Deanship of Graduate Studies

Al-Quds University

The effect of Bridge technique mobilization with movement versus trapezius Dry Needling in the management of cervical dysfunction

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MPT Thesis

Jerusalem- Palestine

1441\2021

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An Experimental study

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Physiotherapy

Al-Quds University

March/ 2021

Deanship of Graduate Studies

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Thesis Approval

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Jerusalem- Palestine

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Dedication:

This thesis work dedicated to my parents for raising me to believe that anything was possible. Who has loved me unconditionally and whose good examples have taught me to work hard for things that I aspire to achieve.

This work also dedicated to my husband, Hamzah, for making everything possible. Who has been a constant source of support and encouragement during the challenges of my life. I am very grateful that I have you in my life.

Declaration

This thesis was submitted in partial fulfillment of the requirement for the Master's degree in physiotherapy.

I declare that this thesis's content (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Ruqaia Malash

Signed: 

Date: //2021

Acknowledgement

Firstly, foremost, praise and thanks to God, the Almighty, for His showers of blessings throughout my research work to complete the research.

I would like to extend my sincere appreciation to my thesis advisor, Dr Akram Amro (Ph.D.PT) of the Faculty of Health Professions at Al-Quds University. Thank s for giving me the opportunity to do this research and provide invaluable support during this research. I was profoundly by his dynamism, vision, sincerity, and motivation have deeply inspired me. He has taught me the methodology to research and present the research works as thoroughly as possible. It has been was a great pleasure and honor to work and study under his guidance. I am incredibly thankful for what he has offered me. Also, I would like to thank him for his empathy, friendship, and great sense of humor.

I am deeply indebted to my respected teacher Dr Josef Andersen, who proposed the Bridge technique MWM, for continuous support to my research.

I am extremely grateful to my lovely parents for their prayers, caring, and sacrifices for educating and preparing me for my future. I am very thankful to my great husband and my lovely daughters for their love, support, prayers, understanding, and continuing support to complete this research. Also, I express warm thanks to my sisters and brothers for their support and valuable prayers.

Finally, I could not have finished this research without the support of my friends especially, my team in Celina Care for physical therapy in Bethlehem & Hebron, who provided stimulating discussions as well as happy distractions to rest my mind outside of my research

Abstract

Background: Hypomobility of the Cervicothoracic junction has been proposed as a contributing factor for cervical dysfunction. **Objectives**: This study investigates the effect of Bridge technique mobilization with movement compared to the Trapezius Dry Needling technique on physiotherapy outcome in patients with cervical dysfunction. **Methods**: A randomized clinical trial was conducted where participants with cervical dysfunction complaints were randomly assigned to either the Bridge MWM intervention group or the Trapezius Dry needling. Forty participants with a mean age of 32-year-old in the Bridge (experimental) group: and 29 years old in the Dry needling group The primary outcome measures used were visual analogue scale, Northwick Park Questionnaire, Neck Disability Index, Quality of life scale, and Goniometer for cervical extension ROM. **Results**: There was a statistically significant difference (improvement) on an active cervical extension after application Bridge technique represented in the increase of the mean of extension ROM (from 23 ± to 52 ±), while in Dry needling group(from 20 ± to 37±). Statistically significant reduction of pain mean was achieved after application of the Bridge technique (from 7.9 ± to 0.3 ±), while in Dry needling group(from 7.65 ± to 4.48.±) as well as decreasing in the degree of disability in (NPQ & NDI) compared with the baseline and control group measurements (P<.005). However, an improvement was found in both groups in improving the Quality of life score. **Conclusion**: The study identified that both techniques are effective in improving CROM, pain, and functional abilities outcomes, but the Bridge technique was more effective than Dry Needling in the management of cervical dysfunction

Keywords: Bridge technique, mobilization with movements, Dry Needling, trapezius, cervical dysfunction, Cervicothoracic junction, cervical ROM, functional ability.

ملخص باللغة العربية

تأثير تقنية بريدج للعلاج اليدوي مع الحركة بالمقارنة بالإبر الجافه للعضلة شبه المنحرفة في علاج اضطرابات الرقبة

المقدمة:

نقص الحركة في المفصل العنقي الصدري يعتبر عاملا مساهما في ضعف الرقبة ومشاكلها.

الهدف :

فحص مدى تأثير تقنية الجسر مع الحركة مقابل الإبرة الجافة للعضلة شبه المنحرفة على المرضى الذين يعانون من مشاكل وضعف في وظيفة الرقبة .

الأساليب:

تم إجراء تجربة سريرية عشوائية حيث تم تعيين المشاركين الذين يعانون من خلل والم أو خلل وظيفي في منطقة الرقبة، بشكل عشوائي إما إلى مجموعة التدخل بتقنيه الجسر مع الحركة أو الى الإبرة الجافه للعضلة شبه المنحرفة كمجموعة التحكم. أربعون مشاركًا بمتوسط عمر 32 عام لمجموعة تقنية الجسر مع الحركة : و 29 عام لمجموعة الابر الجافه للعضلة شبه المنحرفة تم تجنيدهم للدراسة. تم قياس مقاييس النتائج الأولية من خلال المقياس التناظري البصري (VAS) لشدة الألم، نورثويك بارك (NPQ) ، مؤشر إعاقة الرقبة (NDI) ، مقياس جودة الحياة (QOL) ، ومقياس الزوايا لتمديد الرقبة .

النتائج:

كان هناك فرق ذو دلالة إحصائية على زيادة متوسط رجوع الرقبة للخلف (من 23 ± إلى 52 ±) ، بينما في مجموعة الإبرة الجافة (من 20 ± إلى 37 ±). تم تقليل الألم بمستوى ذو دلالة إحصائية أيضًا بعد تطبيق تقنية الجسر مع الحركة، حيث نزل متوسط الألم (من 7.9 ± إلى 0.3 ±) ، بينما في مجموعة الإبرة الجافة (من 7.65 ± إلى 4.48 ±). وكذلك تناقص ذو دلالة احصائية في درجة الإعاقة في (NPQ & NDI) مقارنة بخط الأساس وقياسات المجموعة الضابطة. حيث تم العثور على اثر ذو دلالة احصائية في كلا المجموعتين في تحسين نوعية مقياس الحياة بغض النظر عن نوعية التدخل.

الاستنتاج:

اظهرت الدراسة أن كلتا الطريقتين فعالتان في تحسين مدى الحركة, شدة الألم ، ومقياس نوعية الحياة, لكن تقنية الجسر مع الحركة كان أكثر فعالية من الوخز بالإبر الجافة للعضلة شبه المنحرفة في تحسين حالة المرضى الذين يعانون من ألم واختلال في وظيفة الرقبة.

الكلمات المفتاحية: تقنية الجسر ،تحريك فقرات مع بالحركة ، الوخز بالإبر الجافة ،العضلة شبه المنحرفة ، خلل في عنق الرقبة ، المفرق الرقبى الصدري

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List of Abbreviations

CROM: Cervical Range Of Motion

CT: Cervicothoracic

DDN: Deep Dry Needling

D.N.: Dry Needling

MWM: Mobilization with Movement

NDI: Neck Disability Index

NPQ: Northwick Park Neck Pain

PPT: Pressure Pain Threshold

QoL: Quality Of life Questionnaire

ROM: Range Of Motion

TrPs: Trigger points

VAS: Visual Analogue Scale

MTSM: Maitland Thoracic Spine Manipulation

MCSM: Maitland Cervical Spine Mobilization

MICT: Mechanical Intermittent Cervical Traction

CVA: Craniovertebral angle

HTA: High Thoracic Angle

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Chapter One Content

Introduction

1.1Background

1.2Problem Statement

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Chapter One

Introduction

1.1 Background

Neck pain and movement disorders of the cervical spine may sign a serious medical condition requiring immediate attention or a musculoskeletal dysfunction that requires simple interventions such as ergonomic education, manual therapy intervention, or exercise[1][2]. Neck pain characterized by pain, stiffness, discomfort, or soreness experienced in a region between the occipital bone and T2[3].

Globally, neck pain ranks fourth among the leading causes for enduring years of disability[4]. The onset of neck pain increases in middle age; the disease's annual prevalence rate reaches 30% and appears most often in females[5]. Most acute neck pain episodes resolve with or without treatment, but nearly 50% of the patients report recurrences and chronic pain [5]. About 70% of the population experience neck pain at some point in their life [6]. 30% of adults suffer from ailments—annually, and 5–10% lose efficiency [6]. Considering that neck pain is generally on the increase, the physiotherapy profession needs to update possible treatment options and investigate new techniques that may help restore normal cervical spine function and alleviate symptoms associated with neck movement dysfunctions.

Biomechanically, there are cervical, thoracic, and lumbar spines are interlinked. The thoracic spine region serves as a support base for the cervical spine and controls cervical kinematics via the cervical junction [7]. Concomitant thoracic spine motion & balance muscles are necessary to produce the complete range of movements at the cervical spine without pain, often reduced with changes in the thoracic spine’s normal alignment [7].

Cervicothoracic (C.T.) junction is a key issue in the successful treatment of neck pain. It is commonly present with relatively limited movement at the junction between C6 - T2. This limitation was also accompanied by excessive movement at the mid-cervical spine C3-C6 region[1]; similarly, there was limited motion at the upper cervical spine

C0-C3[2]. Increasing ROM at the Cervicothoracic junction tends to normalize posture, and relative movements mentioned[8].

Movement restriction phenomena, wherein restricted joints, excessive movement in one segment lead to (stiffness) in another to stabilize a compensatory pattern. So restricted upper thoracic and Cervicothoracic junction(CTJ) may be the basis for so many cervical dysfunctions, as it is related to changing the biomechanics of cervical movement [8][9].

C.T. junction was considered a safe area for mobilizing in neck pain [10]. Spinal mobilization of the specific region of dysfunction or remote segment is typically used to relieve pain in the neck [11][12].

The BRIDGE technique is a form of Mobilization with Movement (MWM) described by Brian Mulligan from New Zealand and published in the new edition book in 2019. BRIDGE is performed simultaneously by the therapist and the patient. It involves an extension movement by the patient in a supine position while the therapist mobilizes the Cervicothoracic junction[13].

The soft tissue release techniques are a manual therapy for the recovery of soft tissue function that involves removing scar tissue, which can cause pain, stiffness, muscle weakness, and abnormal sensations, including mechanical dysfunction in the muscles, Myofascial, and soft tissue[14].

Dry Needling is a method to treat soft tissue dysfunction/restrictions. This technique can help create stretching of the soft tissue at both the surface and deeper layers. There is strong evidence for trapezius dry Needling to have a positive effect on pain intensity and ROM [15] [16][17].

The trapezius is the most superficial muscle of the cervical spine, thoracic regions, and much of the scapula is the trapezius muscle [18]. The trapezius may be similar to the gluteus maximus, the “big house,” as both the cervical and thoracic regions’ largest muscle. It “covers” many muscles of the cervical and thoracic spine[18].

Many studies showed the effect of dry Needling on this muscle to decrease pain and increased ROM [15][16][17]. Moreover, there is a lack of studies about the effect of

mobilizations on the Cervicothoracic junction in cervical dysfunction and neck pain[12].

1.2 Problem Statement:

As a newly published technique, there is a Gap of knowledge about the effect of bridge technique as a new maneuver of mobilization on cervical function. Also, there is a lack of comparison of the Bridge technique's effectiveness as a joint maneuver compared to soft tissue techniques like dry Needling in particular. This study aims to investigate the difference in the effect of both techniques.

1.3 Study Justification

Considering that neck pain is generally increasing, the physiotherapy profession needs to be updated on potential new possible treatment options and investigate new techniques that may help restore the normal cervical spine movement and alleviate symptoms associated with neck movement dysfunctions .

This research may contribute to a better outcome related to the therapists efforts in contributing to shorter physiotherapy periods and may contribute towards further evidence-based practice in Physiotherapy management of Cervical dysfunction.

This study's results may be beneficial also for patients and the community. The results may shorten the number of sessions needed for the rehabilitation program of cervical dysfunction and introduce more effective and time-efficient cervical dysfunction patient management outcomes.

1.4 Objectives

1. To investigate the effectiveness of Bridge technique on cervical dysfunction
2. To investigate the effectiveness of trapezius dry needling on cervical dysfunction
3. To compare the effectiveness of Bridge mobilization versus trapezius dry Needling in terms of cervical physiotherapy management outcome

1.1 Hypotheses

1. Bridge technique MWM is more effective than Dry Needling in the management of cervical dysfunction.
2. Both Dry Needling and Bridge technique mobilization are effective in the management of cervical dysfunction.

Chapter Two Content

Literature Review

2.1 Theoretical Studies

- 2.1.1 Cervical pain and thoracic spine alignment
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Chapter Two

Literature Review

2.1 Theoretical Studies

2.1.1 Cervical pain and thoracic spine alignment

Normal spine alignment and good posture are essential for optimal biomechanical function, including spinal joint health and longevity[19]. Various scientific literature has confirmed the value of proper positioning of the spine and posture for routine in everyday tasks, athletics and physical fitness, lifting, and accident prevention [19][20].

Many studies demonstrated how the spine's lack of proper alignment and posture correlates with intensified neck pain, back pain, headache, dizziness, ROM limitations, etc. [19][21]. If the spine correctly aligned, the body retains a straight line from the head down to the neck and back and the elbows, knees, and legs. Proper alignment goes further than ensuring a healthy position in place[19][22]. Limitation in ROM and misalignment may affect the Quality of life[19] [22][23].

The thoracic spine is the region segment where the ribs connect and make up half of our whole spine—often neglected when treating neck pain, shoulder pain, and upper back pain[24]. The thoracic spine is also a guide to correct positioning and orientation of the spine [24]. Restricted movement of the cervical spine is also associated with pain in the neck [25]. Previous biomechanics studies have demonstrated that the upper thoracic spine contributes significantly to total cervical movements[24][26].

2.1.2 Thoracic mobility and cervical pain

The Cervicothoracic (C.T.) junction is the transitional region between the mobile cervical and less mobile kyphotic thoracic spines and potential region for stiffness [7][20]. Reduction of Cervicothoracic junction mobility leads to cause pain in the spine, headaches, and upper limbs [27]. The changed mobility pattern referred to as the “Inverse C7-T1 relationship” is related[27].

For cervical dysfunction, this indicates the need to normalize C.T. junction mobility in people with cervical dysfunction [28]. Improving the C.T. junction's mobility decreases the need for movement in the middle and lower cervical segments, reducing the cervical spine's tension. Also, the C.T. junction is considered a safe segment for performing mobilization for cervical pain [10][20].

For the treatment of cervical dysfunction, spinal mobilization or manipulation of the particular dysfunction segment or the remote segment is widely used[11] despite the suggested role of C.T. junction hypomobility in causing pain in the neck[27].

Several recent studies have explored the interaction between high-velocity manipulation of the thoracic spine and cervical dysfunction[29][30]. These studies have used outcome measures such as the Neck Disability Index (NDI), the Visual Analog Scale (VAS), and the Numeric Pain Rating Scale (NPRS). These studies' general findings are that high-velocity manipulation applied to the upper thoracic U.T. spine reduces subjective complaints of neck pain and disability compared to mobilization [29][30][31].

Very few studies have assessed the effectiveness of C.T. junction Mobilization with pain in the neck[12][32].

A Preliminary study of Joshi, Balthillaya, and Neelapala (2020), in India, was the first trial investigating C.T. junction mobilization effects, specifically in participants with C.T. junction dysfunction with neck pain and compared with thoracic manipulation (active control intervention). The study identified that a single C.T. junction mobilization session is not superior to thoracic manipulation in improving neck pain and neck pain participants with C.T. junction dysfunction. Suggests that region-specific mobilization may not be superior to treating remote thoracic spine segments in patients with mechanical neck pain[12].

Creighton et al. (2014) compared two mobilizations (gliding and distraction) techniques applied to the C7-T1 segment in a quasi-experimental study and reported an improved rotation range of Motion (ROM) and decreased severity of pain after a single one Session of the treatment of both methods[10].

Three sessions of Mulligan's Sustained Natural Apophyseal Glides (SNAGs) were administered directly to the Cervicothoracic area (C5-T4 levels) by another pre-post

single group sample on ten young adult patients who reported symptoms for mechanical neck pain. Patients indicated a reduction in pain on the Numeric Rating Scale NRS, increases in the Patient-Specific Functional Scale (PSFS) and Neck Disability Index (NDI) functions, and increases in cervical range of motion (CROM) [33].

A recent study by Kim & Kim (2020) compared the immediate effect of upper-cervical and Cervicothoracic junction level manual therapy on head posture. Cervical range of motion and muscle activity (electromyography) of 22 subjects forwarding head Cervicothoracic. The cervical junction group significantly improved extension and rotation compared to the upper cervical group and improved cervical alignment [23].

Few randomized controlled trials of high-quality demonstrated C.T. junction mobilization efficacy have been investigated and contrasted with successful active intervention in neck pain[29][10].

Based on the principles of regional interdependence and neurophysiological effects of manual therapy, thoracic spine manual therapy has been widely used to treat cervical dysfunction[34].

2.1.3 Trapezius Dry Needling

Dry Needling is a method to treat soft tissue dysfunction/ restrictions and is a physical therapy technique indicated for the treatment of MTrPs[15][16]. Physiotherapists use trigger point dry needling (TrPs-DN) as an invasive treatment where a rigid filament needle is implanted into a Myofascial trigger point (MTrP) on a taut band or spot of exquisite tenderness to palpation that refers to pain at a distance and can cause the distant motor and autonomic effects to reduce pain symptoms[35].

Cervical dysfunction is associated with musculoskeletal tissue alterations. Active trigger points in the trapezius muscle are common in patients with cervical pain[35]. Moreover, many studies stated that TrPs-DN Improved the cervical range of motion and minimized discomfort Immediately following treatment and at a follow-up stage of 4 weeks in the Patients with symptoms of upper-quarter Myofascial pain, particularly neck pain[17][36][37][38]. Trigger points formed in the trapezius muscle

local and referred pain and considered the cervical pain's primary source[17][35] [37][38].

2.2 Similar Studies

Searching in the literature for the effect of the Bridge technique described in the literature using the following search engines: PEDro, MIDLINE, EBSCO Host, Google Scholar, PubMed, there are no similar studies, as the researcher mentioned in the problem statement of the study. Bridge technique itself is a new technique in Mulligan.

In this study, the outcome measures used are; Visual Analog Scale (VAS) for pain intensity, Goniometer for cervical extension ROM, Quality of life Questionnaire (QoL) for functions, Northwick Park Questionnaire (NPQ) & Neck disability index (NDI) for a neck disability.

Different studies aimed to achieve similar outcomes in the same area in the neck and C.T. junctions. Creighton (2014) conducted a preliminary study in Australia, an RCT comparing non-thrust and thrust mobilization techniques applied to the C7 segment in 30 patients (average age 58 years) who suffer from restricted and painful cervical rotation. C7 mobilization techniques with and without thrust were applied. The examination was performed Pre and post the intervention using ROM for cervical rotation only and VAS for Pain intensity; they found that both C7 mobilization techniques improved active cervical rotation and reduced perceived pain in both groups of mobilization [10]. In a Similar RCT by Waqas (2016), they investigated the effectiveness of Maitland Thoracic Spine Manipulation (MTSM) Versus Maitland Cervical Spine Mobilization (MCSM) in Chronic Unilateral C6 – C7 Cervical Radiculopathy on 100 patients from Pakistan, with a mean age of 47 years old, using NPRS for pain intensity and NDI for functional ability. The study showed that MTSM and MCSM with mechanical, intermittent cervical traction MICT and strengthening exercises were effective pain reduction techniques and functional abilities restoration. However, the first group subjects with MTSM presented better progression in reducing neck pain and refining functional status during comparison[39]. A review by Joshi (2019) in India investigated thoracic posture and mobility in the mechanical neck Pain population, were nine articles included, they used Numeric Pain Rating

Scale (NPRS), Visual Analogue Scale for the severity of neck pain, Neck Disability Index (NDI), Northwick Park Questionnaire (NPQ), and Craniovertebral angle (CVA) for cervical posture and upper/high thoracic angle (HTA) values for thoracic spine alignment, In mechanical neck pain patients. The study recommended including thoracic spine examination and care[7].

