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INFLUENCE *STRAIN COUNTERSTRAIN* ON FUNCTIONAL ACTIVITIES IN CONVECTION TAILORS EXPERIENCE NECK PAIN

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ABSTRACT

The functional activities of convection tailors involve repetitive and intensive movements which are mostly carried out in a sitting position. Sitting in the same position for a long time can cause the neck to become tense and not move normally. Therapy *strain counterstrain* can be used to reduce tension and balance stress on muscles. The aim of the research is to determine the effect of giving *strain counterstrain* on neck pain on the functional activities of convection tailors. The design of this research is *as if experimental* with a plan *one group pretes-posttest*. The research population was 46 tailors. The research sample was 8 people who were selected *purposive sampling method*. The research instrument uses the NDI scale (*Neck Disability Index*). The result of research on functional activity of neck before therapy strain counterstrain is 27,38% and after therapy strain counterstrain is 21%. The p value = 0,012 means there is an increase in functional activities. The result of the research can be concluded that there is an influence strain counterstrain on functional activities in convection tailors experience neck pain. Use a comfortable body position to reduce tension and balance the pressure on the muscles, thereby providing *strain counterstrain* can improve the functional activities of tailors.
Keywords: Functional Activities, Neck Pain, Strain Counterstrain

BACKGROUND

Neck pain is a common problem that two out of three people will experience during their lifetime. The human neck is the most complex structure and is very susceptible to irritation, in fact 10% of all people will experience neck pain within one month. Potential pain generators include bones, muscles, *ligament*, joints and *intervertebral disc*. Nearly any injury or disease process to the neck or adjacent structures will result *spasms* muscles and loss of motor function. So neck pain is a case *musculoskeletal* second largest after lower back pain (*Low back pain*) (Nurhidayanti, Hartati and Handayani, 2021).

Painful *musculoskeletal* in the neck is a health problem in modern society. A study shows the prevalence of pain *Musculoskeletal* in the community for 1 year the amount is 40% and this prevalence is higher in women. Over 1 year, the prevalence of pain *musculoskeletal* in the neck area in workers it is 70% and women are also higher than men (Haryatno and Kuntono, 2016). MSD's problems in tailors that often occur are neck stiffness, limited neck movement and neck pain. This can result in a decrease in functional activity of the neck and ultimately cause a person to be unable to work (Wahyuningsih and Wahyuni, 2017).

Working as a seamstress carries a high risk of disruption *musculoskeletal*, including pain in the neck and shoulders. The pain is often related to a bowed neck position. This position changes the body's center of gravity, increasing tension in the neck and shoulder muscles, especially the muscles *trapezius*. Work Tailors have characteristics such as sitting for long periods of time, a head that tends to bend, knees and elbows that bend, and repetitive movements of the body parts. This static condition causes the muscles to contract continuously, disrupting the oxygen supply to the muscles, and resulting in decreased tissue perfusion, which ultimately causes the sensation of pain. Long periods of work can also worsen the pain experienced. In general, tailors usually work for 3 to 7 hours a day. A research conducted in Banda Sakti District, *Lhokseumawe*, shows that around 26.7% of tailors work more than 7 hours a day (Alfianty, Zakiyah and Sulistyowati, 2023).

Strain Counterstrain is a manipulation technique that applies palpation/pressure techniques accompanied by providing a comfortable position on the pathological tissue for 90 seconds. This can stimulate muscle spindles that experience spasm, resulting in activation of proprioceptors. Stimulation received by the muscle spindle will also cause reflex relaxation of the spasming muscle. The strain counterstrain technique is an effective technique for reducing muscle

tissue hypersensitivity and reducing pain and increasing functional ability in the MPS of the upper trapezius muscle (Paul and Balakrishnan, 2018).

Based on data from 9 convections in Bukittinggi, the number of tailors is around 46 people. Strain Counterstrain is a form of exercise that aims to reduce the impact of symptoms, providing stimulation to muscles experiencing spasm and relaxation. Considering the above, tailors at convections have a high risk of experiencing musculoskeletal disorders such as neck and shoulder pain. Therefore, researchers are interested in conducting research entitled The Effect of Strain Counterstrain on functional activities in convection tailors who experience neck pain.

METHOD

This research was conducted at 9 convections in Bukittinggi, in June 2024. The Neck Disability Index (NDI) was used as a measuring tool to assess the functional ability of the respondents' necks. This research uses a quasi experimental design with a one group pretest-posttest design. In this research, the sample size was 8 people from 46 populations, selected using a purposive sampling method based on inclusion criteria and exclusion criteria. The data obtained by researchers in this study was analyzed to determine the effect of Strain Counterstrain on functional abilities in convection tailors who experienced neck pain using a statistical test, namely the Wilcoxon test, where based on the Wilcoxon test a p value was obtained of 0.012 (P<0.05).

