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Effect of Manual Traction on Cervical Myofascial Pain

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Abstract:
Cervical pain is widely in the community. The incidence rate of cervical pain is the second largest after low back pain. One of the most widely used therapeutic techniques for cervical pain is manual traction. Objective: to determine the effect of manual traction on cervical myofascial pain. This research was desained One group pre and post test design. Subject: physiotherapy students semester V and semester I Transfer Class Class Bachelor applied physiotherapy year 2021-2022 that meets the criteria of inclusion and exclusion, amounting to 12 people. Treatment: The treatment in this study was manual traction. Place and time of research: the research was conducted in the department of physiotherapy Poltekkes Surakarta in September 2021. Measuring instrument: Numerical Fating Scale (NRS). The Paired Sample T Test between before and after treatment, obtained a value of p = 0.000 (p<0.05) means that there is a very significant influence of manual traction can reduce cervical myophyasial pain. Conclusion: Manual traction can decrease cervical myofascial pain.

Keywords: *pain, neck, myofascial, manual traction*

INTRODUCTION

The neck is the most flexible part of the spine, and is one of the most mobile parts of the human body. The neck is composed of seven vertebrae, ligaments, facet joints, discs, nerves and neck muscles all of which will work well together so that the neck can support the head well and allow the neck and head to move properly, safely and comfortably. The presence of abnormalities, injury or inflammation in some of the tissues mentioned above can cause neck pain or stiffness in the neck. Many people experience neck pain and or neck stiffness mostly due to poor posture or due to overuse (Pitrangelo & Higuera, 2015).

Neck pain is a common complaint in society. Neck muscles tense up due to poor body position, for example, bending the head in front of the computer or on the desk for a long time or sleeping with a bad head position. However, neck pain often occurs without a definite cause (NCBI, 2019). It is estimated that 1 in 3 adults experience neck pain once a year and the incidence in women is greater than in men (NCBI, 2019). According to Widyadharma quoted by Nadhifah et al., (2019), it is estimated that every year around 16.6% complain of discomfort in the neck and 0.6 of the population develop severe neck pain.

Most workers who experience neck pain when viewed from their work position are workers who use their neck, hands and shoulders more with the same movements repeatedly. This can result in decreased oxygen supply to the muscles, inhibited carbohydrate metabolism processes and as a result the accumulation of lactic acid which can cause muscle pain (Winihastuti, 2016). Neck pain often resolves with self-care, for example by rest, warm or cold compresses and by improving posture. However, it often also requires medical therapy for example with drugs, physiotherapy and also injections (Rachmi, Werdhani, & Murdana, 2018).

Many physiotherapy modalities can be used to treat neck pain, including warm or cold compresses, electrical stimulation, ultrasound, massage, motion exercises, joint mobilization or manual therapy. One of the manual therapy techniques now widely used

is Mulligan Snag. The term Snag is an acronym for Sustained Natural Apophyseal Glide. This snag can be described as the passive application of accessory movement (glide) to the vertebrae and at the same time the patient is actively moving (Mulligan, 2019). The direction of the glide must be in the same direction or parallel to the plane of the facet joint and Snag is performed with the patient's weight bearing position (sitting, standing). Snag can improve vertebral movement and reduce pain (Mulligan, 2019).

LITERATURE REVIEW

Myofascial Pain

Cervical pain is a very common medical condition found in people these days. Neck pain can arise from a number of disorders and diseases of any tissues in the neck. Common neck pain conditions are whiplash, a herniated disc, or a pinched nerve.

Neck pain is the fourth leading cause of disability, with an annual prevalence rate exceeding 30%. Most episodes of acute neck pain will resolve with or without treatment, but nearly 50% of individuals will continue to experience some degree of pain or frequent occurrences. History and physical examination can provide important clues as to whether the pain is neuropathic or mechanical and can also be used to identify “red flags” that may signify serious pathology, such as myelopathy, atlantoaxial subluxation, and metastases. Magnetic resonance imaging is characterized by a high prevalence of abnormal findings in asymptomatic individuals but should be considered for cases involving focal neurologic symptoms, pain refractory to conventional treatment, and when referring a patient for interventional treatment. Few clinical trials have evaluated treatments for neck pain. Exercise treatment appears to be beneficial in patients with neck pain. There is some evidence to support muscle relaxants in acute neck pain associated with muscle spasm, conflicting evidence for epidural corticosteroid injections for radiculopathy, and weak positive evidence for cervical facet joint radiofrequency denervation. In patients with radiculopathy or myelopathy, surgery appears to be more effective than nonsurgical therapy in the short term but not in the long term for most people (Cohen, 2015).

