ASSOCIATION BETWEEN CERVICOCEPHALIC
KINESTHETIC SENSIBILITY AND
CHARACTERISTICS OF MECHANICAL NECK PAIN
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Key Words: Mechanical Neck Pain, Kinesthetic Sensibility, Neck Proprioception.

ABSTRACT

Background: Dysfunction of neck kinesthetic sensibility characterized by increased movement irregularities and movement errors during reposition tasks has been shown in middle-aged subjects with chronic neck pain. However, pain can also induce changes in muscle spindle discharge or the central output of the nervous system. Aim of study: To determine a relationship between impaired cervicocephalic kinesthetic sensibility and mechanical neck pain characteristics.

Procedures: Sixty patients with mechanical neck pain repositioned their heads to the neutral head position in sagittal and transverse plane. When the subjects reach the reference position, the subject’s relocation accuracy was measured in degrees using the CROM device. The Northwick neck pain questionnaire (NPQ) has proved to be a useful tool in neck pain studies, correlating with objective measurements of neck pain characteristics. Results: there was positive significant correlation between NPQ score and flexion, rotation reposition error. Conclusion: Disturbed kinesthetic sensibility was correlated with changes in the mechanical neck pain characteristics.

INTRODUCTION:

Neck pain is a musculoskeletal symptom associated with disability and significant economic health costs. Neck pain has been classified as 1 of the top 2 largest reasons for disability caused by musculoskeletal pain conditions by the Global Burden of Disease studies. It has been reported that 70% of the general population will experience neck pain at some time during their lives; however, the global point prevalence is 4.9%[1].
Neck pain shows a high rate of recurrence and chronicity. Three out of 10 neck pain patients will develop chronic symptoms that last more than 6 months whereas 34% will show symptoms for more than 12 months[2]. Some studies have demonstrated an association between range, velocity and smoothness of cervical motion and patients' subjective reports of pain intensity and disability, and also fear of neck motion[3]. Some investigators assume that proprioception deficit might be a factor predisposing to pain and injury via poor motor control. Understanding the proprioceptive function alterations in the presence of chronic neck pain (CNP) thus seems necessary for evaluation and rehabilitation of these patients[4].

Several authors have speculated that imprecision in the proprioceptive system could contribute to or cause persistent pain, via peripheral and central mechanisms[5].

An impaired position sense disturbs both neuronal and muscular control of the normal cervical joint function, which may result in the untimely production of unbalanced muscle force and place the joint at risk of trauma [6].

Dysfunction of kinesthetic sensibility characterized by increased movement irregularities and movement errors during reposition tasks has been shown in middle-aged subjects with chronic neck pain. However, pain can also induce changes in muscle spindle discharge or the central output of the nervous system[7].

Disturbed kinesthetic sensitivity has been implicated in the functional instability of joints and their susceptibility to reinjury, chronic pain, and even degenerative joint disease[8].

The relationship of pain and changes in motor control has been shown in several studies and is seen as protective reaction of the body to limit provocation of the painful area. This, in the long run, can cause further damage, exacerbate the symptoms through peripheral and central nervous system sensitization (lowering of pain threshold), and promote dysfunctional movement patterns [9].

An important function of the cervical spine is quick and precise head movement in reaction to surrounding stimuli. Consequently, research into impairments associated with altered cervical kinematics, such as velocity and accuracy of movement, in those with neck pain has been gaining attention[3].

This study was designed to correlate cervicocephalic kinesthetic sensibility and characteristics of mechanical neck pain.

Procedures:

I. Patients selection:

Correlational study conducted on sixty subjects with mechanical neck pain. The subjects were diagnosed, and referred from a neurologist. The patients were selected from helmya military hospital. Ethical committee
approval was obtained from the ethical committee of the Faculty of Physical Therapy, Cairo University, Egypt

**Inclusion criteria include:** the patients had insidious neck pain for 3 months. Their age ranged from 18 to 30 years. Neck pain was the main presenting complaint and neck movements reproduced neck pain. Patients had sufficient cognitive abilities that enables them to understand and follow instructions (Mini-Mental State Examination (MMSE) scale >24).

**Exclusion Criteria include:** Pregnant females, patients with tumors (spinal tumors), spinal fracture, polyneuropathy, caudaequina syndrome and cord compression, previous spinal surgery, degenerative spondylolisthesis and medically or psychologically unstable patients.