In a different study, Faria (2018) investigated the effects of static stretching in comparison with the Kaltenborn mobilization technique in nonspecific pain on Forty-four patients from Pakistan (with an average age of 37 years old suffering from nonspecific neck pain, researchers investigated Pain intensity by using a numeric rating pain scale, active ROM by goniometer and neck disability index (NDI) at baseline and post-study. Both groups showed significant improvement in pain intensity, and both groups showed significant improvement in the NDI score and superior improvement in the Kaltenborn group in Active flexion and extension of the neck [40].

A recent pilot study by Joshi (2020) investigated the immediate effects of Cervicothoracic junction mobilization compared to thoracic manipulation on the range of motion and pain in 42 mechanical neck pain and Cervicothoracic junction dysfunction patients; age average was 35 years old, they used cervical ROM & self-reported pain intensity pre and post-intervention. They found significant improvements in cervical ROM and pain in both groups[12]. Furthermore, in the RCT conducted by Kraus(2008), that investigates the immediate effects of upper thoracic Spinal Manipulation on Cervical Pain and ROM on 32 neck pain patients from America, with an age average of 34 years, findings indicated an increase in QoL with treatment at those time points. They favored both manipulation or mobilization [29]. Similarly, Coulter et al. (2019), in a systematic review and meta-analysis that included 47 RCTs in determining the effectiveness, efficacy, and safety of various mobilization and manipulation therapies to treat chronic nonspecific neck pain, used QoL, VAS, and cervical ROM. They concluded that there was low to moderate-quality evidence that different manipulation and/or mobilization types can improve function and reduce pain for chronic nonspecific neck pain compared to other interventions [41]. Also, Kim, Kim, & Lee (2020) examined the effects of thoracic spine self-mobilization exercise using a tool (tennis balls) on pain, Range of Motion, and Dysfunction in 49 chronic neck Pain patients. Using NPQ, ROM, VAS, they

reported that thoracic self-mobilization exercise using a tool effectively improves neck pain, disability level, ROM, and upper body posture for patients with chronic neck pain [32].

About the same outcomes, few different studies used NPQ as an outcome measure for cervical dysfunction. Gauns and Gurudut (2018), RCT reported an improvement in functional activities according to NPQ; study compares the effect of Myofascial release (MFR) of upper limb and neck alone with conventional physiotherapy against only traditional treatment in subjects with mechanical neck pain referred to the upper limb in terms of cervical endurance, pain, range of motion, and function, conducted on 40 subjects with average age (30) years old. Outcome measures used were biofeedback to measure cervical endurance, a goniometer for cervical ROM, and the Northwick Park NP questionnaire; they reported that Myofascial release of neck and upper limb is an effective technique for mechanical neck pain subjects and has a higher rate of improvement[42].

Regarding dry needling effectiveness, several similar studies investigated the effect of trapezius dry needling on pain, functional ability, and cervical ROM. Cagnie et al. (2015), in A Systematic Review that included 50 trials and evaluated The effectiveness of Dry Needling and Ischemic Compression in the Management of Trigger Points of the Upper Trapezius in Patients with Neck pain on pain and cervical ROM (side bending, Extension, and rotation), and used Functionality (Neck Disability Index (NDI, quality-of-life by QoL as an outcome measures. They found that there is moderate evidence for ischemic compression on pain and ROM. On the contrary, there was strong evidence for Dry Needling to affect pain intensity and ROM positively; however, there was weak evidence of an impact on functionality and Quality of life [17].

A recent study by Gallego-Sendarrubias et al. (2020), involving 101 participants with chronic mechanical neck patients from Spain, used to show the effects of Dry Needling on trapezius & Levator muscles and manual therapy on the cervical spine to evaluate pain, ROM, and neck functions by used, NPRS numeric pain rating scale, pressure pain threshold (PPT), cervical range of motion (ROM) and neck disability index, (NDI) as an outcome measures. This study found that the combination between dry Needling and manual therapy is better than sham dry Needling and manual

therapy at reducing pain intensity, PPT, neck disability, and cervical ROM in patients with chronic mechanical neck pain[35].

Another Randomized trial by Cerezo-Téllez, Lacomba, et al. (2016), involving Forty-four office workers with active MTrPs in the trapezius muscle and neck pain from Spain, used the deep dry Needling DDN with and without a passive stretch of the trapezius muscle to evaluated pain intensity, measured using a visual analogue scale (VAS). Cervical range of motion (CROM), Pressure pain threshold (PPT), and strength muscle. Data were obtained at Baseline, after procedures, and 15 days after the last procedure. The results supported that the use of DDN in the management of trapezius muscle Myofascial pain syndrome decreases pain intensity[15]. Pecos (2015) also investigates the effectiveness of the lower trapezius muscle dry needling (MTrP) or lower trapezius muscle dry needling but not at (MTrP) on 72 patients with mechanical unilateral neck pain from Spain. They used the visual analogue scale (VAS), Neck Pain Questionnaire (NPQ), and pressure pain threshold (PPT) before the intervention and one week and 1-month post-intervention. The study found that treatment with Dry Needling of the lower trapezius muscle MTrP decreases pain and PPT and improves the degree of disability compared with control group measurements[16].

Furthermore, Ziaeifar (2014), in RCT, conducted to investigate the effect of dry Needling in treating trigger points in the upper trapezius muscle on pain, pressure pain threshold and disability for 33 patients. U.T. muscle TrPs into two trigger point compression techniques (control group) and D.N. (experimental group). They found that Pain intensity was decreased, and pressure pain thresholds increased [43].

2.3 Summary

The bulk of studies showed that trapezius muscle dry Needling effectively decreased pain and increased functional ability in patients with cervical dysfunction. Despite this, there is moderate evidence that dry Needling increases the cervical range of motion. These results support D.N.'s use in the management of trapezius muscle Myofascial pain syndrome in cervical dysfunction. However, there were no studies on C.T. junction mobilization with movement (bridge technique) since the techniques are new.

Chapter Three Content

Methods and procedures

Chapter Three

Methods and procedures

3.1 Study design:

A single-blinded randomized controlled trial (RCT) was conducted in "Celina Care Centers (Bethlehem and Hebron "). This design is the golden standard methodology to investigate the effectiveness of two different interventions[12][31][34].

3.2 Study sample

3.2.1 Sampling method

A convenience sampling method was used. Where every available and legible patient was invited to participate in the study, all patients were recruited from the south region of the west bank / Palestine (Hebron and Bethlehem).

3.2.2 Sample size

Forty patients were recruited and equally divided into either group, where they have been randomly assigned to each group using systematic randomization. This number was adopted as it serves the sample size requirements of the intended statistical.

3.2.3 Inclusion criteria

- Adult patients aged (25 – 65) years, males & females.
- Cervical dysfunction
- Orthopedic dysfunction without neurological defects
- Limitation in ROM (extension & rotation)
- VAS scale scores for neck pain must be > 4/10
- Neck pain aggravated by neck posture or movement
- Willing to give an informed consent

3.2.4 Exclusion criteria

- Any known medical condition, cardio, cancer
- Manipulative treatment within the past three months
- Previous spinal surgery in the past five years
- Current use of medication
- Disc prolapse acute stage

- previous epidural injection since the onset of present symptoms
- diagnosis of any generalized neurological disorder
- medical red flags suggestive of severe pathology
- pregnancy

3.3 Tools of Data Collection

3.3.1 Study variables:

3.3.1 Independent variables:

1. Bridge technique MWM
2. Trapezius Dry needling

3.3.2 Dependent variables:

1. Neck Extension (ROM)
2. Numeric Visual Analogue Scale VAS
3. Quality of life Questionnaire (QoL)
4. Northwick Park Questionnaire (NPQ)
5. Neck Disability Index (NDI)

3.3.2 Tools of data collection

- The data collection sheet was composed of demographic and personal data (name, age, gender, address, level of education, occupation, and medical history) for descriptive statistics.
- A goniometer for measuring ROM, especially extension movement, is a physical therapy device used to estimate the range of motion for the body's joint. All participants were positioned in Sitting, with thoracic & lumbar spine well supported by the chair's back. The shoulder girdle was stabilized to prevent flexion of the thoracic & lumbar spine; center: over the external auditory meatus, proximal arm: Perpendicular or parallel to the ground, and distal arm: With a base of nares or parallel to a longitudinal axis of the tongue depressor. The goniometer is valid and reliable for cervical extension measurements[44] [45].
- Numeric Visual analogue scale (VAS): is the most commonly used method for assessing pain intensity. The leftmost value on the 10-cm horizontal line

used for VAS indicates a painless condition represented by 0. The rightmost value is 10, which represents extreme pain. The subjects rated their feelings of pain on the line by themselves, thereby quantifying the pain. The validity and reliability are very high[46][47][48].

- Quality of life Questionnaire (QoL)
  Quality of Life Questionnaire (QoL) is an instrument for measuring the Quality of an individual's life across a broad range of specific areas. Quality of life (QoL) could be viewed as a subjective, multidimensional concept that emphasizes an individual's current state's self-perception. However, the general Quality of life includes individuals' evaluation of all aspects of life, including the safety of the environment in which they live, whether they feel they have access to health care and social services, and their current spiritual status[49]. The QoL was originally a 15-item tool that assessed five conceptual areas of QoL: Mental and physical well-being; Relationships with other people; Social, community, and activities; Personal development and fulfillment; and Recreation and fun. The QoL was scored by adding up each item's score to yield the instrument's total score. Scores can range from 16 to 112. There is no automated operation or scoring software for the QoL [50].
- The Northwick Park Neck Pain Questionnaire (NPQ)

  The Northwick Park Neck Pain Questionnaire (NPQ) measures neck pain and consequent patient disabilities. It is easy to complete, to score, and it gives an objective measure to assess the monitor symptoms and outcome in patients with acute or chronic neck pain over time. It was developed at Northwick Park Hospital in Middlesex, England, in (1992). The questionnaire is divided into nine sections and five parts for each section. Namely: 1) neck pain intensity, neck pain, sleeping, pins and needles or numbness in the arms at night, duration of symptoms, carrying, reading and watching television, working and housework, social activities, and driving. In the end, a tenth question aims to compare the current state to the state when the questionnaire was last completed. The percentage ranges from 0% to 100%. The higher the percentage, the greater the disability and the pain. The NPQ had good short-term repeatability, high internal consistency, and a sensitivity to alter. It gives

a Minimal, Clinically Important Difference (MCID) that allows patients with varying levels of severity to demonstrate improvement[51][52][53].

- Neck Disability Index (NDI)

  The Neck Disability Index (NDI) was grown in (1989) by Howard Vernon. The Index developed to modify the Oswestry Low Back Pain Disability Index with the original author's permission J. Fairbank, (1980). Vernon and Mior at (1991) the reliability and validity analysis finding have been published in the Manipulative and Physiologic Therapeutics Journal. Since then, approximately ten publications have appeared in the indexed literature on the NDI.
  These findings have demonstrated the original reports of high reliability and validity [51][54]. NDI consists of one factor - "physical disability" - although NDI scores related well with SF-36 mental component scores. Each of the ten items gets from (0 – 5). The maximum score is 50. The obtained score can be multiplied by 2 to produce a percentage score. Occasionally, a respondent will not complete one question or another. The average of all other items added to the completed items. The original report provided scoring intervals for interpretation, as follows: (0-8%) no disability, (10 – 28%) mild disability, (30-48%) moderate disability, (50- 64%) severe disability, (70-100%) complete disability.

3.3.3 Study procedure

The proposal had been approved by the physiotherapy higher education committee. Ethical approval was granted from the Al-Quds university central ethics committee; participants who met the inclusion criteria were invited to participate. After a thorough explanation of the study procedures, those who agreed were requested to sign a consent form was presented. Each participant received the allocated treatment procedure based on his code number, which was previously nominated for either a Bridge technique MWM group or a Dry Needling group.

The assessment was performed with a filling of data collection sheet and application of outcome measures before starting the treatment (baseline), then participants started to receive the treatment for four weeks (2 sessions each week) with 48 hours between every session. After two weeks (4 sessions) mid-test was conducted; after the 3rd and

fourth weeks (8 sessions), a post-test at the end of sessions was performed for both group were performed for all groups. The researcher performed all assessments and interventions with an international certificate practitioner in Mulligan and dry Needling.

3.4 Intervention

3.4.1 Group one (Bridge technique MWM group n=20):

Bridge technique; a manual therapy: mobilization with movement) technique designed to enhance movement at the Cervicothoracic junction and assist in regaining the cervical spine motor control, especially for cervical extension ROM and neck pain[13]. Performed in two phases:

Phases one:

Patient in supine, head resting on a pillow, cervical spine relaxed in a neutral position, physiotherapist sitting or standing at the head of the table. Hands support both sides of the head through the thenar eminence on each side, fingers in contact with the C7, T1or T2 articular pillar bilaterally (Figure 3.1) and (Figure 3.2).

Application guidelines :

1. The therapist contacts the articular pillars of the cervicothoracic junction on each side
2. The eminence stabilizes the head
3. Mid-to end range mobilizations of the cervicothoracic junction occur when the patient actively lifts their chest by pushing down through their elbows while the therapist stabilizes the neck above the level of hand contact.
4. Perform six repetitions in one set, with 2-4 sets per treatment session.

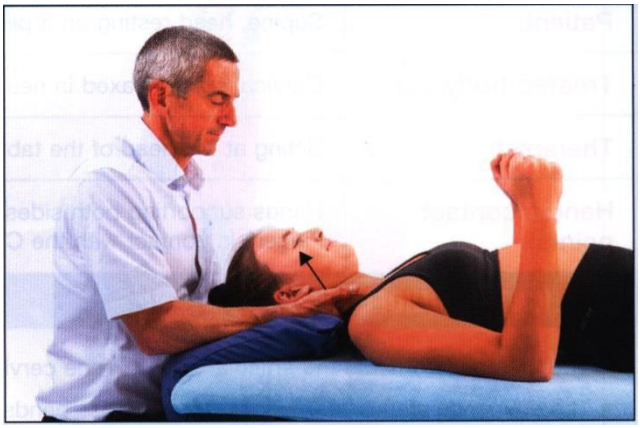

Figure 3.1: Bridge MWM start position

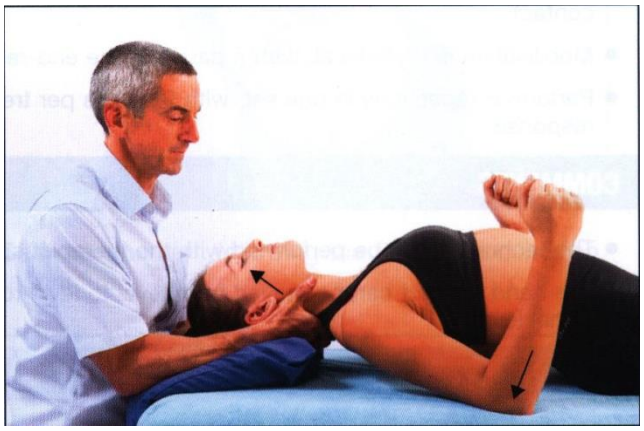

Figure 3.2 Bridge technique end position

Phases two: Self-management following the Bridge mobilization technique

1. While sitting with their back supported, the patient pulls the belt vertically, supporting the head's weight while moving the neck into extension (Figure 3.1).
2. Repeat the exercise 5 times on each occasion, twice per day

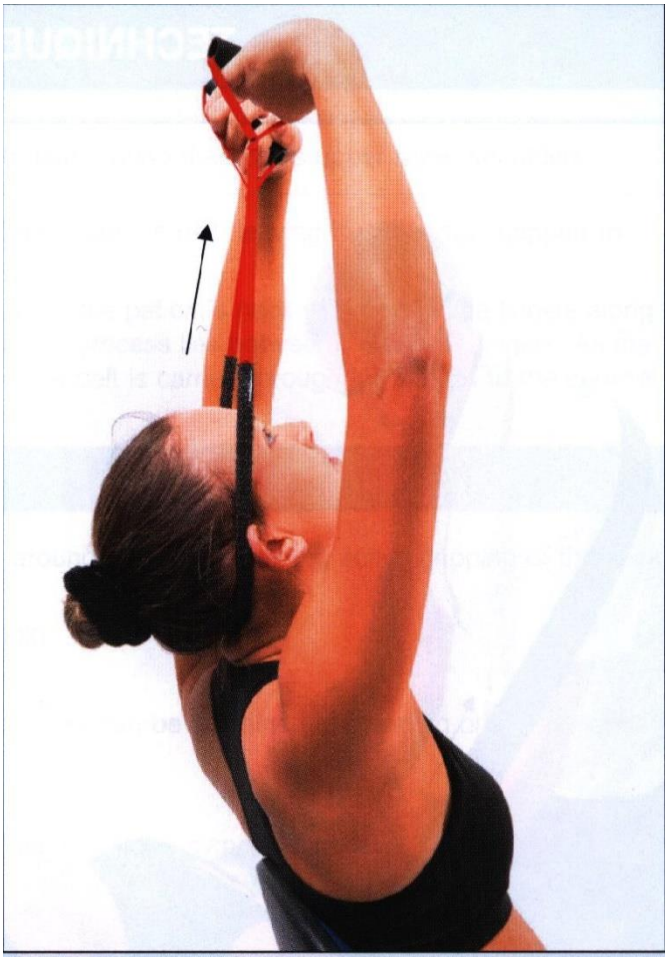

Figure 3.3: Self-management following the Bridge mobilization technique

3.3.4.2 Group two (Dry Needling group n =20):

- Following baseline measurements, deep D.N. was provided by a licensed and trained physiotherapist.
- Participants in this group received two sessions per week of D.N. treatment for the trapezius muscle.
- Participants place in a prone position on the examination table.
- The sterile acupuncture needles of 0.30 mm diameter and 50 mm length were used.
- The needle was inserted through the skin over the palpated trigger point slowly advanced until it reached the trigger point, and a twitch response was elicited.

- Reproduction of identifiable pain or visualization of a local twitch response indicates appropriate needle placement.
- Each trigger point was repeatedly needled for 1–2 min until the pain resolved.
- No concomitant medications or therapies are allowed.

3.3.4.3: For both groups: home program exercises:

Three Stretching exercises for trapezius muscle as a home program. 3session a day with one set per session, 15 repetitions for each set (Figure 3.3).

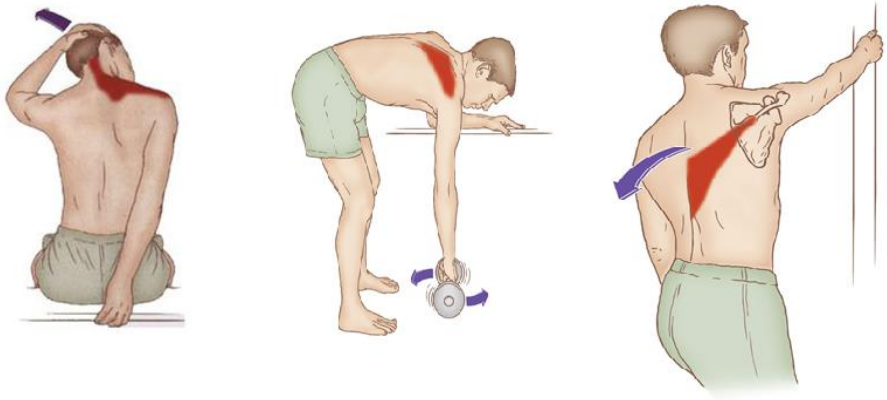

Figure 3.4: Home program exercises

3.5 Statistical analysis:

SPSS Version 20 was used for data analysis. Descriptive statistics (frequencies, percentages, Means, Standard Deviations) were used to describe the study sample's demographic variables. The following tests and methods used to analyze the results and to test the study hypotheses assuming that the P-Value ≤ 0.05 is significant:

1. Kolmogorov-Smirnov to test the normality of study variables.
2. One Way repeated measures analysis of variance (ANOVA) to test within-subjects effects for study variables at baseline, mid, and post-treatment. And Between-Subjects Effects according to Groups (Bridge technique MWM, Dry Needling).
3. Independent Samples T-test examines the differences in the study variables' levels between the Experimental and control groups in each treatment stage.

4. Pearson Correlation test to examine the relationships between the age of participants and all study variables.

3.6 Ethical Consideration:

Ethical approval was granted from the research ethics committee of Al-Quds University, Palestine.

Each participant obtained Informed written consent before data collection. Personal data and privacy were assured for each subject. Each participant had been given an information sheet explaining the study aspects and risks of fatigue, with a clearly stated declaration of his/her rights to withdraw from the study at any stage with harm in his or her interests, the safety of data, anonymity, and confidentiality were guaranteed by the researcher.