Neck pain is a multifactorial disease (Kazeminasab et al., 2022). Several population-based studies have explored the role of various modifiable and non-modifiable risk factors for neck pain, such as advanced age, being female, low social support, and a history of neck or lower back pain (Genebra, Maciel, Bento, Simeão, & Vitta, 2017; Hogg-Johnson et al., 2008; Kim, Wiest, Clark, Cook, & Horn, 2018; McLean, May, Klaber-Moffett, Sharp, & Gardiner, 2010). Since there is a tendency for neck pain to become a chronic problem, it is important to identify risk factors in order to enable prevention and early diagnosis (Kim et al., 2018). As neck pain is a multifactorial disease, there are a number of risk factors which can contribute to its development. There is, however, more evidence for some risk factors, such as lack of physical activity, duration of daily computer use, perceived stress and being female (Jahre, Grotle, Smedbråten, Dunn, & Øiestad, 2020).

Myofascial pain is defined as a musculoskeletal disorder that causes pain in the area of a muscle in the body, and its surrounding connective tissue known as fascia (Giamberardino, Affaitati, Fabrizio, & Costantini, 2011). The pain can be local or regional, and can also be characterized by multiple trigger points. Trigger points are highly sensitive muscle foci that are painful to touch and refer pain to the surrounding area. Specifically, in the cervical region, muscles commonly involved include the rhomboids, trapezius, levator scapulae, supraspinatus, and infraspinatus. The pain can be acute or chronic and likely occurs due to overuse, postural changes, or muscle trauma (Touma, May, & Isaacson, 2022).

Myofascial pain syndrome is a common disorder in patients with nonspecific chronic neck pain (Ezzati et al., 2021). Myofascial pain syndrome (MPS) is considered as a common nonarticular musculoskeletal pain syndrome and an etiology for chronic neck pain. Patients with MPS have specific trigger points (TrPs) that are detectable on physical examination (Akhbari, Salavati, Ebarahimi, Ezzati, & Haghighat Khah, 2015). A trigger point is a tender point within a tight muscular band which is stimulated by excessive pressure, tension, contraction, or loading. Upper trapezius and infraspinatus are two of the most prone muscles to having TrPs in patients with chronic neck pain. These points not only cause local discomfort, but also they are able to cause referral pain in remote areas (Salavati, Akhbari, Takamjani, Ezzati, & Haghighatkhah, 2017).

Manual Traction

Traction is a physiotherapy technique or modality that has a work system by pulling and providing resistance to applied body parts such as the legs, arms and spine (Boyles, Toy, Mellon, Hayes, & Hammer, 2011). Traction is a technique used to treat joint dysfunctions such as stiffness, reversible joint hypomobility and pain. Traction is a passive movement that the physiotherapist can perform at a slow pace so that the patient can stop the movement. Traction movement based on arthrokinematics motion.

Giving traction can stimulate biological activity by draining synovial fluid that can carry nutrients to the avascular parts of the joint cartilage on the joint surface and joint fibrocartilage. Repeated movements in the traction motion will improve microcirculation and a lot of fluid will come out so that the water content and matrix in the tissue can increase and the tissue becomes more elastic. In addition, the element of traction motion is almost the same as the physiological motion of the knee joint in flexion so that it can increase and maintain the elasticity of the capsule, ligaments, and muscles (Negara, 2013).

Manual Traction is a minimally invasive treatment option for neck and back pain. It has proven to be an effective mechanism providing patients with pain relief and increased mobility. The main principle behind lumbar and cervical traction is to decompress the spine. When a disc herniates or ruptures, the inner part of the disc protrudes causing pressure on the vertebrae and nerves. By stretching the spine, the displaced material is able to reposition itself to the core of the disc. This allows for more flexibility and movement as well as pain relief (Total Health & Rehab, 2021).

Manual traction is a technique in which Physical Therapist uses their hands to manually pull on the neck or legs creating a traction force. For neck traction, the patient is lying down on their back with their head at one end of the table. The physical therapist will then put their hands near the base of the patient's skull. The therapist then leans back gently (not tugging) creating the traction force to the neck. The therapist will perform spinal decompression which is the relief of pressure on the vertebral segments of the spinal column. This is an effective method to treat conditions that result in chronic neck pain (Wellbridge Physical Therapy, 2021).

