et al., 2022).

METHODS

The application of nerve and tendon gliding exercises can cause stretching of adhesions in the carpal tunnel so that it can expand the longitudinal area of contact between the median nerve and the transverse carpal ligament, reduce tenosynovial edema, increase venous return from nerve fibers, and reduce pressure in the carpal tunnel (Bartkowiak et al., 2019). Nerve and tendon gliding exercises can reduce soft tissue adhesions and relieve CTS symptoms. Performing nerve and tendon gliding exercises can stretch the soft tissue adhesions in the carpal tunnel, thereby improving the relative trajectory of the median nerve (Sheereen et al., 2022).

Figure 1. Nerve Mobilization Exercise

This study used a quantitative method with a quasi-experimental type using a one-group pre-test and post-test design without a control group.

ISSN 2722 – 9610
E –ISSN 2722 - 9629

The aim was to determine the effect of nerve mobilization exercise on pain in CTS cases. In this study, one group was given a nerve mobilization exercise program with a frequency of 3x a week for 3 weeks.

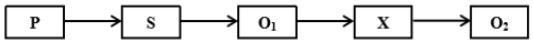

Figure 2. Research Design

This research sample was taken using purposive sampling by paying attention to inclusion and exclusion criteria. Inclusion criteria in this study: 1) Age 30-58 years 2) Male and female 3) Experiencing one of the CTS complaints 4) Mild to moderate symptoms 5) Positive clinical provocative test (Phalen's test or Tinel's sign). Exclusion criteria: 1) Wrist trauma 2) Having comorbidities (eg: Diabetes mellitus and rheumatoid arthritis) 3) Pregnancy 4) Open wounds. Drop out: 1) While following the exercise program the subject falls ill 2) Not following fully from start to finish or stopping midway during the course of the study.

This research was conducted at Indriati Hospital Solo Baru in May and June 2025. Data processing used univariate analysis, with variables analyzed including age, gender, and pain before and after the intervention. Bivariate analysis used a paired t-test to determine the effect of nerve and tendon gliding mobilization.

This research has obtained research ethics approval with Number 442/V/AUEC/2025 issued by the Health Research Ethics Committee of 'Aisyiyah University Surakarta.

RESULTS

This study used a quasi-experimental design with a one-group pre-test and post-test approach without a control group. Twenty-eight subjects with mild to moderate Carpal Tunnel Syndrome (CTS) symptoms who met the inclusion criteria participated in a three-week intervention, administered three times per week. The Visual Analogue Scale (VAS) was used to assess pain. Assessments were conducted before and after the intervention.

Table 1. Respondent Characteristics Based on Age

Age	(n)
29-45	14 (50%)
46-61	14 (50%)
Total	**28 (100%)**

Respondent characteristics based on age from a total of 28 respondents were 14 (50%) respondents aged between 29-45 years, and 14 (50%) respondents aged 46-61 years.

Table 2. Respondent Characteristics Based on Gender

Gender	(n)
Female	24 (85%)
Male	4 (15%)
Total	28 (100%)

Respondent characteristics according to age from a total of 28 (100%) respondents, 24 (85%) were female and 4 (15%) were male.

Table 3. Pain characteristics before and after treatment

Pain	Average VAS
Pre-test	6.5
Post-test	3.4

Pain characteristics before and after treatment average pain score before intervention (pre-test) 6.5 average pain score after intervention (post-test): 3.4, with an average pain reduction of: 3.1 points.

Table 4. Normality Data Test

Variable	Sig.
Pain Pre	0.065
Pain Post	0.071

From the results of the data normality test using the Shapiro Wilk Test, it was found that the pain value before the intervention had a p value = 0.065 ($p>0.05$) and the pain value after the intervention $p = 0.071$ ($p>0.05$), which means that the pain value before and after the intervention had a normal data distribution.

Table 5. Results of the Influence Test

Influence	Sig.
VAS Pre-Post	0.018

FISIO MU: Physiotherapy Evidences

ISSN 2722 – 9610
E –ISSN 2722 - 9629

The findings of the statistical test with the Paired sample T-Test showed a p-value < 0.05, indicating that there was a statistically significant difference between the pre-test and post-test scores.