Chapter Four Content

Results presentation, Analysis & Discussion

Chapter Four
Results presentation, Analysis & Discussion

4.1 Results Presentation and Analysis

At Baseline, 40 patients were recruited and tested on the Baseline, the same number of participants managed to continue the intervention and tested at the mid-test (two weeks after intervention), and the same number retested at the post-test with no loss of any patients of participants during the study.

4.1.1 Descriptive of Demographics:

The study sample was divided into two groups, Bridge technique and Dry Needling, each with 20 participants.

4.1.1.1 Age of participants

The average ages in the Bridge technique group were **32** years, and the average of ages in the Dry Needling group was **29** years (Figure 4.5). With no statistically significant difference in age between the two groups ($p > 0.05$).

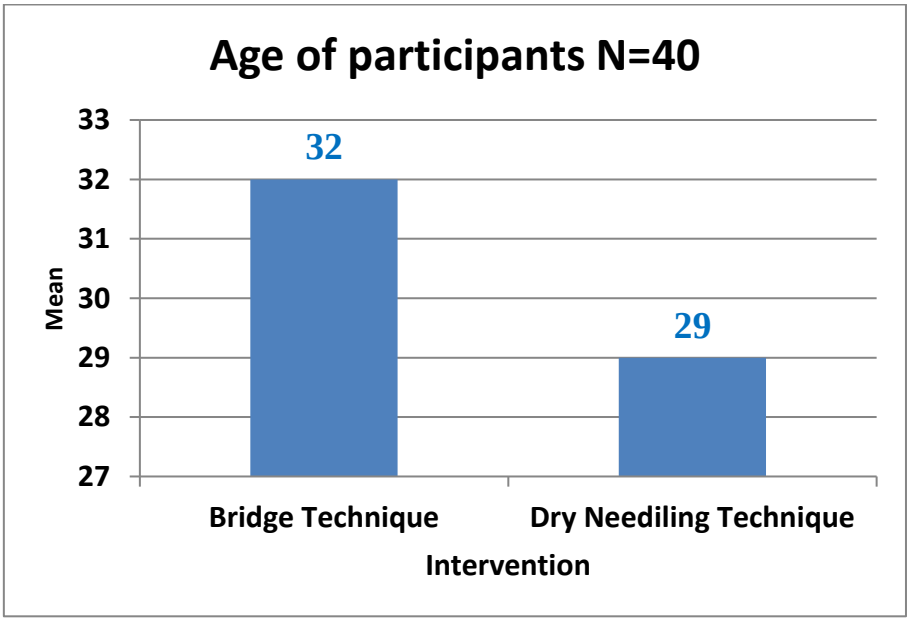

Figure 4.5.: Age of the Participants

4.1.1.2 Gender of participants

The study sample was divided into the Bridge Technique and Dry Needling groups, each with 20 participants. The Bridge technique group included (8) Males and (12) Females, and the Dry needling group included (7) Males and (13) Females (Figure 4.6).

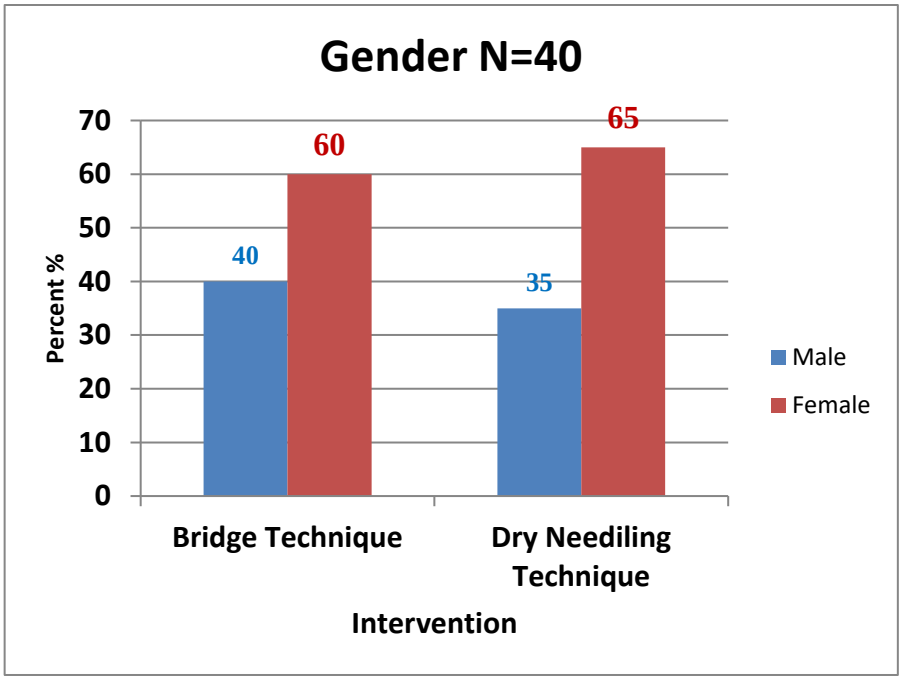

Figure 4.6: Gender of the Participants

4.1.1.3 Level of Education

In the Bridge technique group, only 1(5%) participant was non-educated, and 1(5%) was high school educated, 2(10%) participants have an elementary level of education, 6(30%) participants have a college-level of education, and 10(50%) participants graduated with Professional Degree, in the Dry needling technique group, 3(15%) participants were high school educated, 5(25%) participants have an elementary level of education. Also, 5(25%) participants have a college-level of education, and 7(35%) participants graduated with a Professional Degree (Figure 4.7).

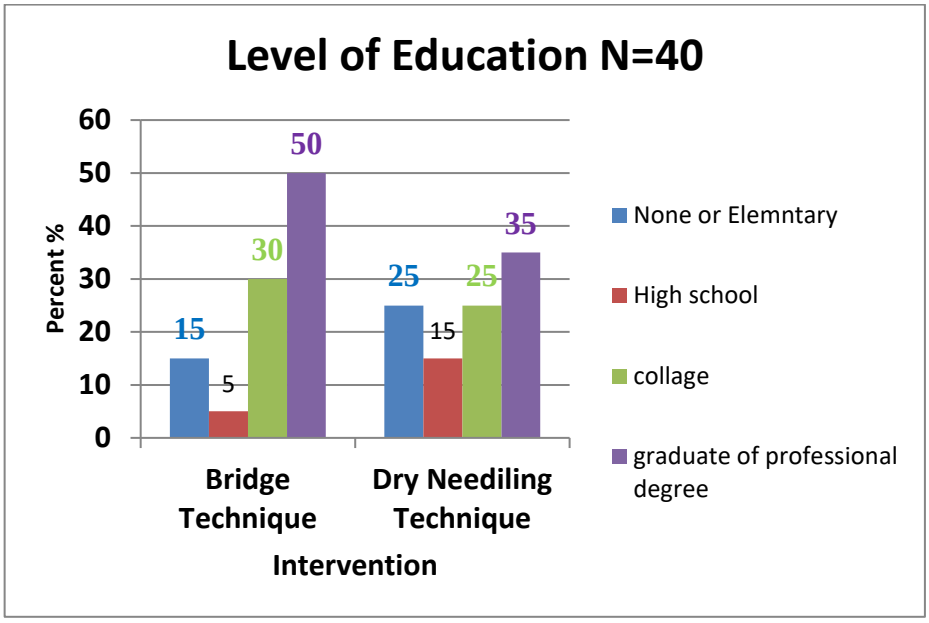

Figure 4.7: Education level of the Participants

4.1.1.4 Occupation of the participants

Regarding Occupation of the Participants, in the Bridge group, the distribution was: 3(15%) participants without occupation, 9(45%) Office Work, and 8(40%) Physical Demand Job, and in the Dry Needling group, 6(30%) participants without occupation, 7(35%) Office Work, and also 7(35%) Physical Demand Job (Figure 4.8).

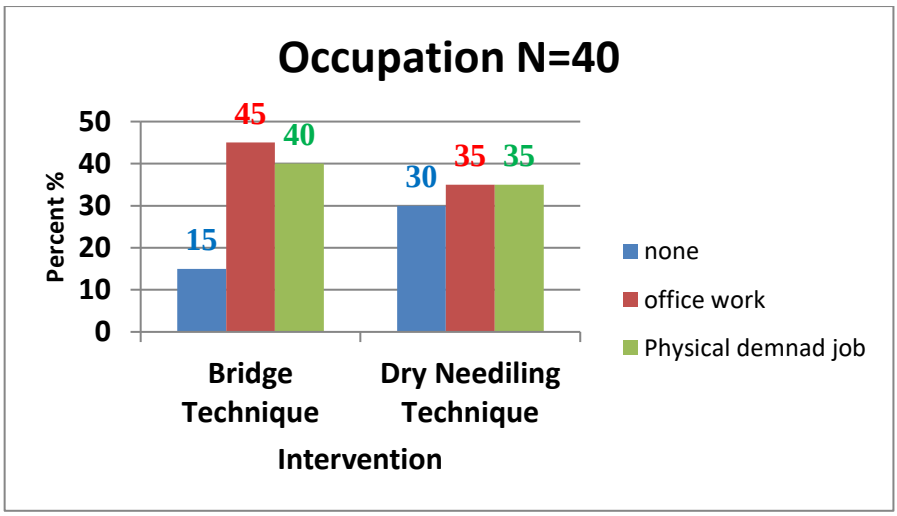

Figure 4.8: Participants Occupation

4.1.1.5 History of the previous Physiotherapy

In each study group, the Bridge and Dry needling, 12(60%) participants have a History of the Previous Physiotherapy (Figure 4.9).

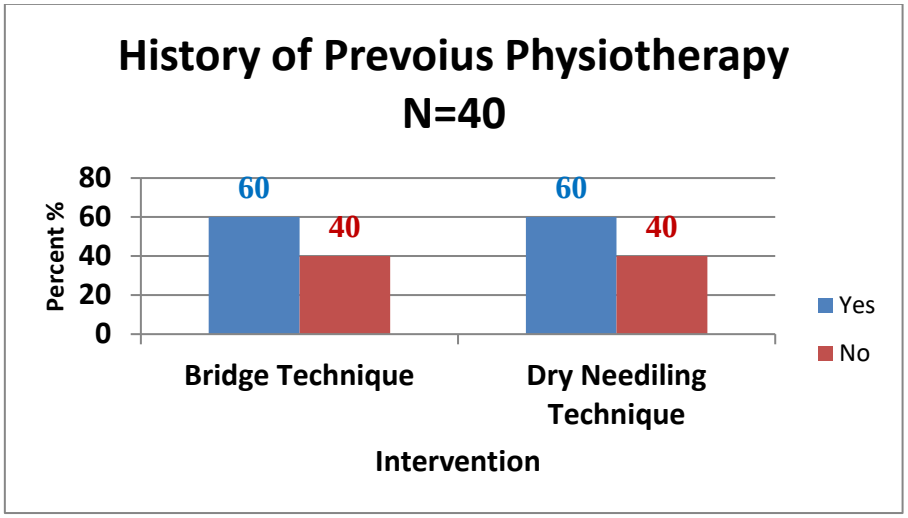

Figure 4.9: History of the Previous Physiotherapy for the Participants

4.1.1.6 History of Traditional Treatment

In each study group, the Bridge technique and the Dry Needling, 11(55%) participants have a History of Traditional Treatment (Figure 4.10).

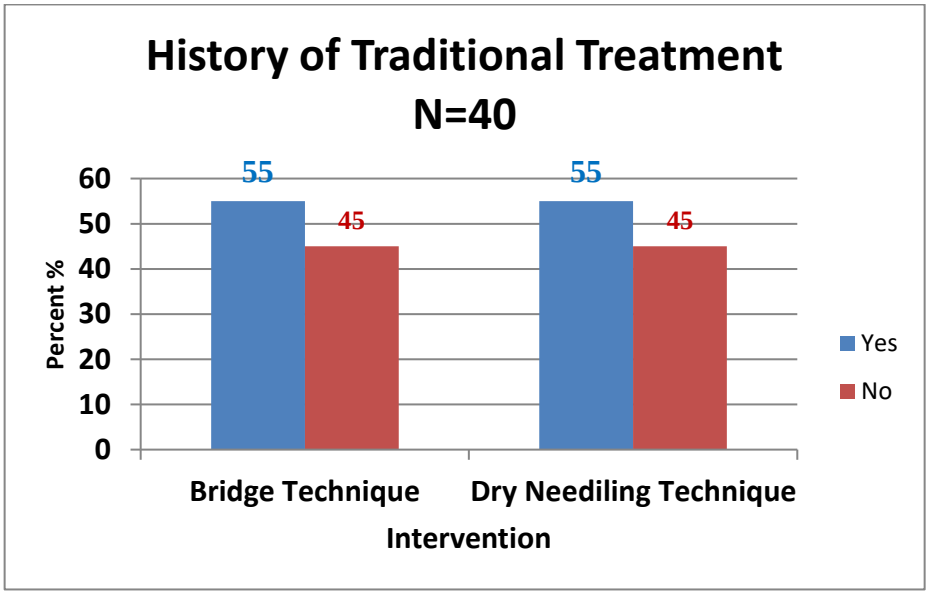

Figure 4.10: History of Traditional Treatment for the participants

4.1.1.7 History of Manual Therapy

In the Bridge group, only 1(5%) participant had a history of manual therapy compared to no one who had a history of manual therapy in the Dry needling group (Figure 4.11).

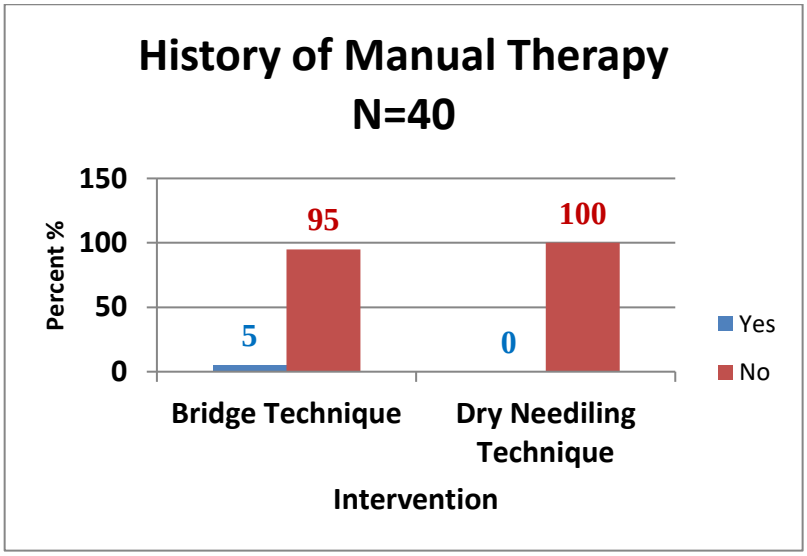

Figure 4.11: History of Manual Therapy for the participants

4.1.1.8 History of chiropractic

In both groups, only 1 participant (5%) in each group had a history of chiropractic therapy (Figure 4.12).

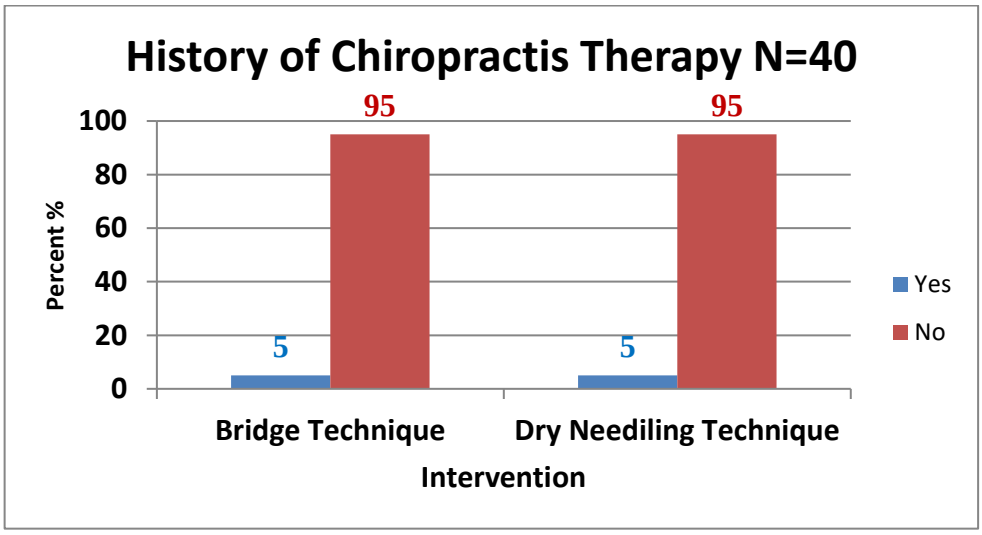

Figure 4.12: History of Chiropractic Therapy for the participants

4.1.2 Inferential statistics results

4.1.2.1 Normality test:

Normality of study variables among the study groups (Bridge technique, Dry Needling) was conducted before starting the analysis to decide the use of parametric or non-parametric statistical tests. The test of Kolmogorov-Smirnov Z was used for this purpose, and the following (Table 4.1) shows the results of this test:

Table 4.1: The results of Kolmogorov-Smirnov Normality Test

Study Variables	Bridge Technique group		Dry Needling Technique group	
	Z	P-value	Z	P-value
Total Score of Quality Of Life Score at Baseline	0.512	0.956	0.429	0.993
Total Score of Quality Of Life Score in the Mid of Treatment	0.366	0.999	0.682	0.740
Total Score of Quality Of Life Score in the Post of Treatment	0.641	0.805	0.394	0.998
Total Score of The Northwick Park Questionnaire at Baseline	0.456	0.985	0.594	0.872
Total Score of The Northwick Park Questionnaire at the Mid of Treatment	0.631	0.820	0.816	0.518
Total Score of The Northwick Park Questionnaire at the Post of Treatment	1.932	**0.001**	0.936	0.345
Total Score of Neck Disability Index at Baseline	0.696	0.718	0.536	0.936
Total Score of Neck Disability Index at the Mid of Treatment	0.683	0.739	0.499	0.964
Total Score of Neck Disability Index at the Post of Treatment	1.825	**0.003**	0.607	0.856
The Total Score of Physical Health Domain in Quality Of Life Score at Baseline	0.765	0.602	0.768	0.598
The Total Score of Physical Health Domain in Quality Of Life Score at the Mid of Treatment	1.204	0.110	0.706	0.701
The Total Score of Physical Health Domain in Quality Of Life Score at the Post of Treatment	1.119	0.163	0.633	0.818
The Total Score of Psychological Health Domain in Quality Of Life Score at Baseline	0.580	0.889	0.700	0.712
The Total Score of Psychological Health Domain in Quality Of Life Score at the Mid of Treatment	0.593	0.874	0.563	0.909
The Total Score of Psychological Health Domain in Quality Of Life Score at the Post of Treatment	0.648	0.796	0.599	0.866
The Total Score of Social Relationship Domain in Quality Of Life Score at Baseline	0.852	0.462	0.652	0.788
The Total Score of Social Relationship Domain in Quality Of Life Score at the Mid of Treatment	0.891	0.405	0.649	0.794
The Total Score of Social Relationship Domain in Quality Of Life Score at the Post of Treatment	0.631	0.821	0.695	0.719
Range of Motion at Baseline	0.647	0.797	0.617	0.841
Range of Motion at the Mid of Treatment	0.653	0.788	0.913	0.375
Range of Motion at the Post of Treatment	0.586	0.883	0.600	0.864
Visual Analog Score at Baseline	0.791	0.559	1.167	0.131
Visual Analog Score at the Mid of Treatment	0.659	0.778	1.252	0.087
Visual Analog Score at the Post of Treatment	2.129	**0.000**	0.762	0.608

The results of the normality test above (Table 4.1) shows that variables among the study groups (Bridge technique, Dry Needling technique) normally distributed since the P-values of the Kolmogorov-Smirnov Z test are higher than 0.05 except in (Total Score of The Northwick Park Questionnaire at post-treatment and Total Score of Neck Disability Index at post-treatment and Visual Analogue Score). So the results ensure that the normality condition of study variables is satisfied, and it is allowed to use parametric statistical methods in this research.

4.1.2.2: Testing Study Hypotheses:

To test the study hypotheses, One Way repeated-measures analysis of variance (ANOVA) used since there are three readings for each participant; these readings assumed as the levels of the dependent variable through time, and the independent variable is the group variable which consists of two categories (Bridge technique, Dry Needling technique).