METHODS

This study is a pre-experimental study with a one group pre test and post test design to determine the effect of giving traction manual on reduction of pain cases of myofascial cervical pain. The study was conducted in September 2021 for 2 weeks. The research was conducted at the Department of Physiotherapy at Poltekes Surakarta.

The subject of this study is a student of semester V and semester I Transfer Level of the academic year 2021-2022 Bachelor of Applied Physiotherapy Department of Physiotherapy Poltekkes Surakarta who has complaints of cervical myofascial pain. The inclusion criteria are as follows: (1) have complaints of pain or discomfort of neck

movement at least a score of 2 on the NRS scale, (2) willing to be the subject of research. The exclusion criteria in this study are: (1) suffering from neck pain that extends to the arms and hands, (2) there are signs / symptoms of baal on the shoulders, arms and hands.

The instruments used in this study were the Numerical Rating Scale (NRS) to measure pain, the measuring tape to measure the range of motion of the joints (LGS) and the Blank Informed Consent. The NRS scale is a line numbered from 0 (zero) to 10 (ten). The number 0 means no pain and the number 10 indicates the heaviest pain (Jacques, 2020). According to Jackques (2019) this NRS can be categorized into four categories, namely: no pain, mild pain, moderate pain and severe pain, as shown in Figure 1. below.

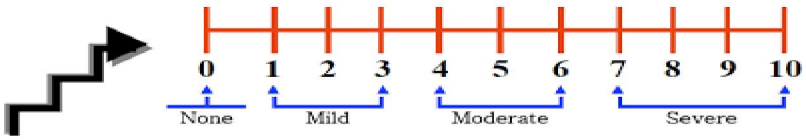

Figure 1. Numerical rating Scale
(Source: Jackques, 2019)

Before measuring the study subject explained what to do and how to perform in this pain measurement process. All 12 study subjects were measured the intensity of their pain with their necks actively moving. The intensity of pain measured is only the highest intensity of all motion pain. Measuring the intensity of pain, the subject sits in a chair with his back and neck upright and relaxed, not tense. Then the subject is asked to bend his neck forward slowly until the maximum and back upright and continued looking back. Subjects were asked to repeat the movement three times, and subjects were asked how much pain was felt when moving earlier by mentioning the number between zero and ten as previously taught. Then the subject is asked to move his neck to the right side to the maximum, back upright and continue to move to the left side until the maximum and so on back upright. The movement to the right and left side is repeated three times. Furthermore, the subjects were also asked whether there was pain, and if there was pain, how much pain.

Subjects totaling 12 people were treated with manual traction once, which was done in between lecture hours. Manual traction implementation to reduce pain is done by way of the patient sleeping on his back and the therapist sits next to and facing the patient's head. One forearm of the therapist is inserted under the patient's neck in a supination position. Then, the other two fingers are placed under the chin or in front of the patient's forehead to prevent the patient's head from being lifted during traction. Furthermore, the therapist's forearm is moved pronation until the anterior part of the bone radius presses on the lower part of the occiput bone so that traction occurs in the upper cervical. In one series traction consists of traction for 10 seconds then rest for 5 seconds and and repeated ten times. The treatment of manual traction is carried out as many as three series.

Data analysis was performed with SPSS 16.0. According to Hastono, (2010) if the research subjects are less than 30 people, it can be assumed that the data is not normally distributed so that the analysis uses non-parametric statistics. Although in this study the number of subjects was only 15 people, the researchers continued to test the normality of the existing data to ensure that the distribution of the data was normal or abnormal. If the data is normally distributed then the analysis uses parametric statistics.

Based on the data normality test using Kolmogorov-Smirnov obtained the value p = 0.063 (p>0.05) and the test using Shapiro-Wilk obtained the value p = 0.099 (p>0.05), meaning all data is normally distributed. Thus the analysis of the data used next is with parametric statistics, namely Paired sample t test. The results of the full data normality test are as seen in the table 1.

Tabel 1. Tes Normalitas data

		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Before	1,00	0,296	7	0,063	0,840	7	0,099
After	2,00	0,385	3	.	0,750	3	0,000

a. before is constant when after = ,00. It has been omitted.
b. Lilliefors Significance Correction
c. before is constant when after = 3,00. It has been omitted.