RESULT

Univariate Analysis

The average functional activity of the before the Strain Counterstrain intervention in convection tailors experience neck pain based on the research findings, from 8 respondents the average value of neck functional activity before the Strain Counterstrain intervention was 27,38%, with a standard deviation of 4,274. The lowest neck functional activity scale value was 20% and the highest neck functional activity scale value was 33%. The average functional activity of the neck after the Strain Counterstrain intervention in convection tailors experience neck pain on the research findings, from 8 respondents the average value of hand functional activity after the Strain Counterstrain intervention was 21%, with a standard deviation of 3,854. The lowest neck functional activity scale value was 18% and the highest neck functional activity scale value was 28%.

Bivariate Analysis

The Influence Strain Counterstrain Intervention on the Functional Activity in Convection Tailors Experience Neck Pain

Table 1. The Effect of Giving *Strain Counterstrain* In Increasing Functional Activities of the Neck in Tailors

Variable		Mean	SD	P Value
Before Strain Countersrain	Strain	27,38	4,274	0,012
After Counterstrain		21	3,854	

The results of the study showed that of the 8 respondents, the average neck functional activity scale before using exercise therapy was carried out *Strain Counterstrain* in tailors is 27.38% (*moderate disability*) with a standard deviation of 4.274. Meanwhile, the average neck functional activity scale after using exercise therapy *Strain Counterstrain* in tailors it is 21% (*moderate disability*) with a standard deviation of 3.854. The average difference between before and after administration *Strain Counterstrain* is 6.38%. Statistical test results using *wilcoxon signed ranks test* shows a p value = 0.012 (< 0.05), meaning that Ho is rejected so it can be concluded that there is an effect of giving *Strain Counterstrain* in increasing the functional activities of the neck in tailors in Bukittinggi.

DISCUSSION

Univariate Analysis

Functional neck disorders are usually caused by excessive pressure and tension in the muscles *upper trapezius*. Muscles *upper trapezius* is one of the postural muscles that is susceptible to overuse, especially due to incorrect posture and repetitive activities. Pressure and tension on these muscles can cause neck pain, discomfort, and interference with

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functional neck movements (Desai and Jeswani, 2018).

Working in an awkward posture such as sitting too forward or too slanted and using inappropriate work facilities such as a table that is too low or too high, stress, bending or looking down for too long, and aging can cause muscles to become stressed, excessive pressure will cause tension in the upper trapezius muscle can reduce the range of motion of the neck joint, then the limited range of motion results in increased stiffness in the soft tissue (Sulistyaningsih and Putri, 2020).

The results of this research are in line with research conducted by Hasmar (2017) entitled "Differences between Integrated Neuromuscular Inhibition Technique and Strain Counterstrain on Functionality in Upper Trapezius Muscle Myofascial Pain". Research was conducted on batik workers in Yogyakarta, the results showed that the average pretest NDI score for Strain Counterstrain was 27.8%, at the moderate disability level. The lowest neck functional activity scale value was 26% and the highest neck functional activity scale value was 28%.

In this study, the neck functional activity scale was measured before administration *Strain Counterstrain* the respondents are at the level *moderate disability*. This shows that respondents experience limitations in carrying out functional activities. In convection tailors, the work duration is 8 hours per day with a rest period of 30 minutes, most of the work is done in a sitting position. Apart from that, sitting in the same position for a long time can cause the neck to become tense and not move normally, the position of both hands who is always on the sewing machine and always having both feet on the dynamo drive saddle can also cause pain and stiffness in the neck. after therapy *Strain Counterstrain* for 4 weeks with a frequency of 2 times in 1 week with a total of 8 interventions giving strain counterstrain, there was an increase in neck functional activity in all respondents.

The results of the study showed that of the 8 respondents, the average neck functional activity scale after exercise therapy using Strain Counterstrain on tailors was 21% (moderate disability) with a standard deviation of 3.854. The lowest neck functional activity scale value was 18% and the highest neck functional activity scale value was 28%.

Strain Counterstrain is a manual therapy technique used to treat pain and tension in the joints. This technique works by placing the patient in a position that causes relaxation of the affected muscles and joints, thereby reducing pain and tension. This position usually places the muscles and joints in a more flexible and relaxed position, which reduces pressure and tension on the affected area, thereby reducing pain and tension.

By reducing pain and tension, the range of motion of the joints in the neck will increase. This is caused by muscle relaxation leading to increased joint flexibility. Increasing the range of motion of the joints in the neck will allow a person to carry out activities more freely and comfortably. Apart from that, the increase in muscle strength in the neck will also increase, which will strengthen the muscle and joint system, thereby increasing the neck's functional activity capabilities (Putri, Anjani and Lutfie, 2022)

This is supported by research by (Gowda N, Rajeeva and Lokesh, 2018) which shows that there was an increase in the NDI score, the average pre-test score was 40.27 on Day 1 and decreased to 15.33 at the end of Day 5 with $p< 0.0001$, while group B pre-test average value was 38.7 on Day 1 and decreased to 20.13 on that day at the end of day 5 with $p<0.0001$. The results of this research are also in line with research conducted by (Schmidt, 2016). The research results show that the difference in initial NDI scores (*pretest*) and end (*posttest*) gift *Strain Counterstrain* obtained by 26%. These results indicate that the SCS technique can reduce pain and improve neck function, which is thought to be due to muscle relaxation leading to increased joint flexibility. (Paul and Balakrishnan, 2018) research, reports that technique *Strain Counterstrain* effective in treating patients with neck pain caused by upper trapezius tension. The results showed improved neck function, reduced pain, and tenderness in the upper trapezius after SCS intervention. Improvements in neck function of 50%-100% occurred in 19 of 20 patients immediately after therapy *Strain Counterstrain*.