DISCUSSION

Study findings indicate that tendon nerve mobilization intervention significantly reduced pain intensity in CTS patients at Indriati Hospital. This reduction indicates the effectiveness of the nerve and tendon gliding exercises provided (Papacharalambous et al., 2022).

Carpal Tunnel Syndrome (CTS) is a neuropathy caused by compression of the median nerve in the carpal tunnel, which causes sensory and motor impairment in the hand. CTS is known to be a multifactorial condition influenced by various risk factors, including gender, occupation, systemic comorbidities (such as diabetes or hypothyroidism), and age (Mondelli et al., 2005). Among these factors, age plays a significant role in determining an individual's susceptibility to CTS (Hernández-Secorún et al., 2021).

Several studies have shown that the prevalence of CTS increases with age. The peak incidence of CTS generally occurs between the ages of 40 and 60, with the highest incidence found in the age group >50. This is related to the physiological changes that occur in body tissues with aging (Lacourpaille et al., n.d.). In older adults, the regenerative capacity of peripheral nerves and soft tissues tends to decline. Nerve remyelination is slower, and the activity of antioxidant enzymes that protect nerves from oxidative damage also decreases. Consequently, when the median nerve is repeatedly or chronically compressed, older adults are more susceptible to more severe clinical symptoms of CTS and slower recovery (Paquette et al., 2021).

Many epidemiological studies have shown that CTS is more common in women than in men. The incidence ratio between women and men varies between 2:1 and 9:1, depending on the population and the diagnostic method used (Eros et al., 2024). The highest incidence is found in women aged 40–60 years, which also correlates with the perimenopausal and menopausal periods (Feng et al., 2021; Mohammad, 2019).

The physiological mechanism of gliding exercises explains that it helps reduce adhesions and pressure on the median nerve in the carpal tunnel, improves blood and lymph circulation, and reduces the accumulation of inflammatory substances in the area (Nunez de Arenas-Arroyo et al., 2021). By actively mobilizing nerves and tendons, anatomical structures are returned to their original position, minimizing mechanical irritation and improving the function of the peripheral nervous system (Sheereen et al., 2022)(Tatsios et al., 2024).

These results align with previous research (Putri, 2019; Vaidya, 2020) which states that this exercise can reduce edema, pain, and improve hand function. From the results of brief interviews with participants, most stated that pain gradually decreased during the 2nd and 3rd weeks (Ceylan et al., 2023). In addition, they felt more comfortable in performing activities that previously felt difficult, such as gripping objects, typing, and carrying light objects (Beddaa et al., 2022)(Jiménez-del-Barrio et al., 2022).

According to (Kaur et al., 2016)(Romero-Morales et al., 2022) nerve gliding exercise therapy is a physiotherapy technique that involves stretching the tendons and nerves in the wrist to relieve pain and reduce adhesions. The goal of nerve gliding exercise in CTS patients is to increase median nerve mobility post-surgery, based on Ballestero-Pérez et al. (Ballestero-Perez et al., 2017). It is hypothesized that nerve gliding exercise has various effects, including increasing venous blood flow in the median nerve, reducing tunnel pressure, and lengthening adhesions (Ijaz et al., 2022; Khademi et al., 2023).

Physiotherapists often use Tendon and Nerve Gliding as a mechanical-based treatment modality that aims to increase the vascularization of the median nerve in the carpal tunnel and encourage soft tissue regeneration (Savage & Albano, 2020)(Cihan et al., 2024). Tendon and Nerve gliding exercises have the potential to reduce edema, increase median nerve mobility, and reduce adhesions in the surrounding connective tissue. Scalise et al. further stated that the tenosynovium undergoes remodeling and elongation around the carpal tunnel structures during exercise, which reduces adhesions and

ISSN 2722 – 9610
E –ISSN 2722 - 9629

compression on structures within the carpal tunnel. Adhesions and compression in the tunnel can be reduced, and symptoms can be progressively reduced, as these anatomical structures are returned to their original and proper positions through this exercise (Leblebicier et al., 2022; Scalise et al., 2021)

This study's main strength lies in its specific and applicable intervention focus, namely a combination of tendon and nerve mobilization in patients with Carpal Tunnel Syndrome. This approach is relevant to clinical practice because it is non-invasive, easy to implement, and does not require special equipment, potentially increasing patient compliance. Furthermore, the use of objective parameters such as the Visual Analog Scale (VAS) provides a quantitative measure of pain changes, supporting the validity of the study results. The relatively short intervention duration (3 weeks) yet significant results are also an added value, demonstrating the effectiveness of the therapy.