**II. Instrumentations:**

1- Cervical Range of Motion device (CROM) as an objective assessment device for cervicocephalic kinesthetic sensibility:

The cervical range of motion (CROM) device figure (1) is one of the tools available clinically to measure cervical ROM. The CROM device consists of a plastic frame placed on the head over the nose and the ears, secured by a Velcro strap[10]. The cervical range of motion (CROM) device measures cervical ROM for rotation, flexion/extension, and lateral flexion using 3 separate inclinometers attached to a frame similar to eyeglasses: the first inclinometer in the transverse plane for rotation, the second inclinometer in the sagittal plane for flexion/extension, and the third inclinometer in the frontal plane for lateral flexion. The rotation inclinometer has a magnetic needle, whereas the flexion/extension and the lateral flexion inclinometers have gravity needles. A magnetic necklace is worn by the subject to produce the magnetic field required to move the rotation inclinometer’s needle when the head is rotated. A moveable ring on each inclinometer is used to set the zero position. Finally, all the inclinometers are marked in 2° increments[11].

![Figure (1): CROM device.](image-url)
2- The Northwick Park Neck Pain Questionnaire as an assessment method of pain characteristics:

Among the different questionnaires available for outcome measures, the Northwick neck pain questionnaire (NPQ) has proved to be a useful tool in neck pain studies, correlating with objective measurements[12]. The NPQ is a self-administered questionnaire which includes 9 sections on daily activities that may be affected by neck pain: intensity, sleeping, numbness, duration, carrying, reading/television, work, social and driving. The NPQ had three items linked to body function categories and five items linked to activity and participation categories. Two items (item 4: ‘Duration of symptoms’ and item 10: ‘Comparison of current state with the last time the questionnaire was completed’) could not be linked to any ICF category[13]. Among the different questionnaires available for outcome measures, the NPQ has proved to be a useful tool in neck pain studies, correlating with objective measurements [14]. It has been validated in patients with neck pain in several countries and languages, and also with acceptable test–retest reliability[15]. The Arabic version of NPQ is valid, reliable and appropriate for use in Arabic-speaking patients with physiological neck pain in Egypt. Thus, this tool will be invaluable to clinicians and researchers working with neck pain patients in Egypt[16].

III. Assessment Protocol:

Our participants underwent the following battery of evaluation:

Clinical assessment includes: full history taking, general medical examination and neurological evaluation and general neurological examination sheet (Appendix 1). On approval to participate in the study, all subjects signed an informed consent form after receiving full information on the purpose of study, procedure, possible benefits, privacy and use of data, and their rights to withdraw from the study when even they want. All subjects were evaluated using the same procedures.

A. Assessment of cervicocephalic kinesthetic sensibility using CROM:

Figure (2): Assessment of rotation and flexion repositioning error
The subjects sit upright in a comfortable position and looked straight ahead (i.e., in neutral head position) and advised not to move their shoulders for the rest of the test. The CROM was placed on top of the head and was attached posteriorly using the Velcro strap. The magnetic part of the unit was then placed so that it would set squarely over the shoulders. The investigator calibrated the CROM device to a neutral head position. For the cervicocephalic kinesthetic sensibility tests, subjects were asked to keep their head in the neutral position and were told to close their eyes throughout the subsequent tests. The test was the head-to-neutral head position repositioning test [17]. The subjects were instructed to turn their head fully to the left and back to what they believed to be the starting point in a controlled fashion without opening their eyes. When the subjects reached the reference position, the subject’s relocation accuracy was measured in degrees using the CROM device. The repositioning tests were done in the sagittal and transverse planes. When the subjects reached the reference position, their relocation accuracy was measured in degrees using the CROM device. Each test trial position was carried out three times, and the average of the three trials was used for analysis. Joint position sense (JPS) was analyzed by calculating the angular displacement error of active angle repositioning of cervical movement (the absolute value of the difference between the reference angle and subject’s reposition angle).

B. Evaluation of the characteristics of mechanical cervical pain using the Arabic version of the Northwick neck pain questionnaire (NPQ):

The NPQ consisted of nine items including pain intensity, duration of symptoms, pins and needles or numbness at night, Pain affecting sleep, effect on social life, carrying, reading/watching television (TV), working/housework, and driving [18]. For each item, there were five potential responses describing a greater degree of difficulty (0 = no difficulty to 4 = severe difficulty). An overall percentage NDQ score was calculated by adding together the scores for each item (0–36) and calculating a percentage (total score/36 x 100%). If items were not applicable, the total potential score was reduced (e.g., one item not applicable, total score out of 32). The NPQ had been validated in patients complaining of neck pain attending a rheumatology clinic in the United Kingdom (UK) where mean scores for each item were shown to correlate with intensity of pain [19]. It had also been shown to have acceptable test–retest reliability [20] and sensitivity to change.