According to the researchers' assumptions, after Strain Counterstrain therapy was carried out for 4 weeks with a frequency of 2 time per week, there was an increase in neck functional activity in all respondents. The steps for strain countersrain therapy are carried out with a comfortable body position to reduce tension and balance muscle pressure, using manual palpation to find areas that feel sore or tense, increasing pressure on the detected area until the respondent feels pain and pressure, and changing body position automatically. passive to reduce stress in the detected area thereby reducing pain and improving neck function.

All respondents showed an increase in the functional neck activity scale, which means that the tailor could carry out functional activities more easily and did not experience radiating neck pain. Counterstrain plays a role in increasing functional activity through muscle relaxation which can reduce pain in the neck, thereby increasing neck function. Apart from that, this increase in functional activity occurred due to the good response from respondents to Strain Counterstrain therapy. The respondent's willingness and discipline in following the therapy schedule also plays an important role in

increasing functional activity

Bivariate Analysis

The results of the study showed that of the 8 respondents, the average neck functional activity scale before exercise therapy using Strain Counterstrain on tailors was 27.38% (moderate disability) with a standard deviation of 4.274. Meanwhile, the average neck functional activity scale after exercise therapy using Strain Counterstrain on tailors was 21% (moderate disability) with a standard deviation of 3.854. The average difference between before and after administering Strain Counterstrain was 6.38%. The results of statistical tests using the Wilcoxon signed ranks test show a value of p = 0.012 (< 0.05), meaning that Ho is rejected so it can be concluded that there is an effect of giving Counterstrain Strain in increasing the functional activity of the neck in tailors in Bukittinggi.

Counterstrain Strain can significantly reduce pain in the neck. This technique works by pressing the part of the muscle that is shortening and passively positioning the joint in a position that creates the most comfortable feeling. This realigns muscle spindles automatically, which helps report muscle length and tone, thus reducing tenderness and localized pain (Muthiah, Hasbiah and Fajriah, 2020)

Counterstrain helps release spasms and improves muscle flexibility. This is done by stimulating the muscle spindle and Golgi tendon organs, which affects pain and muscle flexibility. Reduction of spasm and fibrosis can improve the functional ability of the neck. Strain Counterstrain works by compressing the part of the muscle that is shortening and passively positioning the joint in a position that creates the most comfortable feeling. This produces a very powerful pain inhibitory effect, thus reducing spasm and fibrosis which causes a decrease in the functional ability of the neck.

Previous research was conducted by (Saleem *et al.*, 2023) entitled "Comparative Effects of Strain Counterstrain and Ischemic Compression Technique in Patients with Upper Trapezius Trigger Points". The research results showed that the significance value of the Numerical Pain Rating Scale (NPRS) and NDI was below 0.05, namely p=0.001 (NPRS) & p=0.000 (NDI). The Counterstrain strain reduced pain by 4 points and increased neck functional activity by 16 points.

According to the researchers' assumptions, in order for strain counterstrain therapy to have a major effect on improving neck function, the most sensitive or tender points must be identified. This point usually feels the most painful or more sensitive than the surrounding area. After finding the tender point, determine the most comfortable position for the respondent, this is done to reduce pain and spasm. The Strain Counterstrain technique helps in lowering the neck disability index scale in several ways, including reducing pain in the neck caused by sitting for long periods of time from sewing activities. This technique also improves circulation in the neck joints which helps in reducing muscle tension and promotes relaxation. By using the Strain Counterstrain technique, convection tailors can reduce the risk of functional neck disorders and stay healthy while working. Thus, exercise therapy using Strain Counterstrain can help overcome functional neck disorders in convection seamstresses, thereby improving their quality of life and ability to do their work.

Strain Counterstrain helps release spasm and increases muscle flexibility. This is done by stimulating the muscle spindle and golgi tendon organs, which affects pain and muscle flexibility. Reduction of spasm and fibrosis can improve the functional ability of the neck. This technique works by pressing the part of the muscle that is shortening and passively positioning the joint in a position that creates the most comfortable feeling. This produces a very powerful pain inhibitory effect, thus reducing spasm and fibrosis which causes a decrease in the functional ability of the neck.

CONCLUSION

Based on the results of research after providing intervention to 8 convection tailors who experienced neck pain at 9 convections in Bukittinggi, it was found that there was an effect of giving Counterstrain Strain on the functional activities of tailors who experienced neck pain. There are differences and improvements between the average values before and after the intervention. Suggestions for future researchers are to consider the latest interventions in their research and increase the research sample.

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