4.1.2.3: Range of Motion Score:

In the following (Table 4.2), the results of One Way repeated-measures analysis of variance (ANOVA) consist of within-subjects effects for Range of Motion Score in each treatment stage. Pairwise Comparisons tests between means of in what follows, at the three measurements, and the tests of between-subjects effects according to groups (Bridge technique, Dry Needling technique).

Table 4. 2: Range of Motion Score Effects within-subjects in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	23.05±3.75	46.25±3.8	52.2±3.91
Dry Needling Technique	20	20.35±3.67	30.6±4.85	37.25±5.28
Range of Motion Score	40	21.7±3.91	38.43±9.02	44.73±8.85

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The results above (Table 4.2) shows that there are visual differences in the Range of Motion Score between means at baseline, mid and post-treatment within and between study groups; within and between subjects, effects for Range of Motion Score will be followed to check these visual differences.

Table 4.3: Range of Motion Scores effects within-subjects in each treatment stage and between-subjects effects according to groups

Range of Motion Score	Group		t	df	P-value
	Bridge Technique	Dry Needling Technique			
	Mean ±. S.D	Mean ±. S.D			
Baseline	23.05±3.75	20.35±3.67	2.300	38	0.027
Mid	46.25±3.8	30.6±4.85	11.365	38	0.000
Post	52.2±3.91	37.25±5.28	10.171	38	0.000

*Numbers between parentheses are standard errors of the estimated means.

The results above (Table 4.3) shows that there is a significant effect of the time on the dependent variable (Range of Motion Score); this means that there are significant differences at 0.05 level in Range of Motion Score when measured in each treatment stage (P-value< 0.05).

Follow up Pairwise comparisons below (Table 4.4) indicated that each pairwise difference was significant (all P-values<0.05), the results show that the mean Range of Motion Score in post-treatment (44.73) is significantly higher than the mean Range of Motion Score in mid-treatment (38.43) which is significantly higher than the mean of Range of Motion Score at baseline (21.7).

So it is concluded that there is a significant increase in the mean of Range of Motion Score over time, suggesting a significant time effect.

Table 4.3: Range of Motion Score between means in each treatment stage*

(I) ROM	(J) ROM	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	-16.725	0.653	0
Baseline	Post	-23.025	0.825	0
Mid	Post	-6.3	0.426	0

*Adjustment for multiple comparisons: Bonferroni.

The results of within-subjects effects exhibit significant interaction between ROM and group, meaning that the treatment applied in the Bridge technique group significantly affected the Range of Motion Score over time. These results show significant differences at 0.05 level in Range of Motion Score when measured in each treatment stage (P-value < 0.05), indicating that Dry needling and Bridge techniques have a different effect on Range of Motion Score over time differences within each group are significant.

It is clear from the results that the Bridge technique is more effective than Dry Needling in increasing the Range of Motion Score. The results show that in the Bridge Technique group, the mean of Range of Motion Score at baseline was (23.05), which increased to (46.25) in mid-treatment, to become (52.2) in post-treatment. On the other hand, in the Dry Needling technique group, the mean of Range of Motion Score at baseline was (20.35), which increased to (30.6) in mid-treatment, to become (37.25) in post-treatment.

Between-subjects effects results show significant differences at 0.05 level in Range of Motion Score between the Bridge technique group and the Dry Needling technique group (P-value < 0.05). This result indicates that the main effect of the group on the average of the three-time intervals of the Range of Motion Score is significant, and the Bridge technique(Estimated Mean=40.5) is more effective than dry Needling (Estimated Mean=29.4) in Range of Motion Score.

The following (Table 4.5) represents the results of the Independent Samples T-test to examine the differences in Range of Motion Score between the Bridge technique and the Dry Needling technique group in each treatment stage:

Table 4.4: Range of Motion Scores differences between the Bridge and the Dry Needling groups in each treatment stage.

Range of Motion Score	Group		t	df	P-value
	Bridge Technique	Dry Needling Technique			
	Mean ±. S.D	Mean ±. S.D			
Baseline	23.05±3.75	20.35±3.67	2.300	38	0.027
Mid	46.25±3.8	30.6±4.85	11.365	38	0.000
Post	52.2±3.91	37.25±5.28	10.171	38	0.000

The results above (Table 4.5) shows that there are significant differences at 0.05 level in Range of Motion Score between the Bridge technique and the Dry Needling

technique group in each treatment stage (P-values < 0.05). In the baseline, the mean of the Bridge technique group (23.05) was significantly higher than the Dry Needling technique group (20.35). In mid-treatment, the mean of the Bridge technique group (46.25) was significantly higher than the Dry Needling technique group(30.6). Moreover, in post-treatment, the mean of the Bridge technique group (52.2) was significantly higher than the mean of the Dry Needling technique group (37.25)(Figure 4.13).

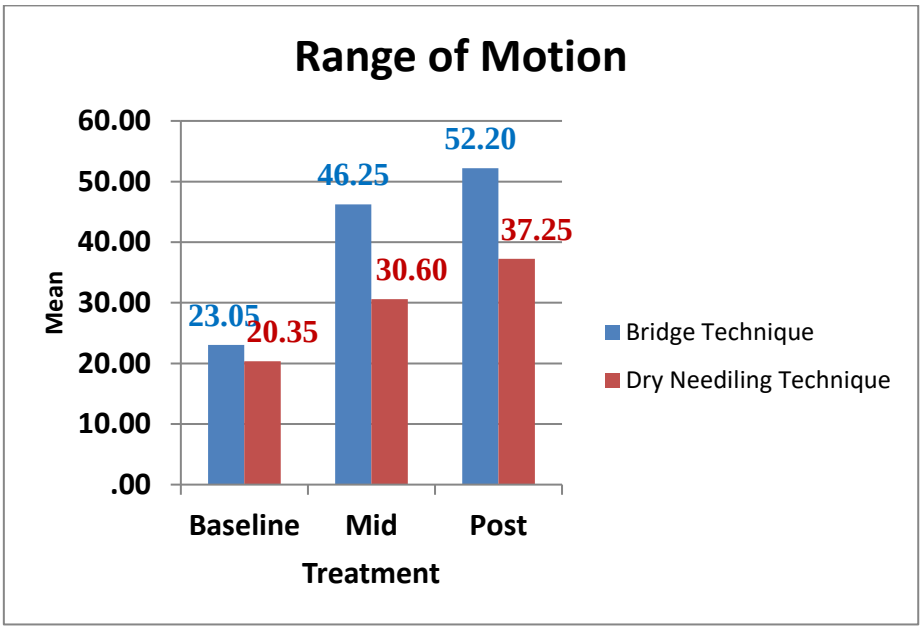

Figure 4.13: ROM scores between groups in each treatment stage

4.1.2.4: Visual Analog Scale:

One Way repeated-measures analysis of variance(ANOVA) results of within-subjects effects for Visual Analog Score in each treatment stage. Pairwise Comparisons tests between means of in what follows, at the three measurements, and the tests of between-subjects effects according to group (Bridge technique, Dry Needling technique).

Table 4.5: Visual Analog Scores Effects within-subjects in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	7.9±1.48	1.85±1.46	0.3±0.66
Dry Needling Technique	20	7.65±1.53	4.05±1	1.75±1.55
Visual Analog Score	40	7.78±1.49	2.95±1.66	1.03±1.39

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The results above (Table 4.6) shows that there are visual differences in the Visual Analog Scale between means in each treatment stage. Within and between study groups, the tests of within and between subjects effects for Visual Analog Score will be followed to check these visual differences.

Table 4.6: Visual Analog Scores effects within-subjects in each treatment stage and between-subjects effects according to groups

Source of variation		Sum of Squares	df	Mean Square	F	P-value
Within-Subjects Effects	Factor	967.317	2	558.817	322.911	<0.001
	Factor x Group	31.517	2	18.207	10.521	0.000
Between-Subjects Effects	Group	38.533	1	38.533	17.033	0.000

The results above (Table 4.7) shows a significant effect of the time on the dependent variable (Visual Analog Score). This means significant differences at the 0.05 level in Visual Analog Score when measured in each treatment stage (P-value< 0.05).

Follow up Pairwise comparisons below (Table 4.8) indicated that each pairwise difference was significant (all P-values<0.05), the results show that the mean of Visual Analog Score in post-treatment (1.03) is significantly lower than the mean of Visual Analog Score in mid-treatment (2.95) which is significantly lower than the mean of Visual Analog Score at baseline (7.78).

So it is concluded that there is a significant decrease in the mean of the Visual Analog Score over time, suggesting a significant time effect.

Table 4.7: Visual Analog Scores between means in each treatment stage*

(I) VAS	(J) VAS	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	4.825	0.303	0
Baseline	Post	6.75	0.295	0
Mid	Post	1.925	0.213	0

*Adjustment for multiple comparisons: Bonferroni.

The results of within-subjects effects exhibit significant interaction between Visual Analog Score and group, meaning that the treatment applied in the Bridge technique group had a significant effect on the Visual Analog Score over time. These results show that there are significant differences at 0.05 level in Visual Analog Score when measured in each treatment stage within each group (P-value < 0.05), indicating that dry needling and bridge techniques have a different effect on Visual Analog Score over time since the differences within each group are significant.

It is clear from the results that the Bridge technique is more effective than dry Needling in decreasing the Visual Analog Score. The results show that in the Bridge Technique group, the mean of Visual Analog score baseline was (7.9), which decreased to (1.85) in mid-treatment, to become (0.3) in post-treatment. On the other hand, in the Dry Needling technique group, the mean Visual Analog Score at baseline was (7.65), which decreased to (4.05) in the mid-treatment, to become (1.75) in the post-treatment.

The results of between-subjects effects show significant differences at the 0.05 level in Visual Analog Score between the Bridge technique and the Dry Needling technique group (P-value < 0.05). This result indicates that the main effect of the group on the average of the three-time intervals of the Visual Analog Score is significant, and the Bridge technique(Estimated Mean=3.35) is less effective than dry Needling (Estimated Mean=4.48) in Visual Analog Score.

The following (Table 4.9) represents the results of the Independent Samples T-test to examine the differences in Visual Analog Score between the Bridge technique and the Dry Needling technique group in each treatment stage:

Table 4.8: Visual Analog Scores difference between the Bridge technique and the Dry Needling groups in each treatment stage

Visual Analog Score	Group		t	df	P-value
	Bridge Technique	Dry Needling Technique			
	Mean ±. S.D	Mean ±. S.D			
Baseline	7.9±1.48	7.65±1.53	0.524	38	0.603
Mid	1.85±1.46	4.05±1	-5.560	38	0.000
Post	0.3±0.66	1.75±1.55	-3.848	38	0.000

The results above (Table 4.9) shows that there are significant differences at 0.05 level in the Visual Analog Score between the Bridge technique and the Dry Needling technique group in mid and post-treatment (P-values < 0.05). In mid-treatment, the mean of the Bridge technique group (1.85) was significantly lower than the Dry Needling technique group(4.05). Moreover, in the post-treatment, the mean of the Bridge technique group (0.3) was significantly lower than the mean of the Dry Needling technique group (1.75).) (Figure 4.14).

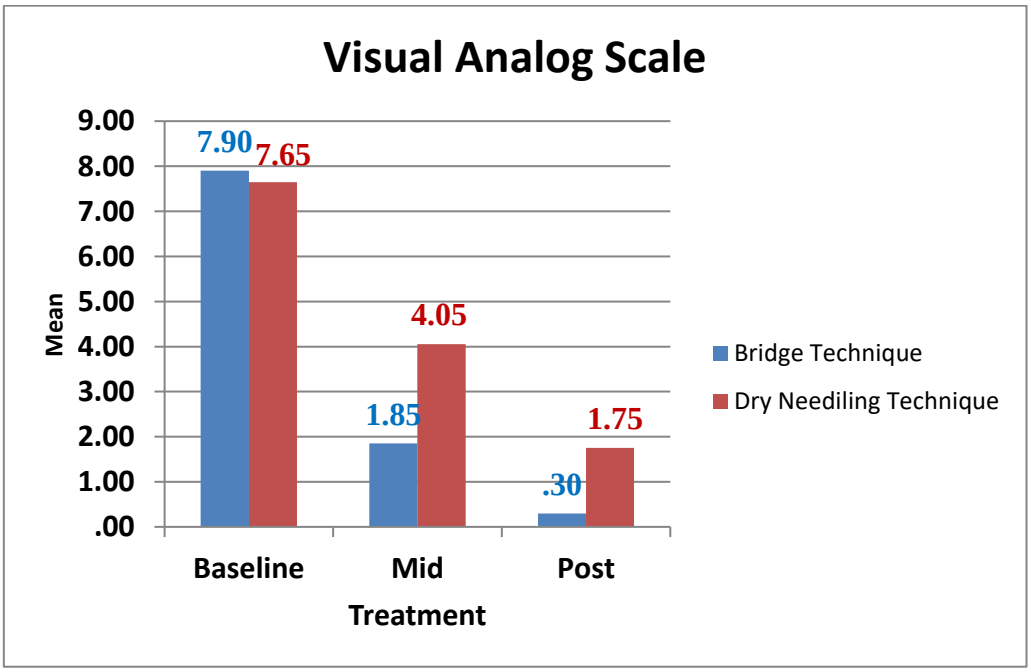

Figure 4.14: VAS scores for both groups in each treatment stage

4.1.2.5: Quality of Life Scale:

In (Table 4.10), the results of One Way repeated-measures analysis of variance (ANOVA) that representing within-subjects effects for Quality of Life score in each treatment stage. Pairwise Comparisons Tests between means of Quality of Life score at the three measurements, and the tests of between-subjects effects according to group (Bridge Technique, Dry Needling Technique).

Table 4.9: Quality Of Life Scores effects within-Subjects in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	68.17±8.35	70.09±6.78	73.22±9.14
Dry Needling Technique	20	63.82±12.84	65.92±11.23	67.6±10.14
Quality Of Life Score	40	65.99 ± 10.92	68.01 ± 9.40	70.41 ± 9.95

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The above (Table 4.10) shows that there are visual differences in Quality of Life Scores between means at baseline, mid, and post-treatment. Within and between study groups, the tests of within and between subjects effects for Quality of Life Score will be followed to check these visual differences.

Table 4.10: Quality of Life Scores affects within-subjects in each treatment stage and between-subjects effects according to the group.

Source of variation		Sum of Squares	df	Mean Square	F	P-value
Within-Subjects Effects	Factor	390.833	1.304	299.762	9.782	0.001
	Factor x Group	12.493	1.304	9.582	0.313	0.638
Between-Subjects Effects	Group	666.465	1	666.465	2.597	0.115

The results of within-subjects effects above (Table 4.11) show that there is a significant effect of the time on the dependent variable (Quality of Life), this means that there are significant differences at 0.05 level in Quality of Life score when measured in each treatment stage (P-value=0.001 < 0.05).

Follow up Pairwise comparisons below (Table 4.12) indicated that each pairwise difference was significant (all P-values<0.05), the results show that the mean Quality of Life score in post-treatment (70.41) is significantly higher than the mean Quality of Life score in mid-treatment (68.01) which is significantly higher than the mean of Quality of Life score at baseline (65.99).

So it is concluded that there is a significant increase in the mean of the Quality of Life scores over time, suggesting a significant time effect.

Table 4.11: Quality of Life Scores in each treatment stage *

(I) QoL	(J) QoL	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	-2.015	0.798	0.047
Baseline	Post	-4.415	1.315	0.005
Mid	Baseline	2.015	0.798	0.047

*Adjustment for multiple comparisons.

The results of within-subjects effects exhibit no significant interaction between Quality of life and group, meaning that the treatment applied in the Bridge technique group had no significant effect on the Quality of Life over time. These results show that there are no significant differences at 0.05 level in Quality of Life Scores when measured at in each treatment stage, within each group (P-value=0.638 > 0.05), indicating that both dry needling and bridge techniques have the same effect on Quality of Life score over time since the differences within each group are not significant.

The results show that in the Bridge technique group, the mean Quality of Life score at baseline was (68.17) increased to (70.09) in mid-treatment, to become (73.22) in post-treatment. By the same effect in the Dry Needling technique group, the mean of Quality of Life Scores at baseline was (63.82) increased to (65.92) in mid-treatment, to become (67.6) in a post of treatment.

The results of between-subjects effects show no significant differences at the 0.05 level of Quality of life between the Bridge technique group and the Dry Needling technique group (P-value=0.115 > 0.05). This result indicates that the main effect of the group on the average of the three-time intervals of the Quality of Life Scores is not significant, and the Bridge technique (Estimated Mean=70.49) is not more effective than the dry needling technique (Estimated Mean=65.78) in the Quality of Life Scores. (Figure 4.15).

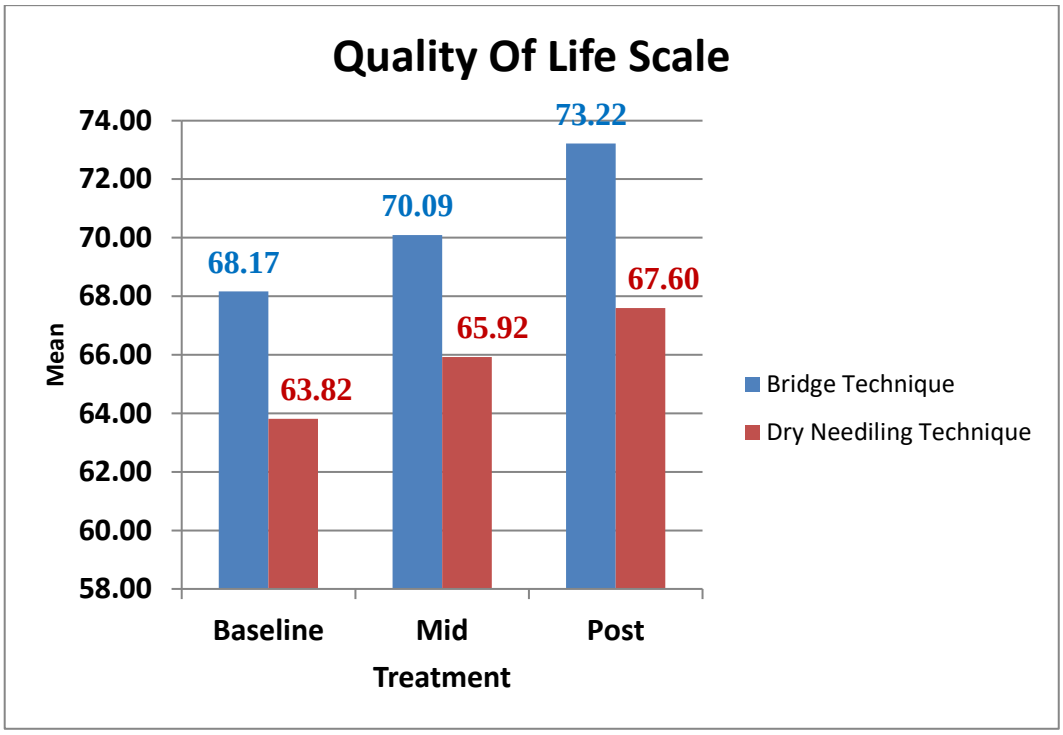

Figure 4.15: Quality of life scores in each treatment stage between groups

4.1.2.6: Physical Health Score of QoL:

In (Table 4.13), the results of One Way repeated-measures analysis of variance(ANOVA) that consists of within-subjects effects for Physical Health Score at each treatment stage. Pairwise Comparisons Tests between means of in what

follows, At the three measurements, and the Tests of between-subjects effects according to group (Bridge technique, Dry Needling technique).

Table 4.12: Physical Health Scores effects for both groups in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	51.95±13.14	70.1±14.2	81.5±12.38
Dry Needling Technique	20	51.1±20.28	62.9±14.99	70.75±11.91
Physical Health Score	40	51.53 ± 16.87	66.5 ± 14.87	76.13 ± 13.17

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The results above (Table 4.13) show that there are visual differences in Physical Health Score between means in each treatment stage within and between study groups. The tests of within and between subjects effects for Physical Health Score will be followed to check these visual differences.

Table 4.13: Physical Health Scores effects within-subjects in each treatment stage, and between-Subjects effects according to Group.

Physical Health Score		Group		P-value
		Experimental Bridge Technique	Dry Needling Control Group	
		Mean ±. S.D	Mean ±. S.D	
Within-Subjects Effects: Physical X Group	Baseline	51.95±13.14	51.1±20.28	0.026
	Mid	70.1±14.2	62.9±14.99	
	Post	81.5±12.38	70.75±11.91	
Between-Subjects Effects		67.85(2.98)*	61.58(2.98)*	0.145

*Numbers between parentheses are standard errors of the estimated means.