Statistical Analysis

Descriptive statistics in form of mean, standard deviation, minimum, maximum, and frequency were conducted to present the measured variables. Pearson Correlation Coefficient was conducted to investigate the correlation between cervicocephalic kinesthetic sensibility (repositioning error) and NPQ. Guidelines for interpreting the correlation coefficient: 0 indicates no linear relationship. Values between 0 and 0.3 (0 and –0.3) indicate a weak
positive (negative) linear relationship. Values between 0.3 and 0.7 (-0.3 and -0.7) indicate a moderate positive (negative) linear relationship. Values between 0.7 and 1.0 (-0.7 and -1.0) indicate a strong positive (negative) linear relationship. the level of significance for all statistical tests was set at p < 0.05. All statistical tests were performed through the statistical package for social studies (SPSS) version 22 for windows. (IBM SPSS, Chicago, IL, USA).

RESULTS
- General characteristics of the subjects:
Sixty subjects with mechanical neck pain participated in this study. Their mean ± SD age, weight, height and BMI were 24.58 ± 3.12 years, 67.55 ± 5.56 kg, 165.66 ± 5.22 cm and 24.61 ± 1.73 kg/m² as shown in table 1 and figure 1-4.

Table 1. Descriptive statistics for the age, weight, height and BMI of the study group.

<table>
<thead>
<tr>
<th></th>
<th>Mean ±SD</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>24.58 ± 3.12</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>67.55 ± 5.56</td>
<td>80</td>
<td>57</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>165.66 ± 5.22</td>
<td>177</td>
<td>157</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>24.61 ± 1.73</td>
<td>27.54</td>
<td>20.08</td>
</tr>
</tbody>
</table>

Figure (1). Mean age of the study group
Figure (2). Mean weight of the study group.
Figure (3). Mean height of the study group.
Figure (4). Mean BMI of the study group.
- **Sex distribution:**

The sex distribution of the study group revealed that there were 13 females with reported percentage of 22% while the number of males was 47 with reported percentage of 78% as shown in table (2) and demonstrated in figure (5).

**Table 2. The frequency distribution of sex in the study group:**

<table>
<thead>
<tr>
<th>Sex distribution</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (%)</td>
<td>13 (22%)</td>
<td>47 (78%)</td>
</tr>
<tr>
<td>Total</td>
<td>60 (100%)</td>
<td></td>
</tr>
</tbody>
</table>

![Sex distribution](image)

**Figure (5).** Sex distribution of the study group.

- **Descriptive statistics of NPQ score of the study group:**

The mean ± SD NPQ score of the study group was 23.99 ± 9.92 with a minimum value of 9.37 and maximum value of 50 as shown in table 3 and figure 6.

**Table 3. Descriptive statistics of the NPQ score of the study group:**

<table>
<thead>
<tr>
<th>NPQ score</th>
<th>$\bar{x}$ ± SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23.99 ± 9.92</td>
<td>9.37</td>
<td>50</td>
</tr>
</tbody>
</table>

$\bar{x}$ : Mean  
SD: Standard Deviation

![NPQ score](image)

**Figure (6).** Mean NPQ score of the study group.
- Descriptive statistics of repositioning error in head to neutral position test:

**Flexion reposition error**

The mean ± SD flexion reposition error of the study group was 2.61 ± 2.17 degrees with a minimum value of 0 degrees and maximum value of 11 degrees as shown in table 4 and figure 7.

**Extension reposition error**

The mean ± SD extension reposition error of the study group was 3.45 ± 1.97 degrees with a minimum value of 0 degrees and maximum value of 8 degrees as shown in table 4 and figure 7.

**Right rotation reposition error**

The mean ± SD right rotation reposition error of the study group was 2.45 ± 1.96 degrees with a minimum value of 0 degrees and maximum value of 9.3 degrees as shown in table 4 and figure 7.

**Left rotation reposition error**

The mean ± SD left rotation reposition error of the study group was 3.16 ± 2.18 degrees with a minimum value of 0 degrees and maximum value of 10.6 degrees as shown in table 4 and figure 7.

