

Review

## Dry needling in cervical pain therapy: literature review

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### Summary

Neck pain, considering its prevalence and rate of disability, represents a significant public health problem, and we believe that the promotion of new effective methods is necessary in its treatment. Among the many therapeutic possibilities described so far, one such is dry needling (DN). This literature review aims to analyze how effective dry needling has proven to be in the treatment of neck pain. Existing works indicate the possibility of a good response from patients when using dry needling in the treatment of neck pain, so we believe that this possibility should be given more attention in practice and research.

**Key words:** dry needling, cervicgia, pain, treatment

## Introduction

The modern way of life, sitting for a long time, working in the office and at the computer have led to an increased prevalence of cervical pain and to an impaired quality of life. Acute cervical pain affects 288 million cases worldwide, and therefore represents a public health problem. This musculoskeletal condition very often becomes chronic, causing disability, which according to global research is identified as the fourth such condition, considering the length of time living with disability [1].

In the treatment of cervical pain, physical therapy that includes cervical manual therapy and exercises along with educating patients about the exercises and proper body posture gives good results. Among the many therapeutic possibilities described so far, one such is dry needling (DN). However, there are no recommendations and instructions on how to use the treatments such as dry needling in the clinical guidelines. The reason for this is not that the

mentioned treatment is not applicable, but because of the lack of clinical research that indicates its effectiveness [2].

The aim of this literature review was to analyze how effective dry needling is when treating cervical pain issues, as well as a description of the possibilities of the mentioned procedure.

## Dry needling

The interest in dry needling therapy (DN) has steadily grown throughout the world, but the lack of proof on how it functions is still present [3].

Dry needling is minimally invasive, inexpensive, practical and safe treatment method. Dry needling treatment is defined as an intervention in which a thin filiform needle is used to penetrate the skin and stimulate myofascial trigger points (MTrP), muscles and connective tissue for the treatment of musculoskeletal pain [4]. Myofascial trigger points (MTrP) can play a very important role in the development of pain. Simons and Travell defined trigger points as “a hypersensitive site located in a tense band/strip of skeletal muscle, the stimulation of which causes the mentioned pain symptoms and motoric phenomena” [5].

As for the dry needling technique itself, we distinguish between two methods based on how deep the needle penetrates the skin: surface and deep dry needling. When applying surface dry needling, analgesia is achieved through mechanical stimulation of the skin and subcutaneous tissue, without the needle reaching the muscles. In deep dry needling, the needle acts directly on specific trigger points, where it penetrates the muscle tissue, which as a result produces a local twitch response that represents an involuntary reaction to the mentioned mechanical stimulation [6].

## Results of previous studies on the use of dry needling in cervical pain therapy

In their research, Mousavi-Khatir and colleagues concluded that dry needling resulted in a positive outcome in terms of reduction in neck pain and disability, and improvement in range of motion and performance of deep flexor muscle function in patients with cervicogenic headache [7].

Lew et al. conducted a meta-analysis to compare dry needling therapy and manual therapy to reduce pain intensity on the visual analog scale and pressure pain threshold and to improve function on the disability index in patients with neck and upper back pain. They searched the PubMed, PEDro, and CINAHL databases for randomized controlled trials that had been performed over the past 10 years. These authors stated that 241 subjects were included in six randomized controlled studies and that the difference in effect between the use of dry needling and manual therapy was not significant on the examined scales of pain and functional improvement. The authors concluded that both therapeutic treatments reduced pain and improved function in the short and medium term and that neither was superior to the other [8].