The results above (Table 4.14) show that there is a significant effect of the time on the dependent variable (Physical Health Score), which means that there are significant differences at 0.05 level in Physical Health Score when measured in each treatment stage (P-value< 0.05).

Follow up Pairwise comparisons in (Table 4.15) indicated that each pairwise difference was significant (all P-values<0.05), the results show that the mean of

Physical Health Score In Post-treatment (76.13) is significantly higher than the mean of Physical Health Score in mid-treatment (66.5) which is significantly higher than the mean of Physical Health Score at baseline (51.53).

So it is concluded that there is a significant increase in the mean of Physical Health Score over time, suggesting a significant time effect.

Table 4.14: Physical Health Scores between means in each treatment stage*

(I) Physical	(J) Physical	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	-14.975	1.838	0
Baseline	Post	-24.6	1.987	0
Mid	Baseline	14.975	1.838	0

*Adjustment for multiple comparisons: Bonferroni.

The results of within-subjects effects exhibit significant interaction between Physical Health Score and group, meaning that the treatment applied in the Bridge technique group significantly affected the Physical Health Score over time. These results show that there are significant differences at 0.05 level in Physical Health Score when measured in each treatment stage within each group (P-value=0.026 < 0.05), indicating that dry needling and bridge techniques have a different effect on Physical Health Score over time since the differences within each group are significant.
It is clear from the results that the Bridge technique is more effective than dry Needling in increasing the Physical Health Score; the results show that in the Bridge Technique group, the mean of Physical Health Score at baseline was (51.95) which increased to (70.1) in mid-treatment, to become (81.5) in post-treatment. On the other hand, in the Dry Needling technique group, the mean Physical Health Score at baseline was (51.1), which increased to (62.9) in mid-treatment, to become (70.75) in post-treatment.

The between-subjects effects results show no significant differences at the 0.05 level in Physical Health Score between the Bridge and Dry Needling techniques (P-value=0.145> 0.05). This result indicates that the main effect of the group on the

average of the three-time intervals of the Physical Health Score is not significant, and the Bridge technique(Estimated Mean=67.85) is not more effective than dry Needling (Estimated Mean=61.58) in Physical Health Score.

The following (Table 4.16) represents the results of the Independent Samples T-test to examine the differences in Physical Health Score between the (Bridge technique, Dry Needling technique) groups in each treatment stage:

Table 4.15: Physical Health Scores differences between the Bridge and Dry Needling groups in each treatment stage.

Physical Health Score	Group		t	df	P-value
	Bridge Technique	Dry Needling Technique			
	Mean ±. S.D	Mean ±. S.D			
Baseline	51.95±13.14	51.1±20.28	0.157	38	0.876
Mid	70.1±14.2	62.9±14.99	1.559	38	0.127
Post	81.5±12.38	70.75±11.91	2.799	38	0.008

The results above (Table 4.16) show that there are significant differences at 0.05 level in Physical Health Score between the Bridge technique and the Dry Needling technique group in post-treatment (P-value < 0.05). In post-treatment, the mean of the Bridge technique group (81.5) was significantly higher than the mean of the Dry Needling technique group(70.75) (Figure 4.16).

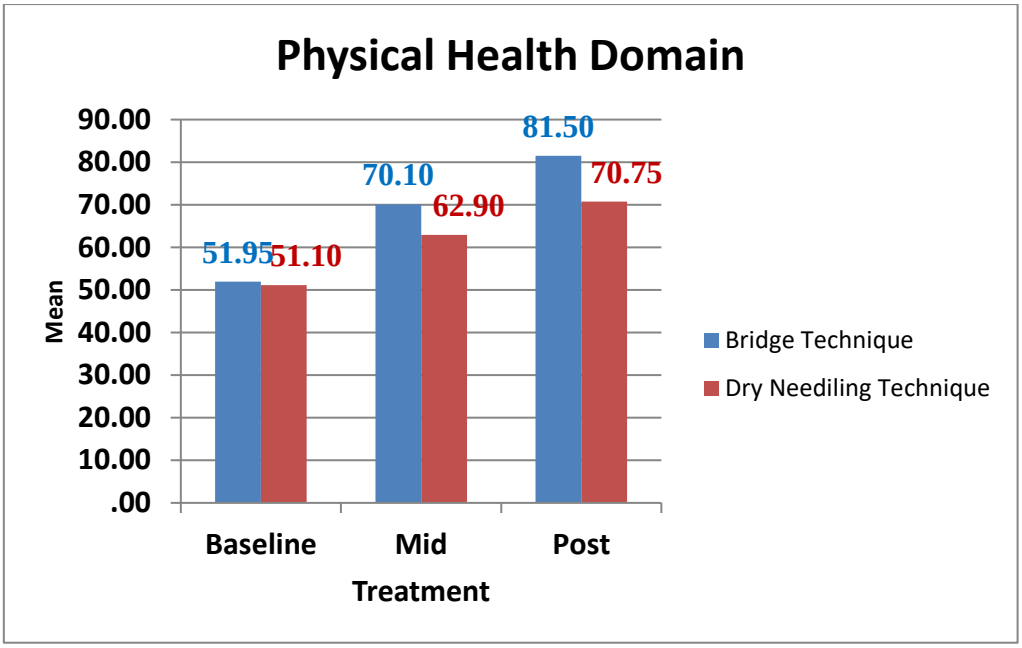

Figure 4.16: Physical Health scores in each treatment stage for both groups

4.1.2.7: Psychological Health Score:

In what follows (Table 4.17), the results of One Way repeated-measures analysis of variance(ANOVA) consist of within-subjects effects for Psychological Health Score in each treatment stage. Pairwise Comparisons Tests between means of In what follows, at the three measurements, and tests between-subjects effects according to Group (Bridge technique, Dry Needling technique).

Table 4. 16: Psychological Health Scores effects within-subjects in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	61.65±15.74	69.8±14.32	74.1±13.54
Dry Needling Technique	20	53.2±22.74	57.25±19.57	60.45±17.86
Psychological Health Score	40	57.43±19.77	63.53±18.08	67.28±17.1

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The results above (Table 4.17) shows that there are visual differences in Psychological Health Score between means at baseline, mid, and in the post of

treatment within and between study groups, the tests of within and between subjects effects for Psychological Health Score will be followed to check these visual differences.

Table 4.17: Psychological Health Scores effects within-subjects in each treatment stage and between-subjects effects according to the group.

Source of variation		Sum of Squares	df	Mean Square	F	P-value
Within-Subjects Effects	Factor	1977.267	1	1502.807	21.436	<0.001
	Factor x Group	150.200	1	114.158	1.628	0.210
Between-Subjects Effects	Group	4002.075	1	4002.075	4.791	0.035

The results above (Table.4.18) show that there is a significant effect of the time on the dependent variable (Psychological Health Score), which means that there are significant differences at 0.05 level in Psychological Health Score when measured in each treatment stage (P-value< 0.05).

Follow up Pairwise comparisons below (Table 4.19) indicated that each pairwise difference was significant (all P-values<0.05), the results show that the mean of Psychological Health Score In the Post of Treatment (67.28) is significantly higher than the mean of Psychological Health Score In mid-treatment (63.53) which is significantly higher than the mean of Psychological Health Score at baseline (57.43).

So it is concluded that there is a significant increase in the mean of Psychological Health Score over time, suggesting a significant time effect.

Table 4.18: Psychological Health Scores between means in each treatment stage*

(I) Psychological	(J) Psychological	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	-6.1	1.438	0
Baseline	Post	-9.85	1.962	0
Mid	Baseline	6.1	1.438	0

*Adjustment for multiple comparisons: Bonferroni.

The results of within-subjects effects exhibit that the interaction between Psychological Health Score and group is not significant, meaning that the treatment applied in the Bridge technique group had no significant effect on the Psychological Health Score over time. These results show that there are no significant differences at 0.05 level in Psychological Health Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group (P-value=0.210 > 0.05), indicating that dry needling and bridge techniques have the same effect on Psychological Health Score over time, since the differences within each group are not significant.

The results show that in the Bridge technique group, the mean Psychological Health Score at baseline was (61.65) increased to (69.8) in mid-treatment, to become (74.1) in post-treatment. By the same effect, in the Dry Needling technique group, the mean of Psychological Health Score at baseline was (53.2) increased to (57.25) in mid-treatment, to become (60.45) in post-treatment.

The results of between-subjects effects show that there are significant differences at 0.05 level in Psychological Health Score between the Bridge technique group and the Dry Needling technique group (P-value=0.035 < 0.05), this result indicates that the main effect of the group on the average of the three-time intervals of the Psychological Health Score is significant. The Bridge technique(Estimated Mean=68.52) is significantly more effective than dry Needling (Estimated Mean=56.97) in Psychological Health Score.

The following (Table 4.20) represents the results of the Independent Samples T-test to examine the differences in Psychological Health Score between the Bridge technique group and Dry Needling group in each treatment stage:

Table 4.19: Psychological Health Scores differences between the Bridge and Dry Needling groups in each treatment stage.

Psychological Health Score	Group		t	df	P-value
	Bridge Technique	Dry Needling Technique			
	Mean ±. S.D	Mean ±. S.D			
Baseline	61.65±15.74	53.2±22.74	1.367	38	0.180
Mid	69.8±14.32	57.25±19.57	2.314	38	0.026
Post	74.1±13.54	60.45±17.86	2.723	38	0.010

The results in (Table 4.20) above show that there are significant differences at 0.05 level in Psychological Health Score between the Bridge technique and the Dry Needling technique group in mid-treatment and post-treatment (P-values < 0.05). In mid-treatment, the mean of the Bridge technique group (69.8) was significantly higher than the mean of the Dry Needling technique group(57.25). Moreover, in post-treatment, the mean of the Bridge technique group (74.1) was significantly higher than the Dry Needling technique group (60.45). (Figure 4.17).

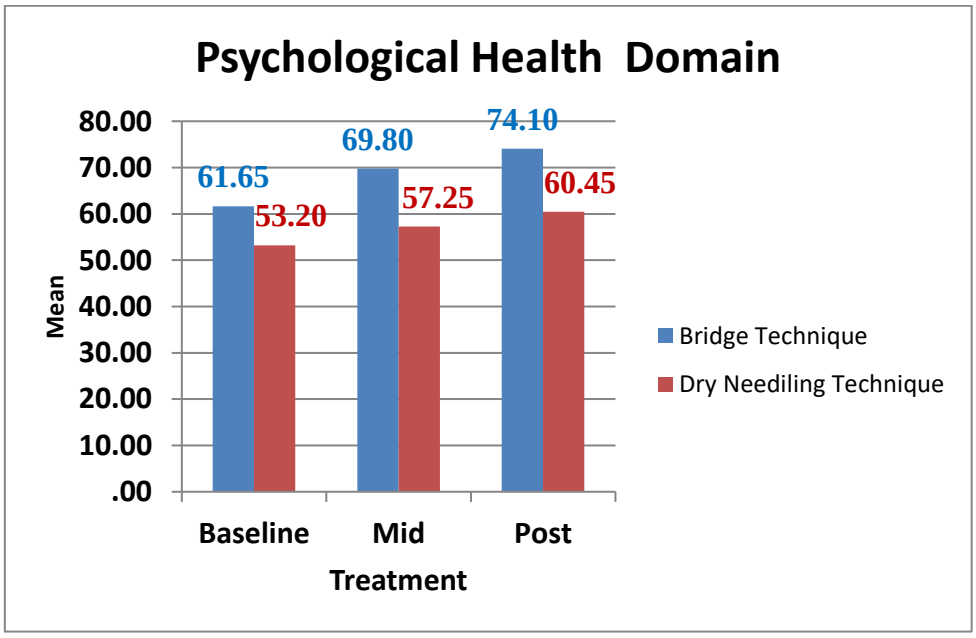

Figure 4.17: Psychological health scores in each treatment stage within groups

4.1.2.8: Social Relationship Score:

In what follows (Table 4.21), the results of One Way repeated-measures analysis of variance(ANOVA) consist of within-subjects effects for Social Relationship Score in each treatment stage. Pairwise Comparisons tests between means of in what follows, At the three measurements, and the tests of between-subjects effects according to Groups (Bridge technique, Dry Needling technique).

Table 4.20: Social Relationship Scores effects within-subjects in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	58.2±22.78	60.45±20.01	63.5±20.77
Dry Needling Technique	20	54.05±29.75	55±27.58	59.05±24.42
Social Relationship Score	40	56.13±26.24	57.73±23.94	61.28±22.49

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The results above (Table 4.21) shows that there are visual differences in Social Relationship Score between means at baseline, mid, and post-treatment within and between study groups. The tests of within and between subjects effects for Social Relationship Score will be followed to check these visual differences.

Table 4.21: Social Relationship Scores effects in each treatment stage and between-subjects effects according to the groups.

Source of variation		Sum of Squares	df	Mean Square	F	P-value
Within-Subjects Effects	Factor	555.800	1	435.461	5.829	0.013
	Factor x Group	9.267	1	7.260	0.097	0.817
Between-Subjects Effects	Group	658.008	1	658.008	0.387	0.538

The results above (Table 4.22) shows that there is a significant effect of the time on the dependent variable (Social Relationship Score), which means that there are

significant differences at 0.05 level in Social Relationship Score when measured in each treatment stage (P-value=0.013< 0.05).

Follow up Pairwise comparisons below (Table 4.23) indicated that each pairwise difference was significant (all P-values<0.05), the results show that the mean of Social Relationship Score in post-treatment (61.28) is significantly higher than both the mean of Social Relationship Score in mid-treatment (57.73) and the mean of Social Relationship Score at baseline (56.13).

So it is concluded that there is a significant increase in the mean of Social Relationship Score over time, suggesting a significant time effect.

Table 4.22: Social Relationship Scores between means in each treatment stage *

(I) Social	(J) Social	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	-1.6	1.268	0.644
Baseline	Post	-5.15	2.043	0.048
Mid	Baseline	1.6	1.268	0.644

*Adjustment for multiple comparisons: Bonferroni.

The results of within-subjects effects exhibit that the interaction between Social Relationship Score and group is not significant, meaning that the treatment applied in the Bridge technique group had no significant effect on the Social Relationship Score over time. These results show that there are no significant differences at 0.05 level in Social Relationship Score when measured in each treatment stage within each group (P-value=0.817 > 0.05), indicating that dry needling and bridge techniques have the same effect on Social Relationship Score over time since the differences within each group are not significant.

The results show that in the Bridge technique group, the mean of Social Relationship Score at baseline was (58.2) increased to (60.45) in mid-treatment, to become (63.5) in post-treatment. By the same effect, in the Dry Needling technique group, the mean of Social Relationship Score at baseline was (54.05) increased to (55) in mid-treatment, to become (59.05) in post-treatment.

The between-subjects effects results show no significant differences at the 0.05 level in the Social Relationship Score between the Bridge and Dry Needling technique groups (P-value=0.538> 0.05). This result indicates that the main effect of the group on the average of the three-time intervals of the Social Relationship Score is not significant, and the Bridge technique(Estimated Mean=60.72) is not more effective than dry needling(Estimated Mean=56.03) in Social Relationship Score.

The following (Table 4.24) represents the results of the Independent Samples T-test to examine the differences in Social Relationship Score between the Bridge technique and the Dry Needling technique group in each treatment stage:

Table 4. 23: Social Relationship Scores differences between the Bridge and the Dry Needling groups in each treatment stage.

Social Relationship Score	Group		t	df	P-value
	Bridge Technique	Dry Needling Technique			
	Mean ±. S.D	Mean ±. S.D			
Baseline	58.2±22.78	54.05±29.75	0.495	38	0.623
Mid	60.45±20.01	55±27.58	0.715	38	0.479
Post	63.5±20.77	59.05±24.42	0.621	38	0.538

The results above (Table4.24) shows that there are no significant differences at 0.05 level in Social Relationship Score between the Bridge technique and the Dry Needling technique group in all treatment stages (P-values > 0.05) (Figure 4.18).

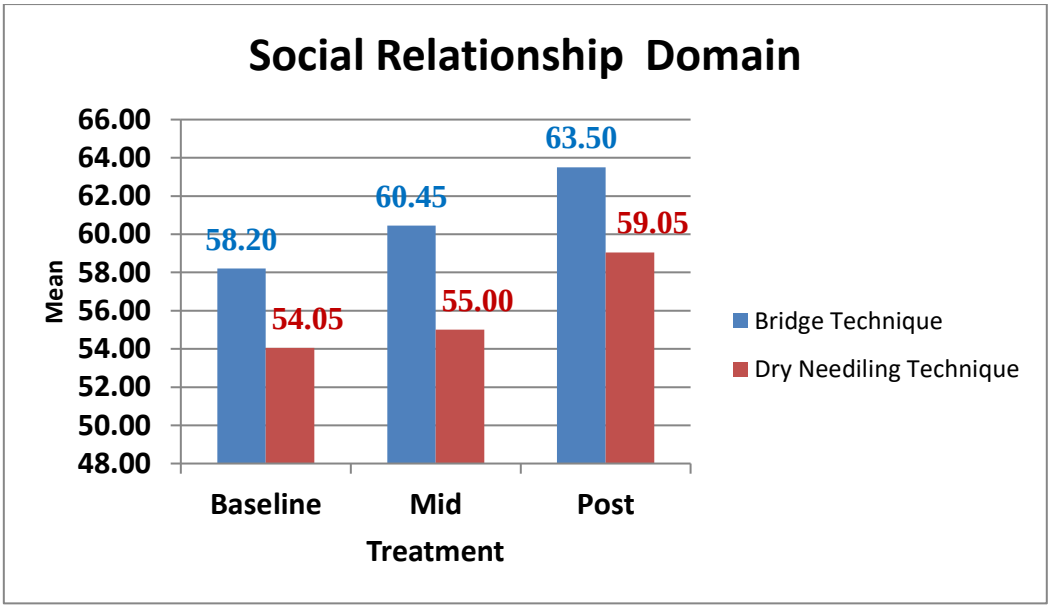

Figure 4.18: Social relationship scores between groups in each treatment stage

4.1.2.9 Northwick Park Questionnaire Score:

As presented below (Table 4.25), results of one way repeated measures analysis of variance (ANOVA) within-subjects effects for Northwick Park Questionnaire Score in each treatment stage. Pairwise Comparisons tests between means of in what follows, at the three measurements, and the tests of between-subjects effects according to Groups (Bridge technique, Dry Needling technique).

Table 4.24: Northwick Park Questionnaire Scores effects for both groups in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	43.32±15.25	12.52±10.15	1.49±4.42
Dry Needling Technique	20	42.96±20.49	23.77±11.03	14.6±12.87
Northwick Park Questionnaire Score	40	43.14 ± 17.83	18.14 ± 11.91	8.04 ± 11.56

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The results above (Table 4.25) shows that there are visual differences in Northwick Park Questionnaire Score between means in each treatment stage within and between study groups. The tests of within and between subjects effects for Northwick Park Questionnaire Score will be followed to check these visual differences.

Table 4.25: Northwick Park Questionnaire Scores effects in each treatment stage and between-subjects effects according to Group.

Source of variation		Sum of Squares	df	Mean Square	F	P-value
Within-Subjects Effects	Factor	26113.247	1	17417.194	133.123	<0.001
	Factor x Group	1065.967	1	710.986	5.434	0.013
Between-Subjects Effects	Group	1918.400	1	1918.400	5.727	0.022

*Numbers between parentheses are standard errors of the estimated means.

The results of within-subjects effects above (Table 4.26) show that there is a significant effect of the time on the dependent variable (Northwick Park Questionnaire Score), this means that there are significant differences at 0.05 level in Northwick Park Questionnaire Score when measured in each treatment stage (P-value< 0.05).

Follow up Pairwise comparisons below (Table 4.27) indicated that each pairwise difference was significant (all P-values<0.05). The results show that the mean of the Northwick Park Questionnaire Score in the Post of Treatment (8.04) is significantly lower than the mean of Northwick Park Questionnaire Score in mid-treatment (18.14), which is significantly lower than the mean of Northwick Park Questionnaire Score at baseline (43.14).

So it is concluded that there is a significant decrease in the mean of Northwick Park Questionnaire Score over time, suggesting a significant time effect.