<table>
<thead>
<tr>
<th>Repositioning error (degrees)</th>
<th>( \bar{x} \pm SD )</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>2.61 ± 2.17</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Extension</td>
<td>3.45 ± 1.97</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Right rotation</td>
<td>2.45 ± 1.96</td>
<td>0</td>
<td>9.3</td>
</tr>
<tr>
<td>Left rotation</td>
<td>3.16 ± 2.18</td>
<td>0</td>
<td>10.6</td>
</tr>
</tbody>
</table>

\( \bar{x} \) : Mean  \quad SD: Standard Deviation

![Figure (7). Mean repositioning error in head to neutral position test of the study group.](image)
I- Relationship between NPQ score and repositioning error in head to neutral position test of the study group:

The correlation between NPQ score and flexion reposition error was moderate positive significant correlation (r = 0.511, p = 0.0001). (Table 6, figure 9).

The correlation between NPQ score and extension reposition error was weak negative non-significant correlation (r = -0.008, p = 0.95). (Table 6, figure 10).

The correlation between NPQ score and right rotation reposition error was moderate positive significant correlation (r = 0.330, p = 0.01). (Table 6, figure 13).

The correlation between NPQ score and left rotation reposition error was weak positive significant correlation (r = 0.274, p = 0.03). (Table 6, figure 14).

Table 6. Correlation between NPQ score and repositioning error in head to neutral position test of the study group:

<table>
<thead>
<tr>
<th>NPQ score</th>
<th>Repositioning error (degrees)</th>
<th>r value</th>
<th>p value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>0.511</td>
<td>0.0001</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Extension</td>
<td>-0.008</td>
<td>0.95</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Right rotation</td>
<td>0.330</td>
<td>0.01</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Left rotation</td>
<td>0.274</td>
<td>0.03</td>
<td>S</td>
<td></td>
</tr>
</tbody>
</table>

r value: Pearson correlation  p value: Probability  S: Significant  NS: Non-significant

Figure (9). Correlation between NPQ score and flexion reposition error in head to neutral position.

Figure (10). Correlation between NPQ score and extension reposition error in head to neutral position.

Figure (13). Correlation between NPQ score and right rotation reposition error in head to neutral position.

Figure (14). Correlation between NPQ score and left rotation reposition error in head to neutral position.
DISCUSSION:

The present study revealed that individuals with higher NPQ score could not reproduce the neutral head position (NHP) as accurately when repositioning their head. The results of the present work revealed that there was positive significant correlation between NPQ score and flexion, rotation repositioning to neutral and non-significant correlation between NPQ score and extension repositioning to neutral. Rix and Bagust found that people with chronic idiopathic neck pain were significantly worse than healthy controls when performing relocation to the neutral head position from flexion \( (p<0.03) \). There were no significant differences between groups \( (p>0.05) \) for relocation tasks from neck extension \[21\]. In the present work, measurement was limited to the age between 18 and 30-year-old to limit the impact of age on JPS, such that as age increases, joint position sense (JPS) reduces.\[22\]. To measure cervical proprioception, this study implemented the active head repositioning to neutral position, which was previously used by several authors in clinical settings and was found to be a reliable method. The number of testing trials or movement repetitions in each direction was limited to three to minimize the effect of fatigue of cervical muscles on joint position error (JPE). Different authors recommended a greater number of trials in each testing direction to improve the reliability of position sense measurement, but increasing the number of repetitions could possibly lead to increased pain and fatigability, which might alter the test results of JPEs in subjects with mechanical neck pain. Recurrent episode of neck pain has reported to induce changes in the cervical mechanoreceptor function and to affect the muscle spindle sensitivity. A modified interpretation of neck proprioceptive signals in the center nervous system could also result in an offset in the egocentric reference frame and interfere with the central control over the activation of muscles. Accordingly, the diminished mechanoreceptor and muscle spindle function, and the central misinterpretation of the proprioceptive inputs could lead to the loss of cervicocephalic kinesthetic acuity.\[7\]. Arimi found no association between cervical JPE and flexor muscle size and endurance. The most direct conclusion on this finding might be that the proprioceptive functioning of the cervical muscles, believed to be the most important proprioceptive afferent source of the neck, performs independently from its structure and force-generating capabilities. Spinal or supraspinal mechanisms had been proposed to be involved in proprioceptive impairment in idiopathic CNP, which explains the lack of relationship between muscle structure and proprioceptive functioning.\[23\]. Previous laboratory studies had provided compelling evidence that pain is capable of inducing changes in muscle spindle discharge and the proprioceptive properties of brainstem neurons. Disturbance of the proprioceptive system has been shown to interfere with motor control and it has been suggested that aberrant motor control might expose the spinal components to abnormal and repetitive strain. Numerous authors had also reported an altered pattern of motor control in patients with neck pain; However, given the cross-sectional nature of our study, it cannot be determined whether the decrease observed in cervicocephalic kinesthetic sensibility is a cause or result associated with changes in neck pain characteristics. It is possible that neck pain and proprioceptive deficiency may both sustain and perpetuate one another.
APPENDIX 1