Source: Primary data

RESULTS AND DISCUSSION

Initial State and Final of Research Subjects

After the subject was given treatment in the form of manual cervical traction as much as three series in one therapy session then again measurement of late stage pain or stage after treatment. The results of motion pain measurements from 12 subjects obtained pain numbers of at least 0 and a maximum of 3 with an average of 1.33. For more details see table 2.

Table 2. Results of Pain Measurement Before and After Treatment

		before	after
N	Valid	12	12
	Missing	0	0
Mean		4,9167	1,3333
Std. Error of Mean		0,25990	0,22473
Std. Deviation		0,90034	0,77850
Variance		0,811	0,606
Range		3,00	3,00
Minimum		3,00	0,00
Maximum		6,00	3,00
Sum		59,00	16,00

By looking at table 2 above it can be said that after manual cervical traction, there is an average pain reduction of 3.58 (4,9167-1,3333).

Analysis and Discussion

The results of the data normality test using the Shapiro-Wilk test as seen in table 1 are known to all normal distributed data. Furthermore, the statistical analysis used to determine the difference between the data before treatment and the data after treatment in this study is paired sample t test. The results of the Paired sample t test analysis are said to be a difference between before and after the treatment if the value of *p* is smaller or equal to 0.05 (p < 0.05).

Paired t test results between cervical motion pain before treatment and motion pain after treatment obtained a value of p = 0.00. This means that there is a very significant difference between the magnitude of the intensity of cervical motion pain after treatment compared to the magnitude of the intensity of cervical motion pain before treatment.

Tabel 3. Uji *Paired sample t test*

			Pair 1 before - after
Paired Differences	Mean		3,58333
	Std. Deviation		0,66856
	Std. Error Mean		0,19300
	95% Confidence Interval of the Difference	Lower	3,15855
		Upper	4,00811
t			18,567
df			11
Sig. (2-tailed)			0,000

Source: Primary Data

By looking at table 3 and paying attention to the results of statistical analysis as described above it can be said that with manual cervical traction can reduce neck pain due to cervical myofascial pain. Paired t test results between the intensity of motion pain before treatment with the intensity of motion pain after treatment obtained a value of p = 0.00. This means that there is a very significant difference between the magnitude of the intensity of motion pain after treatment compared to the magnitude of the intensity of motion pain before treatment.

Mulligan (2010) states that most headaches caused by upper cervical biomecnic disorders, then cervical traction with an extension adetic position is the main therapeutic option. Keep in mind that if handling facet joints with traction then it should be done perpendicular to the therapeutic field (Jovanovićna, Vukašinović, & Šešlija, 2010; Roberts et al., 2018). Cervical traction in principle is to exert a distraction force on the neck in an attempt to stretch the cervical segments and remove the emphasis on nerve roots by the intervertebral discus. This research supports Borman's (2008) assertion that cervical traction is effective for treating neck pain. During traction, muscle tension and skin stretching occur. The rational reason for the use of traction is due to the meknis factor and reflex mechanism. Spinal lengthening due to the widening distance between the spinal and the relaxation of the spinal muscles is thought to be the most important thing that makes this traction very effective (Bendtsen, 2013; Espí-López, Arnal-Gómez, Arbós-Berenguer, López González, & Vicente-Herrero, 2014; Kang & Hyong, 2017) .

There is evidence that traction reduces pressure in the intervetebralis disc and reduces the load of spinal structures due to the smoothing of muscles and ligaments. It has an important role in breaking the cervical pain loop (Saunders et al., 2020). The results of a survey conducted by Madson & Hokman (2017) in the United States of 4000 clinical physiotherapists found that 78.7% of physiotherapists make traction as a means of treating neck pain and 92.3% of these use manual traction.

CONCLUSION

From the study of 12 subjects who suffered from myofascial cervical pain with manual cervical traction as much as 3 series can reduce cervical motion pain. Manual cervical traction can reduce neck pain due to cervical myofascial pain. Paired t test results between the intensity of motion pain before treatment with the intensity of motion pain after treatment obtained a value of p = 0.00. This means that there is a very significant difference between the magnitude of the intensity of motion pain after treatment compared to the magnitude of the intensity of motion pain before treatment.