Table 4.26: Northwick Park Questionnaire Scores between means in each treatment stage*

(I) NPQ	(J) NPQ	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	24.998	2.177	0
Baseline	Post	35.095	2.727	0
Mid	Baseline	-24.998	2.177	0

*Adjustment for multiple comparisons: Bonferroni.

The results of within-subjects effects exhibit significant interaction between NPQ and group, meaning that the treatment applied in the Bridge technique group had a significant effect on the Northwick Park Questionnaire Score over time. These results show that there are significant differences at 0.05 level in Northwick Park Questionnaire Score when measured in each treatment stage within each group (P-value=0.013 < 0.05), indicating that dry needling and bridge techniques have a different effect on Northwick Park Questionnaire Score over time since the differences within each group are significant.

It is clear from the results that the Bridge technique is more effective than dry needling in decreasing the Northwick Park Questionnaire Score. The results show that in the Bridge technique group, the mean of Northwick Park Questionnaire Score at baseline was (43.32), which decreased to (12.52) in mid-treatment, to become only (1.49) in post-treatment. On the other hand, in the Dry Needling technique group, the mean of Northwick Park Questionnaire Score at baseline was (42.96), which decreased to (23.77) in mid-treatment, to become (14.6) in post-treatment.

Between-subjects effects results show significant differences at the 0.05 level in the Northwick Park Questionnaire Score between the Bridge and Dry Needling technique groups (P-value=0.022< 0.05). This result indicates that the main effect of the group on the average of the three-time intervals of the Northwick Park Questionnaire Score is significant and Bridge technique(Estimated Mean=19.11) is less effective than dry needling(Estimated Mean=27.11) in Northwick Park Questionnaire Score.

The following (Table 4.28) represents the results of the Independent Samples T-test to examine the differences in Northwick Park Questionnaire Score between the Bridge technique and the Dry Needling technique group in each treatment stage:

Table 4.27: Northwick Park Questionnaire Score between the Bridge and the Dry Needling groups in each treatment stage.

Northwick Park Questionnaire Score	Group		t	df	P-value
	Bridge Technique	Dry Needling Technique			
	Mean ±. S.D	Mean ±. S.D			
Baseline	43.32±15.25	42.96±20.49	0.064	38	0.949
Mid	12.52±10.15	23.77±11.03	-3.356	38	0.002
Post	1.49±4.42	14.6±12.87	-4.308	38	0.000

The results above (Table 4.28) shows that there are significant differences at 0.05 level in the Northwick Park Questionnaire Score between the Bridge technique and the Dry Needling technique group in mid-treatment and post-treatment (P-values < 0.05). In mid-treatment, the mean of the Bridge technique group (12.52) was significantly lower than the mean of the Dry Needling technique group (23.77). Moreover, post-treatment, the mean of the Bridge technique group (1.49) was significantly lower than the Dry Needling technique group (14.6). (Figure 19.4).

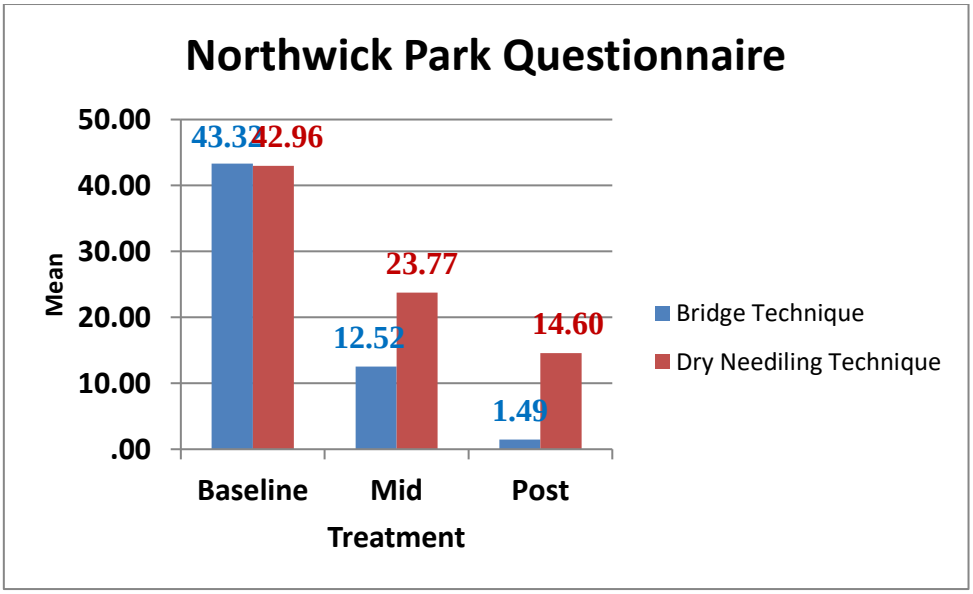

Figure 4.19: Northwick Park Questionnaire scores between groups in each treatment stage

4.1.2.8: Neck Disability Index Score:

In what follows (Table 4.29), the results of One Way repeated-measures analysis of variance (ANOVA) consist of within-subjects effects for Neck Disability Index Score in each treatment stage. Pairwise Comparisons tests between means of in what follows, at the three measurements, and the tests of between-subjects effects according to Groups (Bridge technique, Dry Needling technique).

Table 4.28: Neck Disability Index Scores for both groups in each treatment stage

Group	N	Treatment Time		
		At Baseline	In the Mid of Treatment	In the Post of Treatment
		Mean ±. S.D	Mean ±. S.D	Mean ±. S.D
Bridge Technique	20	41.82±17.51	11.13±10.72	2.05±5.02
Dry Needling Technique	20	39.38±19	21.16±12	12.68±10.97
Neck Disability Index Score	40	40.6 ± 18.08	16.14 ± 12.32	7.36 ± 10.00

* E.Mean: Estimated Mean, S.E: Standard Error. Needed for Between- Subjects Effects analysis.

The results above (Table 4.29) shows that there are visual differences in Neck Disability Index Score between means in each treatment stage within and between study groups. The tests of within and between subjects effects for Neck Disability Index Score will be followed to check these visual differences.

Table 4.29: Neck Disability Index Scores in each treatment stage and between-subjects effects according to the group.

Source of variation		Sum of Squares	df	Mean Square	F	P-value
Within-Subjects Effects	Factor	23733.188	1	17770.614	123.656	<0.001
	Factor x Group	1089.013	1	815.416	5.674	0.014
Between-Subjects Effects	Group	1106.561	1	1106.561	3.216	0.081

The results above (Table 4.30) shows that there is a significant effect of the time on the dependent variable (Neck Disability Index Score), which means that there are

significant differences at 0.05 level in Neck Disability Index Score when measured in each treatment stage (P-value< 0.05).

Follow up Pairwise comparisons below (Table 4.31) indicated that each pairwise difference was significant (all P-values<0.05). The results show that the mean of Neck Disability Index Score in post-treatment (7.36) is significantly lower than the mean of Neck Disability Index Score in mid-treatment (16.14), which is significantly lower than the mean of Neck Disability Index Score at baseline (40.6).

So it is concluded that there is a significant decrease in the mean of Neck Disability Index Score over time, suggesting a significant time effect.

Table 4.30: Neck Disability Index Scores in each treatment stage *

(I) NDI	(J) NDI	Mean Difference (I-J)	Std. Error	P-value
Baseline	Mid	24.458	2.126	0
Baseline	Post	33.238	2.803	0
Mid	Baseline	-24.458	2.126	0

*Adjustment for multiple comparisons: Bonferroni.

The results of within-subjects effects exhibit significant interaction between NDI and group, meaning that the treatment applied in the Bridge technique group significantly affected the Neck Disability Index Score over time. These results show that there are significant differences at 0.05 level in Neck Disability Index Score when measured in each treatment stage within each group (P-value=0.014 < 0.05), indicating that Dry needling and Bridge techniques have a different effect on Neck Disability Index Score over time since the differences within each group are significant.

It is clear from the results that the Bridge technique is more effective than Dry needling in decreasing the Neck Disability Index Score. The results show that in the Bridge technique group, the mean of Neck Disability Index Score at baseline was (41.82), which decreased to (11.13) in mid-treatment, to become only (2.05) in post-

treatment. On the other hand, in the Dry Needling technique group, the mean Neck Disability Index Score at baseline was (39.38), which decreased to (21.16) in mid-treatment, to become (12.68) in post-treatment.

The between-subjects effects results show no significant differences at the 0.05 level in Neck Disability Index Score between the Bridge and Dry Needling technique (P-value=0.081> 0.05). This result indicates that the main effect of the group on the average of the three-time intervals of the Neck Disability Index Score is not significant, and the Bridge technique(Estimated Mean=18.33) is not more effective than Dry needling(Estimated Mean=24.41) in Neck Disability Index Score.

The following (Table 4.32) represents the results of the Independent Samples T-test to examine the differences in Neck Disability Index Score between the Bridge Technique and the Dry Needling Technique group in each treatment stage:

Table 4.31: Neck Disability Index Scores differences between the Bridge and the Dry Needling groups in each treatment stage.

Neck Disability Index Score	Group		P-value
	Experimental Bridge Technique	Dry Needling Control Group	
	Mean ±. S.D	Mean ±. S.D	
Baseline	41.82±17.51	39.38±19	0.675
Mid	11.13±10.72	21.16±12	0.008
Post	2.05±5.02	12.68±10.97	0.000

The results above (Table 4.32) show that there are significant differences at 0.05 level in Neck Disability Index Score between the Bridge technique and the Dry Needling technique group in each treatment stage (P-values < 0.05). In mid-treatment, the mean of the Bridge technique group (11.13) was significantly lower than the mean of the Dry Needling technique group(21.16). Moreover, post-treatment, the mean of the Bridge technique group (2.05) was significantly lower than the Dry Needling technique group (12.68) (Figure 4.20).

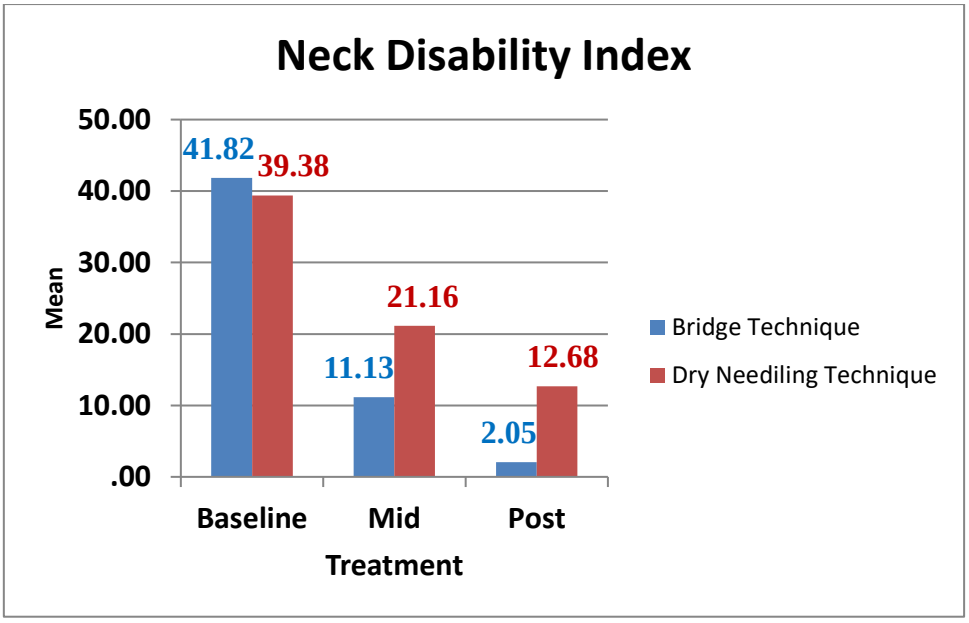

Figure 4.20: Neck Disability Index scores between groups in each treatment stage

4.1.3: Correlation between Study variables and the Age:

The following (Table 4.33) represents the results of the Pearson Correlation Coefficients Matrix to examine the relationship between all Study variables in each treatment stage and the age variable:

Table 4.32: the relationship between all Study variables in each treatment stage and Age

Measurement	Pearson Correlation	P-Value
Total Score of The Northwick Park Questionnaire at Baseline	0.397	0.011*
Total Score of The Northwick Park Questionnaire at the Mid of Treatment	0.319	0.045*
Improvement in Northwick Park Questionnaire	-0.330	0.037*
Total Score of Neck Disability Index at Baseline	0.461	0.003*
Total Score of Neck Disability Index at the Mid of Treatment	0.377	0.016*
Improvement in Neck Disability Index	-0.375	0.017*

The total score of Physical Health Domain in Quality Of Life Score at Baseline	-0.449	0.004*
The total score of Physical Health Domain in Quality Of Life Score at the Mid of Treatment	-0.371	0.018*
The total score of Social Relationship Domain in Quality Of Life Score at Baseline	-0.325	0.041*
The total score of Social Relationship Domain in Quality Of Life Score at the Mid of Treatment	-0.393	0.012*
The total score of Social Relationship Domain in Quality Of Life Score at the Post of Treatment	-0.419	0.007*

* Significant at 0.05 level.

The results above (Table 4.33) shows that there are significant positive relationships at 0.05 level between the Age of participants and the following measurements: Total Score of Neck Disability Index at mid-treatment, Total Score of The Northwick Park Questionnaire at mid-treatment, Total Score of Neck Disability Index at baseline, and Total Score of The Northwick Park Questionnaire at baseline. The P-values < 0.05 and Pearson correlations were positive, indicating that these measurements increase as the participant's age increases.

The results also show that there are significant negative relationships at 0.05 level between the Age of participants and the following measurements: improvement in Northwick Park Questionnaire, improvement in Neck Disability Index, the total score of Physical Health Domain in Quality of Life Scores at baseline, the total score of Social Relationship Domain in Quality of Life Scores at post-treatment, the total score of Social Relationship Domain in Quality of Life Scores at Baseline, Total score of Social Relationship Domain in Quality of Life Scores at mid-treatment, and Total score of Physical Health Domain in Quality of Life Scores at mid-treatment. The P-values < 0.05 and Pearson correlations were negative, indicating that these measurements decrease as the participant's age increases, these measurements decreases.

4.1.4 Summary of findings:

According to the results of the analysis, the following conclusions can be concluded:

1. The results showed a significant effect of the time on the dependent variable (Range of Motion Score), which means significant differences at 0.05 level in Range of Motion Score when measured at Baseline the Mid and In the Post of Treatment. So it is concluded that there is a significant increase in the mean of Range of Motion Score over time, suggesting a significant time effect.
2. The results exhibited significant interaction between ROM and Group, meaning that the treatment applied in the Bridge Technique group had a significant effect on the Range of Motion Score over time. These results showed that there are significant differences at 0.05 level in Range of Motion Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that dry needling and bridge techniques have a different effect on Range of Motion Score over time since the differences within each group are significant. It was clear from the results that the Bridge technique is more effective than dry needling in increasing the Range of Motion Score.
3. The results showed significant differences at the 0.05 level in the Range of Motion Score between the Bridge Technique and Dry Needling Technique. This result indicated that the main effect of the group on the average of the three-time intervals of the Range of Motion Score is significant, and the Bridge technique is more effective than dry needling in Range of Motion Score.
4. The results showed significant differences at the 0.05 level in the Range of Motion Score between the Bridge Technique and the Dry Needling Technique group in the Baseline, the Mid of Treatment, and the Post of Treatment. In the Baseline, the mean of the Bridge Technique group was significantly higher than the mean of the Dry Needling Technique group. In the Mid of Treatment, the mean of the Bridge Technique group was significantly higher than the mean of the Dry Needling Technique group. Furthermore, in the Post of Treatment, the mean of the Bridge Technique group was significantly higher than the mean of the Dry Needling Technique group.

5. The results showed a significant effect of the time on the dependent variable (Visual Analog Scale), which means that there are significant differences at 0.05 level in Visual Analog Scale when measured at Baseline, In the Mid of Treatment, and the Post of Treatment. So it is concluded that there is a significant decrease in the mean of the Visual Analog Scale over time, suggesting a significant time effect.
6. The results exhibited significant interaction between VAS and Group, meaning that the treatment applied in the Bridge Technique group had a significant effect on the Visual Analog Scale over time. These results showed that there are significant differences at 0.05 level in Visual Analog Scale when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that dry needling and bridge techniques have a different effect on Visual Analog Scale over time, since the differences within each group are significant. It was clear from the results that the Bridge technique is more effective than dry needling in decreasing the Visual Analog Scale.
7. The results showed significant differences at the 0.05 level in the Visual Analog Scale between the Bridge Technique and Dry Needling Technique. This result indicated that the main effect of the group on the average of the three-time intervals of the Visual Analog Scale is significant, and the Bridge technique is less effective than dry needling in the Visual Analog Scale.
8. The results showed significant differences at 0.05 level in Visual Analog Scale between the Bridge Technique and the Dry Needling Technique group in the Mid of Treatment and the Post of Treatment. In the Mid Treatment, the mean of the Bridge Technique group was significantly lower than the mean of the Dry Needling Technique group. Furthermore, in the Post of Treatment, the mean of the Bridge Technique group was significantly lower than the mean of the Dry Needling Technique group.
9. The results showed a significant effect of the time on the dependent variable (Quality of Life), which means that there are significant differences at 0.05 level in Quality of Life Scale when measured at Baseline, In the Mid of Treatment, and the Post of Treatment. So it is concluded that there is a significant increase in the mean of the Quality of Life Scale over time, suggesting a significant time effect.

10. The results exhibited no significant interaction between QoL and Group, meaning that the treatment applied in the Bridge Technique group had no significant effect on the Quality of Life over time. These results show that there are no significant differences at 0.05 level in Quality of Life Scale when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that both dry needling and bridge techniques have the same effect on Quality of Life Scale over time since the differences within each group are not significant.
11. The results showed that the increase in the Quality of Life scores in the Bridge Technique group from the Baseline to the Post of Treatment is the same as the increase in the Dry Needling Technique group.
12. The results showed no significant differences at the 0.05 level in the Quality Of Life Scale between the Bridge Technique and Dry Needling Technique groups. This result indicated that the main effect of the group on the average of the three-time intervals of the Quality of Life Scores is not significant, and the Bridge technique is not more effective than the dry needling technique in the Quality Of Life Scale.
13. The results showed no significant differences at 0.05 level in the Quality of Life Scores between the Bridge Technique and the Dry Needling Technique group in all treatment stages.
14. The results showed a significant effect of the time on the dependent variable (Physical Health Score), which means significant differences at 0.05 level in Physical Health Score when measured at Baseline, In the Mid and In the Post of Treatment. So it is concluded that there is a significant increase in the mean of Physical Health Score over time, suggesting a significant time effect.
15. The results exhibited significant interaction between Physical Health Score and Group, meaning that the treatment applied in the Bridge Technique group had a significant effect on the Physical Health Score over time. These results showed that there are significant differences at 0.05 level in Physical Health Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that dry needling and bridge techniques have a different effect on Physical Health Score over time since the differences within each group are significant. It was clear from the results that

the Bridge technique is more effective than dry needling in increasing the Physical Health Score.

16. The results showed no significant differences at the 0.05 level in Physical Health Score between the Bridge Technique and Dry Needling Technique groups. This result indicated that the main effect of the group on the average of the three-time intervals of the Physical Health Score is not significant, and the Bridge technique is not more effective than dry needling in Physical Health Score.
17. The results showed significant differences at 0.05 level in Physical Health Score between the Bridge Technique and the Dry Needling Technique group in the Post of Treatment, the mean of the Bridge Technique group was significantly higher than the mean of the Dry Needling Technique group.
18. The results showed a significant effect of the time on the dependent variable (Psychological Health Score), which means significant differences at 0.05 level in Psychological Health Score when measured at Baseline, In the Mid and In the Post of Treatment. So it is concluded that there is a significant increase in the mean of Psychological Health Score over time, suggesting a significant time effect.
19. The results exhibited that the interaction between Psychological Health Score and Group is not significant, meaning that the Bridge Technique group's treatment had no significant effect on the Psychological Health Score over time. These results show that there are no significant differences at 0.05 level in Psychological Health Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that dry needling and bridge techniques have the same effect on Psychological Health Score over time, since the differences within each group are not significant. The results showed that both the Bridge Technique and Dry Needling Technique groups have the same effect in increasing the mean of Psychological Health Score between the three-time intervals.
20. The results showed significant differences at the 0.05 level in Psychological Health Score between the Bridge Technique and Dry Needling Technique groups. This result indicated that the main effect of the group on the average of the three-time intervals of the Psychological Health Score is significant, and

the Bridge technique is significantly more effective than dry needling in Psychological Health Score.