NEUROLOGICAL EXAMINATION CHECKLIST
(See text of Appendix 5A for examination procedures and definitions of terms.)

Patient's Name: ___________________________ Date/Time: ___________________________
Describe pain/numbness: ___________________________________________________________

HISTORY

Type of dive last performed: ____________ Depth: ____________ How long: ____________
Number of dives in last 24 hours: ______________________________________________
Was symptom noticed before, during or after the dive? _____________________________
If during, was it while descending, on the bottom or ascending? _____________________
Has symptom increased or decreased since it was first noticed? _______________________
Have any other symptoms occurred since the first one was noticed? __________________
Describe: ____________________________________________________________________

Has patient ever had a similar symptom before? __________________ When: ____________

Has patient ever had decompression sickness or an air embolism before? _____ When: ____________

MENTAL STATUS/STATE OF CONSCIOUSNESS

COORDINATION

Walk: ________
Heel-Toe: ________
Romberg: ________
Finger-to-Nose: ________
Heel-Shin Slide: ________
Rapid Movement: ________

CRANIAL NERVES

Sense of Smell (I): ________
Vision/Visual Field (II): ________
Eye Movements, Pupils (III, IV, VI): ________
Facial Sensation, Chewing (V): ________
Facial Expression Muscles (VII): ________
Hearing (VIII): ________
Upper Mouth, Throat Sensation (IX)
Gag & Voice (X): ________
Shoulder Shrug (XI): ________
Tongue (XII): ________

STRENGTH (Grade 0 to 5)

Upper Body
Deltoids: L ___ R ___
Latissimus: L ___ R ___
Biceps: L ___ R ___
Triceps: L ___ R ___
Forearms: L ___ R ___
Hands: L ___ R ___

Lower Body
Hips: Flexion L ___ R ___
Extension ___ ___
Abduction L ___ R ___
Adduction L ___ R ___
Knees: Flexion L ___ R ___
Extension ___ ___
APPENDIX II

استبان (تويرك بارك) لألم الرقعة

الاسم:
التاريخ:
الوقت:
الرجاء قراءة ما يلي: قد تضيف هذا الاستبان للحصول على معلومات عن مدى تكرار الأطفال
المادة الرقعة بكم الرقعة. من فضلك أجاب عن كل سؤال بعناية واحدة فقط توضح في المربع بما
ذات الصلة. نأمل أن تكون القبلة قد تثبيت إجاباتك على ثم في اسم واحد ولكن برجي وحدهي وحدهي
والحیرة تتكون الاقرب لوصف مشكلتك.

قسم 1: نداء الألم بالرقصة

أ - ليس لدي أي آلام في هذه الحالة
ب - لدي آلام خفيفة جدا في هذه الحالة
ت - آلام متوسطة في هذه الحالة
ث - آلام شديدة في هذه الحالة
ج - آلام القول على الطقس في هذه الحالة

قسم 2: كم الرقصات أثناء الليل

أ - لا يراذل الألم على درجة اعتراض
ب - الألم يؤدي إلى الاضطراب نومي أحيانا
ت - الألم يؤثر على دوري بدني مماثل
ث - الألم جعل نومي أقل من 5 ساعات
ج - الألم جعل نومي أقل من ساعتين

قسم 3: الوجيه أو الخدر في الدراة في اليوم

أ - ليس لدي وجه أو خدر في الليل
ب - ألم وجه أو خدر بشكل غير مستمر في الليل
ت - الوجيه أو الخدر يؤثر على نومي بشكل مماثل
ث - الوجه أو الخدر جعل نومي أقل من 5 ساعات
ج - الوجه أو الخدر جعل نومي أقل من ساعتين
قسم 4: مدة الأعراض

أ - لدى شعور طفيف في وقتنا و درجا عابا طوال اليوم
ب - لدى أعراض في رقبتي أو دراعي أثناء العشاء، و تسخمر الأعراض