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REFERENCES

Akhbari, B., Salavati, M., Ebarahimi, I., Ezzati, K., & Haghighat Khah, H. (2015). Association of ultrasonography findings with pain, range of motion, disability, and pressure pain threshold in subjects with upper trapezius myofascial pain syndrome. *Physical Treatments-Specific Physical Therapy Journal*, *4*(4), 221–227.

Bendtsen, T. F. (2013). Proximal us guided sciatic plexus blocks tips and tricks. *Regional Anesthesia and Pain Medicine*, *38*(5), 27–28.

Boyles, R., Toy, P., Mellon, J. J., Hayes, M., & Hammer, B. (2011). Effectiveness of Manual Physical Therapy in the Treatment of Cervical Radiculopathy: a Systematic Review. *The Journal of Manual & Manipulative Therapy*, *19*(3), 135–142. https://doi.org/10.1179/2042618611Y.0000000011

Cohen, S. P. (2015). Epidemiology, Diagnosis, and Treatment of Neck Pain. *Mayo Clinic Proceedings*, *90*(2), 284–299. https://doi.org/10.1016/j.mayocp.2014.09.008

Espí-López, G. V., Arnal-Gómez, A., Arbós-Berenguer, T., López González, Á. A., & Vicente-Herrero, T. (2014). Effectiveness of physical therapy in patients with tension-type headache: Literature review. *Journal of the Japanese Physical Therapy Association*, *17*(1), 31–38. https://doi.org/10.1298/jjpta.Vol17_005

Ezzati, K., Ravarian, B., Saberi, A., Salari, A., Reyhanian, Z., Khakpour, M., & Yousefzadeh Chabok, S. (2021). Prevalence of Cervical Myofascial Pain Syndrome and its Correlation with the Severity of Pain and Disability in Patients with Chronic Non-specific Neck Pain. *The Archives of Bone and Joint Surgery*, *9*(2), 230–234. https://doi.org/10.22038/abjs.2020.48697.2415

Genebra, C. V. D. S., Maciel, N. M., Bento, T. P. F., Simeão, S. F. A. P., & Vitta, A. De. (2017). Prevalence and factors associated with neck pain: a population-based study. *Brazilian Journal of Physical Therapy*, *21*(4), 274–280. https://doi.org/10.1016/j.bjpt.2017.05.005

Giamberardino, M. A., Affaitati, G., Fabrizio, A., & Costantini, R. (2011). Myofascial pain syndromes and their evaluation. *Best Practice & Research. Clinical Rheumatology*, *25*(2), 185–198. https://doi.org/10.1016/j.berh.2011.01.002

Hastono, S. (2010). *Analisis Data Kesehatan*. Jakarta: FKM UI.

Hogg-Johnson, S., van der Velde, G., Carroll, L. J., Holm, L. W., Cassidy, J. D., Guzman, J., … Peloso, P. (2008, April). The Burden and Determinants of Neck Pain in the General Population: Results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders. *European Spine Journal*, Vol. 17, pp. 39–51. https://doi.org/10.1007/s00586-008-0624-y

Jackques, E. (2019). 10 Common Types of Pain Scales. Retrieved July 5, 2022, from Verywellhealth website: https://www.verywellhealth.com/pain-scales-assessment-tools-4020329

Jahre, H., Grotle, M., Smedbråten, K., Dunn, K. M., & Øiestad, B. E. (2020). Risk factors for non-specific neck pain in young adults. A systematic review. *BMC Musculoskeletal Disorders*, *21*(1), 1–12.

Jovanovićna, V., Vukašinović, Z., & Šešlija, I. (2010). Unreduced elbow dislocation treated by ilizarov method - A case report. *Srpski Arhiv Za Celokupno Lekarstvo*. https://doi.org/10.2298/SARH1002095J

Kang, J., & Hyong, I. (2017). Changes in Electromyographic Activity of Lumbar Paraspinal Muscles According to Type of Inverted-Spinal-Traction. *Wireless Personal Communications*, *93*, 35–45. https://doi.org/10.1007/s11277-016-3881-9

Kazeminasab, S., Nejadghaderi, S. A., Amiri, P., Pourfathi, H., Araj-Khodaei, M., Sullman, M. J. M., … Safiri, S. (2022). Neck pain: global epidemiology, trends and risk factors. *BMC Musculoskeletal Disorders*, *23*(1), 26. https://doi.org/10.1186/s12891-021-04957-4

Kim, R., Wiest, C., Clark, K., Cook, C., & Horn, M. (2018). Identifying risk factors for first-episode neck pain: A systematic review. *Musculoskeletal Science & Practice*, *33*, 77–83. https://doi.org/10.1016/j.msksp.2017.11.007

Madson, T., & Hokman, J. (2017). Cervical Traction for Managing Neck Pain: A Survey of Physical Therapist in United State. *Journal of Orthopaedic and Sport Physical Therapy*, *47*(3), 200–208.