On the other hand, this study has several limitations. The primary focus on pain reduction did not encompass other important aspects, such as muscle strength, sensory function, or the patient's overall quality of life. Furthermore, the lack of a control or comparison group could question the study's internal validity, as it is difficult to determine whether improvements are solely due to the intervention. The relatively short duration of the study also made it insufficient to evaluate long-term effects or the likelihood of recurrence. Variations in CTS severity, which may not have been rigorously controlled, could also impact the generalizability of the results.

The clinical implications of the study, "The Effect of Tendon-Nerve Mobilization on Pain Relief in Carpal Tunnel Syndrome," demonstrate that tendon-nerve mobilization intervention can be integrated as a practical, conservative therapy option in the management of patients with carpal tunnel syndrome, particularly in mild to moderate cases. This technique provides an effective, non-invasive alternative to reduce pain while improving hand function, making it suitable for use both in healthcare settings and as a home exercise program. Furthermore, because it requires no specialized equipment and is relatively easy to teach, this intervention has the potential to improve therapy cost-efficiency and patient compliance. Within the context of neuromuscular physiotherapy practice, this approach can enrich rehabilitation protocols by emphasizing the combination of tissue mobilization as a safe, measurable, and evidence-based strategy.

CONCLUSION

Based on the research results, it can be concluded that tendon nerve mobilization intervention was associated with reduced pain intensity levels in patients with mild to moderate Carpal Tunnel Syndrome. This is indicated by a significant decrease in pain scores based on the Visual Analog Scale (VAS) after three weeks of intervention with a frequency of three times per week, namely from an average of 6.3 to 3.4. In addition, this exercise also provides additional benefits in the form of increased comfort and function in daily hand activities, with the advantage of being easy to perform without the need for special equipment. Thus, tendon nerve mobilization can be recommended as part of a conservative approach in neuromuscular physiotherapy that is safe, effective, and economical for the treatment of CTS.

ACKNOWLEDGEMENT

Thank you to the Pusat Penelitian dan Pengabdian kepada Masyarakat (P3M), 'Aisyiyah University, Surakarta for the funding provided.

REFERENCES

Asmoro, I. W., & Pristianto, A. (2022). Pengaruh Pemberian Tendon Gliding Exercise Pada Kasus Carpal Tunnel Syndrome (Cts). *Physio Journal*, *2*(2), 27–31.

Ballestero-Perez, R., Plaza-Manzano, G., Urraca-Gesto, A., Romo-Romo, F., de los Ángeles Atín-Arratibel, M., Pecos-Martín, D., Gallego-Izquierdo, T., & Romero-Franco, N. (2017). Effectiveness of nerve gliding exercises on carpal tunnel syndrome: a systematic review. *Journal of Manipulative and Physiological Therapeutics*, *40*(1), 50–59.

ISSN 2722 – 9610
E –ISSN 2722 - 9629

Bartkowiak, Z., Eliks, M., Zgorzalewicz-Stachowiak, M., & Romanowski, L. (2019). The effects of nerve and tendon gliding exercises combined with low-level laser or ultrasound therapy in carpal tunnel syndrome. *Indian Journal of Orthopaedics*, *53*(2), 347–352.

Beddaa, H., Kably, B., Marzouk, B., Mouhi, I., Marfak, A., Azemmour, Y., Bouzekraoui Alaoui, I., & Birouk, N. (2022). The effectiveness of the median nerve neurodynamic mobilisation techniques in women with mild or moderate bilateral carpal tunnel syndrome: A single-blind clinical randomised trial. *South African Journal of Physiotherapy*, *78*(1), 1823.

Ceylan, İ., Büyükturan, Ö., Aykanat, Ö., Büyükturan, B., Şaş, S., & Ceylan, M. F. (2023). The effectiveness of mobilization with movement on patients with mild and moderate carpal tunnel syndrome: A single-blinded, randomized controlled study. *Journal of Hand Therapy*, *36*(4), 773–785.