21. The results showed significant differences at the 0.05 level in Psychological Health Score between the Bridge Technique and the Dry Needling Technique group in the Mid of Treatment and the Post of Treatment. In the Mid of Treatment, the mean of the Bridge Technique group was significantly higher than the mean of the Dry Needling Technique group. Furthermore, in the Post of Treatment, the mean of the Bridge Technique group was significantly higher than the mean of the Dry Needling Technique group.
22. The results showed a significant effect of the time on the dependent variable (Social Relationship Score), which means significant differences at 0.05 level in Social Relationship Score when measured at Baseline, In the Mid and In the Post of Treatment. So it is concluded that there is a significant increase in the mean of Social Relationship Score over time, suggesting a significant time effect.
23. The results exhibited that the interaction between Social Relationship Score and Group is not significant, meaning that the Bridge Technique group's treatment had no significant effect on the Social Relationship Score over time. These results show that there are no significant differences at 0.05 level in Social Relationship Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that dry needling and bridge techniques have the same effect on Social Relationship Score over time, since the differences within each group are not significant. The results showed that both Techniques have the same effect in increasing the Social Relationship Score between the three-time intervals.
24. The results showed no significant differences at the 0.05 level in Social Relationship Score between the Bridge Technique and Dry Needling Technique groups. This result indicated that the main effect of the group on the average of the three-time intervals of the Social Relationship Score is not significant, and the Bridge technique is not more effective than dry needling in Social Relationship Score.
25. The results showed no significant differences at the 0.05 level in Social Relationship Score between the Bridge Technique and the Dry Needling Technique group in all treatment stages.

26. The results showed that there is a significant effect of the time on the dependent variable (Northwick Park Questionnaire Score), this means that there are significant differences at 0.05 level in Northwick Park Questionnaire Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment. So it is concluded that there is a significant decrease in the mean of Northwick Park Questionnaire Score over time, suggesting a significant time effect.
27. The results exhibited significant interaction between NPQ and Group, meaning that the treatment applied in the Bridge Technique group had a significant effect on the Northwick Park Questionnaire Score over time. These results showed that there are significant differences at 0.05 level in Northwick Park Questionnaire Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that dry needling and bridge techniques have a different effect on Northwick Park Questionnaire Score over time, since the differences within each group are significant.
28. It was clear from the results that the Bridge technique is more effective than dry needling in decreasing the Northwick Park Questionnaire Score.
29. The results showed significant differences at the 0.05 level in the Northwick Park Questionnaire Score between the Bridge Technique and Dry Needling Technique groups. This result indicated that the main effect of the group on the average of the three-time intervals of the Northwick Park Questionnaire Score is significant, and the Bridge technique is less effective than dry needling in Northwick Park Questionnaire Score.
30. The results showed significant differences at the 0.05 level in Northwick Park Questionnaire Score between the Bridge Technique and the Dry Needling Technique group in the Mid of Treatment and the Post of Treatment. In the Mid Treatment, the mean of the Bridge Technique group was significantly lower than the mean of the Dry Needling Technique group. Furthermore, in the Post of Treatment, the mean of the Bridge Technique group was significantly lower than the mean of the Dry Needling Technique group.
31. The results showed a significant effect of the time on the dependent variable (Neck Disability Index Score), which means that there are significant differences at 0.05 level in Neck Disability Index Score when measured at

Baseline the Mid and In the Post of Treatment. So it is concluded that there is a significant decrease in the mean of Neck Disability Index Score over time, suggesting a significant time effect.

32. The results exhibited significant interaction between NDI and Group, meaning that the treatment applied in the Bridge Technique group had a significant effect on the Neck Disability Index Score over time. These results showed that there are significant differences at 0.05 level in Neck Disability Index Score when measured at Baseline, In the Mid of Treatment, and In the Post of Treatment within each group, indicating that dry needling and bridge techniques have a different effect on Neck Disability Index Score over time since the differences within each group are significant. It was clear from the results that the Bridge technique is more effective than dry needling in decreasing the Neck Disability Index Score.
33. The results showed no significant differences at the 0.05 level in Neck Disability Index Score between the Bridge Technique and Dry Needling Technique groups. This result indicated that the main effect of the group on the average of the three-time intervals of the Neck Disability Index Score is not significant, and the Bridge technique is not more effective than dry needling in Neck Disability Index Score.
34. The results showed significant differences at 0.05 level in Neck Disability Index Score between the Bridge Technique and the Dry Needling Technique group in the Mid of Treatment and the Post of Treatment. In the Mid Treatment, the mean of the Bridge Technique group was significantly lower than the mean of the Dry Needling Technique group. Furthermore, in the Post of Treatment, the mean of the Bridge Technique group was significantly lower than the mean of the Dry Needling Technique group.
35. The results showed that there are significant positive relationships at 0.05 level between the Age of participants and the following measurements: Total Score of Neck Disability Index at the Mid of Treatment, Total Score of The Northwick Park Questionnaire at the Mid of Treatment, Total Score of Neck Disability Index at Baseline, and Total Score of The Northwick Park Questionnaire at Baseline. The Pearson correlations were positive, indicating that as the age of participant increases, these measurements increase.

36. The results also show that there are significant negative relationships at 0.05 level between the Age of participants and the following measurements: Improvement in Northwick Park Questionnaire, Improvement in Neck Disability Index, Total score of Physical Health Domain in Quality Of Life Scale at Baseline, Total score of Social Relationship Domain in Quality Of Life Scale at the Post of Treatment, Total score of Social Relationship Domain in Quality Of Life Scale at Baseline, Total score of Social Relationship Domain in Quality Of Life Scale at the Mid of Treatment, and Total score of Physical Health Domain in Quality Of Life Scale at the Mid of Treatment. The Pearson correlations were negative indicating that as the age of participant increases, these measurements decreases.

4.2 Results Discussion

This preliminary RCT targeted the Cervicothoracic treatment junction in cervical dysfunction using either Bridge technique mobilization with movement or trapezius dry needling; this study compares the soft tissue release technique and the joint mobilization technique. Improvements in these outcomes of pain intensity VAS, cervical extension ROM, QoL, NDI, and NPQ were identified before the treatment, after four sessions (two weeks) in the mid-term treatment, and eight sessions (4 weeks) were finally after the treatment. However, comparing the Bridge technique's effectiveness as a joint maneuver compared to soft tissue techniques like dry needling revealed a significant difference between the two groups and within groups. Also, no adverse effects appear in any of the therapy groups. Limited studies have proposed that CT junction, being a transitional segment, is subjected to compressive loads and limited CT junction mobility and significant stress, contribute to cervical dysfunction[20][12].

In this study, the average age of participants in the two groups was (29) years old, with no statistical difference between the experimental Bridge Technique MWM group and the Dry Needling as a control group.

This age considered a young age, considering that this research included age category of (25) to (65) years old. Furthermore, having such an average young age could reflect behavioral and occupational etiology rather than degenerative cervical dysfunction causes.

This young age shows the import ants of a further study investigating the etiology and the epidemiology of cervical dysfunction among young females in Palestine. Moreover, at the same time, it reflects the importance of other ergonomic health promotion among young adults to decrease the incidence of such a phenomenon. Especially that when comparing our age of participants, we found that they are below the average of other studies as compared to the study of Creighton et al.(2014) is (58) years old [10], the study of Andrews et al. 2018 (35) years old[33] and the study of Joshi, Balthillaya, and Neelapala (2020) that reported an average age of (35)years old [12].

Coming back to the young age issue, as we notice in the results that more than two-thirds of the sample in both groups are either working in office work or having a job that requires a physical demand, which may support our potential of the young age of the sample. It is related to behavioral and occupational etiology. It is worth mentioning that even the other third that reported no job may be related to being a housewife who is even considered hard work, with lots of ergonomic and behavioral risks.

Gender wise around 60% of participants were females, which shows an increased percentage in our sample; this increase may not reflect the actual difference in neck pain incidence. Still, it may also reflect other factors like cultural challenges in a conservative community like Hebron, taking into consideration to the treatment was performed by a female therapist, or it may reflect substantial variation in a cadence that we cannot confirm within the scope of this study, however, in literature, most of the participants are females[10][29][39].

As was presented in chapter 4 that 60% of participants in both groups had been subjected to previous physiotherapy sessions, 55% of that 60% reported previous traditional treatment. This indicates that patients in these two groups seek a further solution for unresolved cervical challenges, which is another indicator of unsatisfactory previous traditional physiotherapy trials; it also points to the importance of the applications of up to date evidence-based practice in physiotherapy. This is again evident in that only 5 % of our participants had been subjected to manual therapy, which is considered one of the core interventions in cervical movement dysfunction.

Group analysis revealed a statistically significant improvement in cervical extension ROM. Both the Bridge MWM and Trapezius DDN showed more significant improvement in time. However, the Bridge technique was more effective than trapezius dry needling in increasing the ROM Score over each group's time. Moreover, the Bridge technique is more effective than dry needling in increasing the Range of Motion Score on the average between groups. The Bridge MWM delivered in this study could have reduced the CT junction's stiffness and increased the overall cervical extension ROM. The study showed a similar result in previous studies over the cervical region. There was a predominant increase in ROM in the Bridge

technique group. The increase in cervical extension ROM (in degrees) is almost equivalent to the previous studies after a single session of CT junction mobilization conducted by Riaz et al. (2018), who showed that neck flexion and extension were improved in the Kaltenborn mobilization group more than static stretching[40].

Similarly, (Joshi et al. 2020) found significant cervical ROM improvements and pain reduction in both mobilization and manipulation groups; however, mobilization was more efficacious[12]. Our results also support the findings of Kim and Kim (2020), who concluded that Cervicothoracic junction mobilization was a more significant and increasing cervical extension and right rotation ROM than the upper-cervical mobilization [23]. The findings in this study again support the argument that joint techniques are more logical to improve joint ROM than muscle techniques which the effect of its release on joint motion may be secondary or as an outcome, rather than direct effect as in the case of joint techniques over limited ROM in joints. This study investigated extension ROM, for further studies, it may be recommended to include other direction of ROM, mainly flexion, Rt. And Lt. Rotation and side flexion. Based on this finding the researcher rejects a null hypothesis and accept the alternative hypothesis that is Bridge technique is more effective than Dry needling in the management of cervical dysfunction.

The Bridge technique is more effective than dry needling in decreasing the Visual Analog score over time and between groups. Similar results confirm this finding of the ability of a joint technique to decrease the pain more than soft tissue technique (mainly Dry needling), this finding was supported by Creighton (2014)[10], in a review by Joshi (2019)[7] and a recent pilot study by Joshi (2020)[12].

Pain in general, when it originates from a stressed joint, may limit ROM and make several changes that would make any movement painful. Simultaneously, pain in the joints with limited movement will cause muscle guarding, which will also contribute to the pain through the pain spasm pain cycle; intervention in both directions is part of the vicious cycle of pain being secondary or primary to either joint or muscle dysfunction. This finding also points out the importance of using both approaches in managing pain and the limitation of cervical ROM. Based on this finding, the researcher rejects a null hypothesis and accept the alternative hypothesis that is Bridge

technique is more effective than Dry needling in the management of cervical dysfunction.

Quality of life in both groups significantly improved in between different assessment points. Simultaneously, there was no difference between the two groups (Bridge, Dry needling), indicating that any difference in QoL may be justified by the time itself or the physiotherapy session rather than the intervention type. These results are consentient with a survey conducted by Cagnie et al.(2015) in his A Systematic Review, which concluded weak evidence that mobilizations could affect quality-of-life [17]. Also, come in consensus with Gross et al. (2010), who concluded that manipulation and mobilization were not associated with QoL improvement [55]. The researchers in this study recommend further studies requiring different interventions and the possible association with QoL subdomains instead of the overall QoL questionnaire.

Moreover, found again in the subdomains of the quality of life results in this study, this subdomain showed statistically significant improvement in both groups, with statically significant difference between the Bridge technique and Dry Needling outcome. This change in the overall quality of life and its subdomains of physical and psychological aspects that are interrelated indicated the relatedness of muscular and joint techniques in managing musculoskeletal dysfunction. Both muscles and joints affect each other in different ways. We saw in dry needling targeting trapezius similar improve compared to bridge techniques targeting the CT junction, and both improved physical and psychological aspects with favor for experimental bridge group. No doubt, the failure of both techniques to improve the social domain of the quality of life points out the multi-dimensionality of people's life's social aspects, which cannot be improved by only intervening with musculoskeletal approaches alone. Based on this finding, the researcher rejects a null hypothesis and accepts the alternative hypothesis that both dry needling and bridge technique effectively manage cervical dysfunction. The researchers also recommend further studies investigating the effect of different other discipline outcomes on social aspects in patients with cervical dysfunction.

As was presented in chapter 4, significant improvements were reported by the participants on both NDI and NPQ with a statistical difference in favors of (Bridge

group). This improvement may be justified that cervical associated disability may be associated with restricted cervical movement and pain resulting from a limited movement range. While attempting to do full range functional activities, as the Bridge technique focuses on increasing mobility on a very sensitive area like the CT junction, this can explain the improvement detected on both disability outcome measures (NDI&NPQ). Those results come inconsistency with the finding of Kim, Kim, & Lee (2020), who reported improvement in functional activities according to NPQ when he applied thoracic spine self-mobilization exercise[32]. Based on this finding, the researcher rejects a null hypothesis and accept the alternative hypothesis that is Bridge technique is more effective than Dry needling in the management of cervical dysfunction.

Age, as an independent and sometimes confounding factor, usually affects general interrelated variables. In this study, its positive relation with improvement in physical and functional status is justified because, with age, general changes may occur on the level of ROM in different joints, including the cervical, thoracic junction. Especially when a high percentage of people adopt the poor posture, that will increase those range challenges with time; this finding was also supported by Riaz (2018)[40].

4.3 Study Limitations

The present study has some limitations. Firstly, the researcher assessed and treated one muscle in the cervical region, although other muscles may be implicated in cervical pain; we do not know whether other cervical muscles affect it. Secondly, our study contained pre, mid, and post effects; thus, future studies should investigate the long-term effects of Bridge technique mobilization with movement. Thirdly the researcher was not blinded and performed all interventions and subsequent measurements. Therefore, the potential for examiner bias regarding the use of these techniques cannot be ruled out. Finally, there were only 40 participants in this trial because of Coronavirus; further experimental design should look at a more significant number of patients.

Chapter Five Content

Conclusions and Recommendations

5.1 Conclusions

5.2 Recommendations

Chapter Five

Conclusions and Recommendations

5.1 Conclusions

- This preliminary experimental study is the first trial investigating CT junction mobilization effects using Bridge mobilization with movement, specifically on participants with limitation in cervical extension ROM for cervical dysfunction as a Bridge MWM group compared with trapezius dry needling group.
- The study identified that Bridge technique mobilization with movement is superior to trapezius dry needling in improving cervical extension and pain intensity for participants with cervical dysfunction.
- The study suggests that mobilization with movement (Bridge technique MWM) is superior than trapezius dry needling in the management of cervical dysfunction.
- This study results showed that the bridge technique is cost-effective in achieving less pain in less time as compared to dry needling

5.2 Recommendations

Based on the results of this study, the researchers recommend the following

1. For further research, the researcher recommends
    a. Application of this study over a bigger sample size
    b. A further study investigating the etiology and the epidemiology of cervical dysfunction among young females in Palestine
    c. Further studies that would require different interventions and the possible association with subdomains of QoL instead of the overall QoL questionnaire

d. Further studies investigating the effect of different other discipline outcomes on social aspects in patients with cervical dysfunction

e. Further studies include other direction of Rom, mainly flexion, Rt. And Lt. Rotation and side flexion.

2. To consider dry needling of the trapezius as an effective technique in increasing ROM, functional ability and decreasing pain in cervical dysfunction

3. To adopt the Bridge techniques as safe, fast, and more effective techniques in managing pain, functional ability and ROM limitation in CT junction.

4. Future studies with a larger sample size evaluating the long-term effects of CT junction mobilization in neck pain are necessary to confirm this study's findings further.

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Appendix 1: Data collection sheet

Al – Quds University

Faculty of health professions

Physiotherapy department

Effect of Bridge technique mobilization with movement versus trapezius dry needling in management of cervical dysfunction

تأثير تقنية بريدج للعلاج اليدوي مع الحركة بالمقارنة بالإبر الجافه للعضلة شبه المنحرفة في علاج اضطرابات الرقبة

الدراسة تخص رسالة ماجستير للطالبة رقيه ملش من دائرة العلاج الطبيعي في جامعة القدس

Participant Name:	
Participant Code:	
Date of Signature:	

Section I: Personal Data

1. **Name of participant:…….**
2. **Phone number:…….**
3. **Gender: ■ Female ■ Male**
4. **Age:……**
5. **Education**
    - **None**
    - **Elementary school**
    - **High school**
    - **College**
    - **Graduate / professional degree**
6. **Occupation ----------**

Section II: Medical History

1. **Medication:**
   _____
2. **Previous**
   Surgery:_____
3. **Previous injuries ----------**
   ----
4. **Previous investigation(s)----------**
   ----
5. **Previous physiotherapy treatment: Yes NO**
6. **If Yes, what is the type of treatment:**

- **Traditional treatment**
- **Manual therapy**
- **Chiropractic therapy**

Section III: Outcome Measures

Outcome measures	Pre	Mid	Post
QOLS (total)			
1) Physical health			
2) Psychological health			
3) Social relationships			
NPQ			
NDI			
ROM			

Appendix 2: VAS Scale

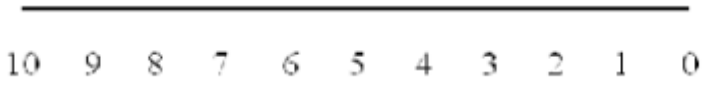
Visual Analogue Scale (VAS)

Instructions for producing a VAS Bedside card:

OPTION 1

- Double-sided print or photocopy the next 2 diagrams ensuring that the lines are exactly 10 cm in length and superimposed
- Laminate the VAS Bedside card for patient use

No pain Worst pain ever



PLEASE NOTE: For purposes of double-sided print, the numbers on this scale are reversed.

Appendix 3: WHO Quality of life scale

WHO Quality of Life Scale-Brief

Before we begin we would like to ask you to answer a few general questions about yourself by circling in the correct answer or by filling in the space provided.

1. What is your gender? Male Female

2. What is your date of birth? _____ / _____ / _____
   Day Month Year

3. What is the highest education you received?
   None at all
   Elementary School
   High School
   College
   Graduate/Professional Degree

4. What is your marital status?
   Single Separated
   Married Divorced
   Living as Married Widowed

5. Are you currently ill? Yes No

6. If something is wrong with your health, what do you think it is? _____ illness/problem

Instructions: This questionnaire asks how you feel about your quality of life, health, or other areas of your life. Please answer all of the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

Please keep in mind standards, hopes, pleasures, and concerns. We ask that you think about your life in the last two weeks. For example, thinking about the last two weeks a question might ask:

Do you get the kind of support from others that you need?	*(Please circle the number)*				
	Not at all	A little	Moderately	Mostly	Completely
	1	2	3	4	5

You should circle the number that best fits how much support you got from others over the last two weeks. So you would circle the number 4 if you got a great deal of support from others.

Do you get the kind of support from others that you need?	*(Please circle the number)*				
	Not at all	A little	Moderately	Mostly	Completely
	1	2	3	(4)	5

You would circle number 1 if you did not get any of the support that you needed from others in the last two weeks.

Do you get the kind of support from others that you need?	*(Please circle the number)*				
	Not at all	A little	Moderately	Mostly	Completely
	①	2	3	4	5

Please read each question, assess your feelings, and circle the number on the scale that gives the best answer for you for each question.

For Office Use G1/G1.1

1. How would you rate your quality of life?

(Please circle the number)				
Very poor	Poor	Neither poor nor good	Good	Very Good
1	2	3	4	5

For Office Use G4/G2.3

2. How satisfied are you with your health?

(Please circle the number)				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
1	2	3	4	5

The following questions ask about how much you have experienced certain things in the last two weeks.