 أقل من ساعة

t - الأعراض موجودة تشير و تختلف من ساعة إلى أربع ساعات
ت - الأعراض موجودة تظهر و تختلف لفترة تزيد على أربع ساعات
 ج - الأعراض موجودة بشكل مستمر طوال اليوم

قسم 5: حمل الأصابات

أ - استطاع أن أحمل أشياء كثيرة دون قلق إضافي
ب - استطاع أن أحمل أشياء كثيرة، لكنها تتسبب لي آلام إضافية
ت - الأحمم مسحون من حمل الأشياء الثقيلة، ولكن استطاع أن أحمل الانتهاء من وزنة
 ج - لا استطاع رفع أو تحريك على الإطلاق

قسم 6: قراءة و مشاهدة التلفزيون

أ - استطاع القيام بذلك دون مشاكل
ب - استطاع القيام بذلك دون مشاكل تامة أو حتى دون مشاكل
ت - استطاع القيام بذلك دون مشاكل، ولكن تلك كانت من الأشياء
 ج - الأليل يساهم في الارتقاء من القلم، بالله على الإطلاق

قسم 7: الأعمال المنزلية:

أ - استطاع القيام بأعمال المائدة دون ألم إضافي
ب - استطاع القيام بأعمال المائدة، ولكن ذلك يتسبب لي آلام إضافية
ت - الألم يضمن من القيام بأعمال المنزليات فلا أعمل إلا في نصف الوقت المستحيل
قسم 8: نشاطية جماعية

أ - حياة الجماعة طبيعية ولا تسبب لي أي آلام
ب - حياة الجماعة طبيعية ولكن تسبب لي آلام
ت - قيد الأزمات الاجتماعية، ولكن مازلت قادراً على الخروج
ج - قيد الأزمات الاجتماعية في المنزل

قسم 9: القيادة (إن وجدت)

أ - أستطيع القيادة كلما لزم الأمر بدون مشقة
ب - أستطيع القيادة كلما لزم الأمر، ولكن بمشقة
ت - ألم الرقبة، أو تصلب القيادة في بعض الأحيان
ت - ألم أو تصلب القيادة يعيق قدرتي على القيادة في كثير من الأحيان
ج - لا أستطيع القيادة على الإطلاق بسبب آلام الرقبة

قسم 10: مقارنة بأخر مرة أجبتي على هذا السؤال، هل الرقبة الخاص بك

أ - أصل بخير
ب - أصل فتيل
ت - نس الثني
ت - أسلوبت
ج - أصل بخير
CONCLUSION:

The present study has provided further evidence that impairments of cervicocephalic kinesthetic sensibility is associated with higher scores of Northwick neck pain questionnaire. Future research should consider the effects of proprioceptive training in the management of mechanical neck pain.

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pain questionnaire, devised to measure neck pain and disability,” *Rheumatology*, 33(12): 1204.


**المقدمة:**-

جلسة الحساسة الحركية للرقبة يتميز بزيادة عدم انتظام الحركة وأخطاء الحركة أثناء مهام إعادة الوضع وقد ظهر في الأشخاص في منتصف العمر الذين يعانون من آلام الرقبة المزمنة، الهدف من الدراسة: تقييم العلاقة بين ضعف الحساسية الحركية للرقبة وخصائص آلام الرقبة الميكانيكية. الطرق: أجريت هذه الدراسة على ستين شخص يعانون من آلام الرقبة الميكانيكية ب不明白 وضع رؤوسهم إلى وضع الرأس المحسن في المستوى السهيمي والعضدي.
عندما تصل وضع الرأس إلى الموضع المرجعي، تم قياس دقة وضع الرأس بالدرجات باستخدام جهاز CROM. أثبت استبيان نورثويك لآلام الرقبة أنه أداة مفيدة في دراسات آلام الرقبة، حيث يرتبط بالقياسات الموضوعية لخصائص آلام الرقبة. النتائج: أظهرت النتائج ما يلي: - توجد علاقة إيجابية معنوية بين درجة استبيان نورثويك وخطأ الانثناء، وبين درجة استبيان نورثويك وخطأ تغيير موضع الدوران. الخلاصة: أن الحساسية الحركية الميكانيكية مرتبطة بتغيير خصائص آلام الرقبة الميكانيكية.

الكلمات الرئيسية: آلام الرقبة الميكانيكية، الحساسية الحركية للقبة