Cihan, E., Akdeniz Leblebicier, M., Sahbaz Pirincci, C., Yaman, F., Ture, A., Ari, B., & Yamuc, B. (2024). The Impact of Lymphatic Drainage and Nerve Mobilization Techniques on Nerve Morphology in Mild-to-Moderate Carpal Tunnel Syndrome: A Randomized Controlled Trial. *Clinical Rehabilitation*, *38*(12), 1633–1644.

Eros, F. R., Demers, P. A., & Sritharan, J. (2024). Sex-differences in the risk of carpal tunnel syndrome: results from a large Ontario, Canada worker cohort. *BMC Musculoskeletal Disorders*, *25*(1), 1098.

Feng, B., Chen, K., Zhu, X., Ip, W.-Y., Andersen, L. L., Page, P., & Wang, Y. (2021). Prevalence and risk factors of self-reported wrist and hand symptoms and clinically confirmed carpal tunnel syndrome among office workers in China: a cross-sectional study. *BMC Public Health*, *21*(1), 57.

Hernández-Secorún, M., Montaña-Cortés, R., Hidalgo-García, C., Rodríguez-Sanz, J., Corral-de-Toro, J., Monti-Ballano, S., Hamam-Alcober, S., Tricás-Moreno, J. M., & Lucha-López, M. O. (2021). Effectiveness of conservative treatment according to severity and systemic disease in carpal tunnel syndrome: a systematic review. *International Journal of Environmental Research and Public Health*, *18*(5), 2365.

Ijaz, M. J., Karimi, H., Ahmad, A., Gillani, S. A., Anwar, N., & Chaudhary, M. A. (2022). Comparative efficacy of routine physical therapy with and without neuromobilization in the treatment of patients with mild to moderate carpal tunnel syndrome. *BioMed Research International*, *2022*(1), 2155765.

Jiménez-del-Barrio, S., Cadellans-Arróniz, A., Ceballos-Laita, L., Estébanez-de-Miguel, E., López-de-Celis, C., Bueno-Gracia, E., & Pérez-Bellmunt, A. (2022). The effectiveness of manual therapy on pain, physical function, and nerve conduction studies in carpal tunnel syndrome patients: a systematic review and meta-analysis. *International Orthopaedics*, *46*(2), 301–312.

Kaur, P., Kumar, S., & Arora, L. (2016). Effect of Tendon and Nerve Gliding In Carpal Tunnel Syndrome: Clinical and Electrophysiological Examination. *International Journal of Healthcare Sciences*, *4*(1), 108–115.

Khademi, S., Yoosefinejad, A. K., Motealleh, A., Rezaei, I., Abbasi, L., & Jalli, R. (2023). The sono-elastography evaluation of the immediate effects of neurodynamic mobilization technique on median nerve stiffness in patients with carpal tunnel syndrome. *Journal of Bodywork and Movement Therapies*, *36*, 62–68.

Lacourpaille, R. G., Quillard, J.-B., McNair, P., & Nordez, A. (n.d.). *Chronic effects of muscle and nerve-directed stretching on tissue mechanics*.

Leblebicier, M. A., Yaman, F., Saracoglu, I., & Ozkaya, D. B. (2022). The effects of tibial nerve mobilization in patients with tarsal tunnel syndrome: A randomized controlled trial. *European Journal of Integrative Medicine*, *56*, 102201.

Mohammad, W. S. (2019). Work-related risk factors for Carpal Tunnel Syndrome among

FISIO MU: Physiotherapy Evidences

ISSN 2722 – 9610
E –ISSN 2722 - 9629

Majmaah University female touchscreen users. *Pakistan Journal of Medical Sciences*, *35*(5), 1221.

Mondelli, M., Aprile, I., Ballerini, M., Ginanneschi, F., Reale, F., Romano, C., Rossi, S., & Padua, L. (2005). Sex differences in carpal tunnel syndrome: comparison of surgical and non-surgical populations. *European Journal of Neurology*, *12*(12), 976–983.

Nunez de Arenas-Arroyo, S., Cavero-Redondo, I., Torres-Costoso, A., Reina-Gutiérrez, S., Alvarez-Bueno, C., & Martinez-Vizcaino, V. (2021). Short-term effects of neurodynamic techniques for treating carpal tunnel syndrome: A systematic review with meta-analysis. *Journal of Orthopaedic & Sports Physical Therapy*, *51*(12), 566–580.