	(Please circle the number)				
	Not at all	A little	A moderate amount	Very much	An extreme amount
For Office Use F1.4/F1.2.5 3. To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
For Office Use F11.3/F13.1.4 4. How much do you need any medical treatment to function in your life?	1	2	3	4	5
For Office Use F4.1/F6.1.2 5. How much do you enjoy life?	1	2	3	4	5
For Office Use F24.2 /F29.1.3 6. To what extent do you feel your life to be meaningful?	1	2	3	4	5
For Office Use F5.2 /F7.1.6 7. How well are you able to concentrate?	1	2	3	4	5

		(Please circle the number)				
		Not at all	Slightly	A moderate amount	Very much	Extremely
		1	2	3	4	5
	8. How safe do you feel in your daily life?					
For office Use F16.1/F20.1.2	9. How healthy is your physical environment?	1	2	3	4	5

For Office Use F22.1/F27.1.2

The following questions ask about how **completely** you experience or were able to do certain things in the last two weeks.

	(Please circle the number)				
	Not at all	A little	Moderately	Mostly	Completely
10. Do you have enough energy for everyday life?	1	2	3	4	5
For Office Use F2.1/F2.1.1 11. Are you able to accept your bodily appearance?	1	2	3	4	5
For Office Use F7.1/F9.1.2 12. Have you enough money to meet your needs?	1	2	3	4	5
For Office Use F18.1/F23.1.1 13. How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
For Office Use F20.1/F25.1.1 14. To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

	(Please circle the number)				
	Very poor	Poor	Neither poor nor well	Well	Very well
For Office Use F21.1/F26.1.2 15. How well are you able to get around?	1	2	3	4	5

For Office Use F9.1/F11.1.1

The following questions ask you to say how **good** or **satisfied** you have felt about various aspects of your life over the last two weeks.

	(Please circle the number)				
	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16. How satisfied are you with your sleep?	1	2	3	4	5
For Office Use F3.3/F4.2.2 17. How satisfied are you with your ability to perform your daily living activities.	1	2	3	4	5

For Office Use F10.3/F12.2.3

		(Please circle the number)				
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
For Office Use F12.4/F16.2.1	18. How satisfied are you with your capacity for work?	1	2	3	4	5
For Office Use F6.4/F8.2.2	19. How satisfied are you with yourself?	1	2	3	4	5
For Office Use F13.3/F17.2.3	20. How satisfied are you with your personal relationships?	1	2	3	4	5
For Office Use F15.3/F3.2.1	21. How satisfied are you with your sex life?	1	2	3	4	5
For Office Use F14.4/F18.2.5	22. How satisfied are you with the support you get from your friends?	1	2	3	4	5
For Office Use F17.3/F21.2.2	23. How satisfied are you with the conditions of your living place?	1	2	3	4	5
For Office Use F19.3/F24.2.1	24. How satisfied are you with your access to health services?	1	2	3	4	5
For Office Use F23.3/F28.2.2	25. How satisfied are you with your mode of transportation?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last two weeks.

		(Please circle the number)				
		Never	Seldom	Quite often	Very often	Always
For Office Use F8.1/F10.1.2	26. How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Did someone help you to fill out this form? *(Please circle Yes or No)* Yes No

How long did it take you to fill out this form? _____minutes

4

Appendix 4: The Northwick Park Neck Pain Questionnaire (NPQ)

Optimal Performance Physical Therapy

Northwick Park Neck Pain Questionnaire

Name: _____ **Signature:** _____ **Date:** _____

Please Read: This questionnaire has been designed to give us information as to how Neck Pain has affected your ability to manage in everyday life. Please answer every section and mark in each section ONLY The ONE BOX which applies to you. We realize you may consider that two of the statements in any one section relate to you, BUT PLEASE MARK THE ONE BOX THAT MOST CLOSELY DESCRIBES YOUR PROBLEM.

Section 1 - Pain Intensity:

- ☐ A. I have no pain at the moment.
- ☐ B. My pain is very mild at the moment.
- ☐ C. My pain is moderate at the moment.
- ☐ D. My pain is fairly severe at the moment.
- ☐ E. My pain is very severe at the moment.

Section 2 - Pain and Sleeping

- ☐ A. My sleep is never disturbed by pain.
- ☐ B. My sleep is occasionally disturbed by pain.
- ☐ C. My sleep is regularly disturbed by pain.
- ☐ D. Because of pain I have less than 5 hours sleep in total.
- ☐ E. Because of pain I have less than 2 hours sleep in total.

Section 3 - Pins, Needles or Numbness in Arms at Night

- ☐ A. I have no pins and needles or numbness at night.
- ☐ B. I have occasional pins and needles or numbness at night.
- ☐ C. My sleep is regularly disturbed by pins and needles or numbness.
- ☐ D. Because of pins and needles or numbness I have less than 5 hours sleep in total.
- ☐ E. Because of pins and needles or numbness I have less than 2 hours sleep in total.

Section 4 - Duration of Symptoms

- ☐ A. My neck and arms feel normal all day.
- ☐ B. I have symptoms in my neck or arms on walking, which last less than one hour.
- ☐ C. Symptoms are present on & off for a total period of 1-4 hrs.
- ☐ D. Symptoms are present on & off for a total of more than 4 hrs.
- ☐ E. Symptoms are present continuously all day.

Section 5 - Carrying

- ☐ A. I can carry heavy objects without extra pain.
- ☐ B. I can carry heavy objects, but they give me extra pain.
- ☐ C. Pain prevents me from carrying heavy objects, but I can manage medium weight objects.
- ☐ D. I can only lift light weight objects.
- ☐ E. I cannot lift anything at all.

Section 6 - Reading and Watching TV

- ☐ A. I can do this as long as I wish with no problems.
- ☐ B. I can do this as long as I wish, if I'm in a suitable position.
- ☐ C. I can do this as long as I wish, but it causes extra pain.
- ☐ D. Pain causes me to stop doing this sooner than I would like.
- ☐ E. Pain prevents me from doing this at all.

Section 7 - Working/Housework, Etc.

- ☐ A. I can do my usual work without extra pain.
- ☐ B. I can do my usual work, but it gives me extra pain.
- ☐ C. Pain prevents me from doing my usual work for more than half the usual time.
- ☐ D. Pain prevents me from doing my usual work for more than a quarter of the usual time.
- ☐ E. Pain prevents me from working at all.

Section 8 - Social Activities

- ☐ A. My social life is normal and causes me no extra pain.
- ☐ B. My social life is normal but increases the degree of pain.
- ☐ C. Pain has restricted my social life, but I am still able to go out.
- ☐ D. Pain has restricted my social life to the home.
- ☐ E. I have no social life because of pain.

Section 9 - Driving (if applicable)

- ☐ A. I can drive whenever necessary without discomfort.
- ☐ B. I can drive whenever necessary, but with discomfort.
- ☐ C. Neck pain or stiffness limits my driving occasionally.
- ☐ D. Neck pain or stiffness limits my driving frequently.
- ☐ E. I can not drive at all due to neck symptoms.

Section 10 - Compared with the last time you answered this question, is your neck pain:

- ☐ A. Much better.
- ☐ B. Slightly better.
- ☐ C. The same.
- ☐ D. Slightly worse.
- ☐ E. Much worse

Page 1 of 1

Appendix 5: Neck Disability Index (NDI)

Neck Disability Index

Office Use Only

Name _____

Date _____

This questionnaire has been designed to give us information as to how your neck pain has affected your ability to manage in everyday life. Please answer every section and **mark in each section only the one box that applies to you**. We realise you may consider that two or more statements in any one section relate to you, but please just mark the box that most closely describes your problem.

Section 1: Pain Intensity

- ☐ I have no pain at the moment
- ☐ The pain is very mild at the moment
- ☐ The pain is moderate at the moment
- ☐ The pain is fairly severe at the moment
- ☐ The pain is very severe at the moment
- ☐ The pain is the worst imaginable at the moment

Section 2: Personal Care (Washing, Dressing, etc.)

- ☐ I can look after myself normally without causing extra pain
- ☐ I can look after myself normally but it causes extra pain
- ☐ It is painful to look after myself and I am slow and careful
- ☐ I need some help but can manage most of my personal care
- ☐ I need help every day in most aspects of self care
- ☐ I do not get dressed, I wash with difficulty and stay in bed

Section 3: Lifting

- ☐ I can lift heavy weights without extra pain
- ☐ I can lift heavy weights but it gives extra pain
- ☐ Pain prevents me lifting heavy weights off the floor, but I can manage if they are conveniently placed, for example on a table
- ☐ Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned
- ☐ I can only lift very light weights
- ☐ I cannot lift or carry anything

Section 4: Reading

- ☐ I can read as much as I want to with no pain in my neck
- ☐ I can read as much as I want to with slight pain in my neck
- ☐ I can read as much as I want with moderate pain in my neck
- ☐ I can't read as much as I want because of moderate pain in my neck
- ☐ I can hardly read at all because of severe pain in my neck
- ☐ I cannot read at all

Section 5: Headaches

- ☐ I have no headaches at all
- ☐ I have slight headaches, which come infrequently
- ☐ I have moderate headaches, which come infrequently
- ☐ I have moderate headaches, which come frequently
- ☐ I have severe headaches, which come frequently
- ☐ I have headaches almost all the time

Section 6: Concentration

- ☐ I can concentrate fully when I want to with no difficulty
- ☐ I can concentrate fully when I want to with slight difficulty
- ☐ I have a fair degree of difficulty in concentrating when I want to
- ☐ I have a lot of difficulty in concentrating when I want to
- ☐ I have a great deal of difficulty in concentrating when I want to
- ☐ I cannot concentrate at all

Section 7: Work

☐ I can do as much work as I want to
☐ I can only do my usual work, but no more
☐ I can do most of my usual work, but no more
☐ I cannot do my usual work
☐ I can hardly do any work at all
☐ I can't do any work at all

Section 8: Driving

☐ I can drive my car without any neck pain
☐ I can drive my car as long as I want with slight pain in my neck
☐ I can drive my car as long as I want with moderate pain in my neck
☐ I can't drive my car as long as I want because of moderate pain in my neck
☐ I can hardly drive at all because of severe pain in my neck
☐ I can't drive my car at all

Section 9: Sleeping

☐ I have no trouble sleeping
☐ My sleep is slightly disturbed (less than 1 hr sleepless)
☐ My sleep is mildly disturbed (1-2 hrs sleepless)
☐ My sleep is moderately disturbed (2-3 hrs sleepless)
☐ My sleep is greatly disturbed (3-5 hrs sleepless)
☐ My sleep is completely disturbed (5-7 hrs sleepless)

Section 10: Recreation

☐ I am able to engage in all my recreation activities with no neck pain at all
☐ I am able to engage in all my recreation activities, with some pain in my neck
☐ I am able to engage in most, but not all of my usual recreation activities because of pain in my neck
☐ I am able to engage in a few of my usual recreation activities because of pain in my neck
☐ I can hardly do any recreation activities because of pain in my neck
☐ I can't do any recreation activities at all

Score: ___/50 Transform to percentage score x 100 = %points

Scoring: For each section the total possible score is 5: if the first statement is marked the section score = 0, if the last statement is marked it = 5. If all ten sections are completed the score is calculated as follows:

Example: 16 (total scored)
50 (total possible score) x 100 = 32%

If one section is missed or not applicable the score is calculated:

16 (total scored)
45 (total possible score) x 100 = 35.5%

Minimum Detectable Change (90% confidence): 5 points or 10 %points

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NDI developed by: Vernon, H. & Mior, S. (1991). The Neck Disability Index: A study of reliability and validity. Journal of Manipulative and Physiological Therapeutics. 14, 409-415

Appendix 6: Ethical approval

Al-Quds University
Jerusalem
Deanship of Scientific Research

بسم الله الرحمن الرحيم

جامعة القدس
القدس
عمادة البحث العلمي

Research Ethics Committee
Committee's Decision Letter

Date: 28 March 2020
Ref No: 117/REC/2020

Dears Dr. Akram Amro and Ms. Ruqaia Malash

Thank you for submitting your application for research ethics approval. After reviewing your application entitled **"Effect of Bridge technique mobilization with movement versus trapezius dry needling in management of cervical dysfunction "**. The Research Ethics Committee confirms that your application is in accordance with the research ethics guidelines at Al-Quds University.

We would appreciate receiving a copy of your final research report/ publication. Thank you again and wish you a productive research that serves the best interests of your subjects.

PS: This letter will be valid for two years.

Nuha El Sharif, PhD
Research Ethics Committee Chair

Cc. Prof. Imad Abu Kishek - President
Cc. Members of the committee
Cc. file

Appendix 7: Information Sheet

نموذج تعريف ومعلومات عن البحث

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اسم الباحث : رقيه ملش

تهديكم الباحثة في هذه الدراسة أ. رقيه ملش اطيب التمنيات وتشكر لكم استعدادكم للمشاركة بهذا البحث، الذي هو جزء من دراسة الماجستير في العلاج الطبيعي من جامعة القدس. هذا البحث يهدف إلى التعرف على تأثير تقنية بريدج للعلاج اليدوي مع الحركة بالمقارنة بالإبر الجافه للعضلة شبه المنحرفة في علاج اضطرابات الرقبة .

- طبيعة الفحوصات التي سوف تستخدم في هذا البحث هي فحوصات أمنة ولا يوجد منها اي ضرر على المريض.
- سيكون هناك فحص قبل التدخل العلاجي و بعده.
- تحدث إلى عائلتك وأصدقائك حول هذا الموضوع وخذ وقتك لاتخاذ القرار. إذا قررت المشاركة ، يجب عليك توقيع هذا النموذج لإظهار رغبتك في المشاركة. إن قرار عدم المشاركة أو قرار مغادرة الدراسة لاحقًا لن يؤدي إلى أي عقوبة أو يؤثر على الرعاية الصحية الحالية أو المستقبلية .

إن اشتراككم في هذا البحث هو طوعي و مرتبط بتوقيعكم على نموذج موافقة بالمشاركة وتصريح بفهمكم لطبيعة البحث، فحوصاته، والتدخل العلاجي فيه. وفي حال وجود اي استفسار عن البحث او اي شيء متعلق بهذه الدراسة، يرجى التواصل مباشرة مع الباحث (أ. رقيه ملش) على الارقام التالية 0598912749:

شاكرين لكم حسن تعاونكم

أ. رقيه ملش

بكالوريوس علاج طبيعي

طالبة ماجستير علاج طبيعي

جامعة القدس

Appendix 8: Consent Form

Informed consent to participate in Research

نموذج الموافقة على المشاركة في البحث

اسم البحث: تأثير تقنية بريدج للعلاج اليدوي مع الحركة بالمقارنة بالإبر الجافه للعضلة شبه المنحرفة في علاج اضطرابات الرقبة .

اسم الباحث : رقيه ملش

Patient name:

Patient code:

Evaluator name: _____

Date of evaluation and signature: _____

عزيزي المشارك /المشارك

توقيعك ادناه على نموذج الموافقة هذا هو بموجب موافقة مكتوبة وموقعة على المشاركة في دراسة بحثية التي تقوم بها الباحثه أ. رقيه ملش " تأثير تقنية بريدج للعلاج اليدوي مع الحركة بالمقارنة بالإبر الجافه للعضلة شبه المنحرفة في علاج اضطرابات الرقبة ". و هو إقرار بإنه قد تم شرح أهداف البحث و طريقة الفحص و التدخل العلاجي للبحث، وانه قد تم شرح حقوقك المتضمنة:

- سرية المعلومات التي تصرح بها وعدم إطلاع اي شخص عليها و تخزينها في مكان امن لا يصل اليه سوى الباحث.
- إخفاء هوية المشارك في تحليل البحث والنتائج.
- استخدام المعلومات للاغراض العلمية فقط.
- حرية إنسحابك في اي وقت من الدراسة ومن دون الحاجة لإبداء الأسباب ودون اية عواقب شخصية او مالية.
- حقك في الإطلاع على نتيجة فحوصاتك ونتائج البحث النهائية.

وأنه في حال كان لديك أسئلة حول الدراسة او حول اي معلومة متعلقة بها, يرجى الاتصال بالباحثة: رقيه ملش على ***رقم التلفون:*** 0598912749

موافقة المشارك

لقد تم وصف الدراسة البحثية لي شفهيا، وبما فيه المعلومات المدرجة أعلاه، وأوافق على المشاركة بهذه الدراسة البحثية. سوف أحصل على نسخة موقعة من هذا النموذج للاحتفاظ بها في سجلاتي، أوافق على المشاركة بهذة الدراسة.

اسم المشارك الرباعي: _____

توقيع المشارك:_____
التاريخ:_____

اسم وتوقيع
الشاهد:_____**التاريخ:**_____

Appendix 9: Dry needling consent form

معلومات عن الإبر الجافه

يعرض أخصائي العلاج الطبيعي علاجك باستخدام تقنية تسمى "الإبرة الجافة". وهذ شرح نشرة المعلومات عن هذه التقنية.

هو علاج طبي ناجح للغاية ، يستخدم إبر رفيعة جدًا دون أي دواء (إبرة جافة) لتحقيق هدفه. يستخدم الإبرة الجافة لعلاج الألم والخلل الناجم عن مشاكل العضلات والصداع وبعض مشاكل الأعصاب.

تعمل الإبرة الجافة عن طريق تغيير الطريقة التي يستشعر بها جسمك الألم (التأثيرات العصبية) ، ومساعدة الجسم على التئام تشنج العضلات العنيد المرتبط بنقاط الزناد (التأثيرات الليفي العضلي). هناك تغييرات كهربائية وكيميائية إضافية مرتبطة بالمعالجة بالإبر الجافة ، والتي تساعد في عملية الشفاء. من المهم أن ترى الإبر مجرد جزء واحد من العلاج التأهيلي الشامل. الوخز بالإبر الجاف ليس علاجًا معجزة - إنه جزء طبيعي من العلاج الطبيعي. ومن المهم أن تقوم بالتمارين وأن تتبع النصيحة التي يمنحك إياها المعالج الخاص بك بالاقتران مع الوخز من أجل الشفاء الأمثل.

تم تدريب المعالج الخاص بك على وجه التحديد في مختلف تقنيات الوخز بالإبر. وسيقوم المعالج باختيار طول وسمك الإبرة المناسبة لحالتك وحجم جسمك ، ثم إدخاله عبر الجلد في المكان المناسب. اعتمادًا على نوع تقنية الإبرة التي اختارها الطبيب المعالج ، قد تشعر أيضًا بألم في العضلات ونشل في العضلات. هذه كلها أحاسيس طبيعية وجيدة ، وتعني أنك ستعاني من أعراض جيدة.

بشكل عام ، هناك القليل جدًا من المخاطر المرتبطة بهذه التقنية إذا تم تنفيذها بشكل صحيح من قبل أخصائي العلاج الطبيعي المدربين. قد تعاني من بعض الكدمات حول موقع الإبرة ، تمامًا كما تفعل مع أي حقنة. في حالات نادرة ، قد يشعر الناس بالسعادة أو البكاء أو التعرق أو البرودة. كل هذه الأعراض تتلاشى بسرعة.

لا توجد آثار مرضية دائمة لهذه الآثار الجانبية.

إذا كنت سعيدًا بمتابعة العلاج على النحو الذي اقترحه معالجك ، وقد طرحت أي أسئلة قد ترغب فيها ، فيرجى التوقيع على نموذج الموافقة المرفق بهذه الصفحة وتسليمها إلى أخصائي العلاج الطبيعي. والاحتفاظ بها بسجلاتك الخاصة.

الموافقة على العلاج بالإبر الجافة

يجب قراءة هذه الوثيقة بالاقتران مع ورقة المعلومات بعنوان "معلومات عن تقنيه العلاج بالإبر الجافة"

1. اسم المريض بالكامل ----------

2. اسم المعالج ----------

3. اسم المركز الذي تتلقى فيه العلاج----------

4. أفهم أنه يمكنني سحب موافقتي في أي وقت
5. أنا أفهم أن المعالج مؤهل بشكل مناسب ومدرب على أداء العلاج المطلوب.
6. مناطق الجسم التي أوافق على تلقي العلاج فيها هي:

....

7. أنا مقتنع بأن هذه التقنية قد أوضحت لي تمامًا ، وأن مخاوفي قد تمت معالجتها وأن أسئلتي قد تمت الإجابة عليها بما يرضي. لقد قرأت ورقة المعلومات المرفقة المسماة "معلومات الإبرة الجافة" ، وأنا في وضع مرضٍ لموازنة مخاطر وقيود هذه التقنية فيما يتعلق بالآثار الجانبية المعروفة.
8. أفهم أن هذه التقنية يتم تنفيذها في إطار إعادة التأهيل وأنه يجب علي اتباع الإرشادات كما هو موضح من قبل أخصائي العلاج الطبيعي.

التاريخ: ..... الوقت: ..... المكان: .....