McLean, S. M., May, S., Klaber-Moffett, J., Sharp, D. M., & Gardiner, E. (2010). Risk factors for the onset of non-specific neck pain: a systematic review. *Journal of Epidemiology and Community Health*, *64*(7), 565–572. https://doi.org/10.1136/jech.2009.090720

Mulligan, B. (2019). *Manual Therapy NAGS, SNAGS, MWMS etc. Sixth edition, Plane view services Ltd* (6th ed.). Wellington, New Zealand: Orthopedic Physical Therapy Products.

N.C.B.I. (2021). Neck Pain Overview. Retrieved July 5, 2021, from InformedHealth.org [Internet] website: https://www.ncbi.nlm.nih.gov/books/NBK338120/

Nadhifah, N., Besse, A. I., & Ahsaniyah. (2019). Analysis Risk Factors for Neck pain complaints in Production Workers at PT Maruki Internasional Indonesia. *Nusantara Medical Science Journal*, *4*(1), 7–13. https://doi.org/https://doi.org/10.20956/nmsj.v4i1.6590

Negara, J. (2013). *Penambahan Traksi/Translasi pada Latihan Gerak Aktif pada Osteoarthritis Lutut Wanita Lanjut Usia*. Denpasar: Universitas Udayana.

Pitrangelo, A., & Higuera, V. (2015). Multiple sclerosis by the numbers: Facts, statistics, and you. Retrieved July 5, 2022, from Chiropractic and Multiple

Sclerosis website: https://www.avonchiropracticclinic.com/chiropractic-and-multiple-sclerosis

Rachmi, I. M., Werdhani, R. A., & Murdana, I. N. (2018). Association of knee pain with working position and other factors among dairy farmers: A study in West Java, Indonesia. *Journal of Physics: Conference Series*, *1073*(4), 1–8. https://doi.org/10.1088/1742-6596/1073/4/042011

Roberts, P. R., Jani, A. B., Packianathan, S., Albert, A., Bhandari, R., & Vijayakumar, S. (2018). Upcoming Imaging Concepts and Their Impact on Treatment Planning and Treatment Response in Radiation Oncology. *Radiation Oncology*, *13*(46), 1–13. https://doi.org/10.1186/s13014-018-1091-1

Salavati, M., Akhbari, B., Takamjani, I. E., Ezzati, K., & Haghighatkhah, H. (2017). Reliability of the Upper Trapezius Muscle and Fascia Thickness and Strain Ratio Measures by Ultrasonography and Sonoelastography in Participants With Myofascial Pain Syndrome. *Journal of Chiropractic Medicine*, *16*(4), 316–323. https://doi.org/10.1016/j.jcm.2017.06.003

Saunders, D. H., Sanderson, M., Hayes, S., Johnso, L., Kramer, S., Carter, D. D., … Mead, G. E. (2020). Physical fitness training for stroke patients. *Cochrane Database of Systematic Reviews*, *3*(3), 1–411. https://doi.org/10.1002/14651858.CD003316.pub7

Total Health & Rehab. (2021). Manual Traction. Retrieved July 5, 2021, from THR website: https://thrpt.com/physical-therapy-treatments/manual-traction/

Touma, J., May, T., & Isaacson, A. C. (2022). *Cervical Myofascial Pain*. Treasure Island (FL): StatPearls Publishing.

Wellbridge Physical Therapy. (2021). Manual/Mechanical Traction. Retrieved July 5, 2021, from How We Treat website: https://wellbridgephysicaltherapy.com/physical-therapy-treatments/manual-mechanical-traction/

Winihastuti, H. (2016). Hubungan Faktor Risiko Ergonomi dan Keluhan Cumulative Trauma Disorders pada Dokter Gigi di PT. X Tahun 2014. *Jurnal Arsi*, *13*(1), 53–65.