Papacharalambous, C., Savva, C., Karagiannis, C., & Giannakou, K. (2022). The effectiveness of slider and tensioner neural mobilization techniques in the management of upper quadrant pain: a systematic review of randomized controlled trials. *Journal of Bodywork and Movement Therapies*, *31*, 102–112.

Paquette, P., Higgins, J., Danino, M. A., Harris, P., Lamontagne, M., & Gagnon, D. H. (2021). Effects of a preoperative neuromobilization program offered to individuals with carpal tunnel syndrome awaiting carpal tunnel decompression surgery: A pilot randomized controlled study. *Journal of Hand Therapy*, *34*(1), 37–46.

Putra, D. K., Setyawan, A., & Zainal, A. U. (2021). Faktor Yang Berhubungan Dengan Gejala Carpal Tunnel Synrome (CTS) Pada Pekerja Komputer Bagian Editing Di Pt. X Tahun 2021. *Environmental Occupational Health and Safety Journal*, *2*(1), 11–18.

Putri, P. P. (2019). Nerve And Tendon Gliding Exercise Sebagai IntervensiNonmedikamentosa Pada Carpal Tunnel Syndrome. *Essence of Scientific Medical Journal (2019)*, *17*(2), 34–39.

Razali, H., Raj, N. B., Wan-Arfah, N., Yusoff, Z., & Ramalingam, V. (2022). Effectiveness of Physiotherapy Interventions on Symptom Severity and Hand Function in Patients with Idiopathic CTS. *IJMAES*, *8*, 1287–1301.

Romero-Morales, C., Calvo-Lobo, C., Rodríguez-Sanz, D., López-López, D., San Antolín, M., Mazoteras-Pardo, V., Martínez-Jiménez, E. M., Losa-Iglesias, M., & Becerro-de-Bengoa-Vallejo, R. (2022). Effectiveness of neural mobilization on pain and disability in individuals with musculoskeletal disorders. In *Treatments, Mechanisms, and Adverse Reactions of Anesthetics and Analgesics* (pp. 555–564). Elsevier.

Savage, N. J., & Albano, J. (2020). Marrying Tendon and Nerve Gliding Exercises with Hydrodissection Following Injection for Carpal Tunnel Syndrome–A New Treatment Approach? *Journal of Orthopaedic Case Reports*, *10*(9), 38.

Scalise, V., Brindisino, F., Pellicciari, L., Minnucci, S., & Bonetti, F. (2021). Carpal tunnel syndrome: a national survey to monitor knowledge and operating methods. *International Journal of Environmental Research and Public Health*, *18*(4), 1995.

Sekaringtyas, D., Susilo, T. E., & Prihati, E. (2021). Combination TENdon and nerve gliding exercise with neurodynamic mobilization to improve hand function in carpal tunnel syndrome patient: a case report. *Academic Physiotherapy Conference Proceeding*.

Sheereen, F. J., Sarkar, B., Sahay, P., Shaphe, M. A., Alghadir, A. H., Iqbal, A., Ali, T., & Ahmad, F. (2022). Comparison of two manual therapy programs, including tendon gliding exercises as a common adjunct, while managing the participants with chronic carpal tunnel syndrome. *Pain Research and Management*, *2022*(1), 1975803.

Tatsios, P. I., Grammatopoulou, E., Patsaki, I., Vrouva, S., & Koumantakis, G. A. (2024). The Effectiveness of Neural Mobilization in Patients with Tarsal Tunnel Syndrome: A Systematic Review and Meta-Analysis. *International Journal of Kinesiology and Sports Science*, *12*(4), 63–72.

VAIDYA, S., & NARIYA, D. (2020). Effect of

ISSN 2722 – 9610
E –ISSN 2722 - 9629

Neural Mobilisation Versus Nerve and Tendon Gliding Exercises in Carpal Tunnel Syndrome: A Randomised Clinical Trial. *Journal of Clinical & Diagnostic Research*, *14*(6).

Wright, A. R., & Atkinson, R. E. (2019). Carpal tunnel syndrome: an update for the primary care physician. *Hawai'i Journal of Health & Social Welfare*, *78*(11 Suppl 2), 6.

ISSN 2722 – 9610
E –ISSN 2722 - 9629