Martín-Sacristán et al. investigated the effectiveness of deep dry needling at an active MTrP relative to a latent trigger point versus a non-trigger location in reducing pain and disability in patients with chronic neck pain. Their sample consisted of 65 subjects and was divided into groups in relation to the activity of the trigger point (active, latent and no trigger point), and as research instruments, a visual analog scale, reproduction of pain in patients, number of local responses to twitching, and pain threshold were used. Under pressure and neck disability index were assessed before, during and after therapy as well as approximately one month after treatment. Subjects who had the active trig-

ger point significantly reduced pain intensity more than subjects without the trigger point after seven days and one month of therapy and showed the greatest improvement in the pressure pain threshold of the tibial muscle. The authors concluded that the application of deep dry needling to active trigger points in the upper trapezius muscle showed greater improvement in pain intensity one week and one month after the intervention, compared to the same therapy applied to latent trigger points or outside the area in patients with neck pain [9].

Steven et al. conducted a study involving 16 subjects with chronic neck pain to examine the additional benefit of using dry needling compared to exercise and manual therapy. Their results indicated that when chronic neck pain treatment consisted of a combination of physical therapy and dry needling, it resulted in small increases in pain after randomization, while they did not determine the impact on disability [10].

Based on the results of a randomized trial, which included eight studies, Fernández-De-Las-Peñas et al. concluded that there was evidence of a positive effect of combining dry needling with other interventions to reduce pain intensity, pain-related disability, and to increase the pressure pain threshold and range of motion in the neck in people with neck pain [11].

Manafnezhad J. et al. conducted the study to compare the outcomes of shock wave therapy with dry needling techniques on the upper trapezius trigger point in patients with nonspecific neck pain. Their study included 17 patients who were randomly assigned to two groups: group I - shock waves (n=35) and group II - dry needling (n=35), and the treatments in each group were done for 21 days and the members of both groups received the appropriate therapy every week. Outcome was measured by pain intensity, which was measured by the numerical pain rating scale, pain pressure threshold measured by a digital

algometer, and functional disability assessed by the Neck Disability Index. All monitored parameters showed the statistically significant improvement after treatment, however, pain intensity neither differed significantly, nor did the disability index and pain pressure threshold between the two groups. Therefore, the authors concluded that both techniques could equally be used to treat MTrPs of the upper trapezius muscle in patients with non-specific neck pain [12].

Gallego-Sendarrubias GM and colleagues analyzed the effectiveness of dry needling compared to manual therapy in the treatment of cervical pain. In their research, 101 subjects with chronic neck pain were divided into two groups, namely the experimental group (n=47) that received dry needling and manual therapy as therapy, while the control group (n=54) received only manual therapy and sham dry needling. The results of the therapy were monitored by measuring pain intensity using a numerical scale, endurance of pain under pressure, range of motion and disability of the neck. The results of this study showed that the difference in pain intensity after the intervention compared to the groups was statistically significantly different and that the amount of pain decreased after the first treatment in the examined group, with a more significant decrease after the second treatment. Statistically significant differences in the pressure pain threshold between the tested and control groups were also determined. Neck range of motion also showed highly statistically significant differences, with better results relative to the experimental group. After one month, a statistically significant reduction in neck disability index was observed in the experimental group [13].

Ziaiefar M. et al conducted a randomized controlled trial, aiming to examine the long-term clinical outcomes of dry needling with 14- and 90-day follow-up in subjects with MTrP in the upper trapezius muscle. Thirty three subjects were included in the research,

divided into two groups, namely group I (n=17), which had trigger point compression as a therapeutic treatment, and group II (n=16), which had dry needling as a therapeutic treatment. The following clinical parameters were monitored using the DASH questionnaire: pain intensity, neck and arm disability, and hand and shoulder disability and they were analyzed before and after treatment as well as at 14-day and 90-day follow-up. The results showed the significant difference in pain intensity, neck disability and DASH after treatment, after 14 days and 90 days compared to the results before treatment in both groups, and there was no noticeable difference in the variables used after 14 or 90 days from the sessions after treatment between these two groups. However, the intensity of pain after treatment was significantly lower in the group treated with dry needling [14].

In their research, Rodríguez-Huguet et al. indicated that dry needling could be the effective treatment option for chronic neck pain, and that positive outcomes were achieved in the short term and in follow-up between three and six months after treatment, and this technique could offer better results than placebo interventions based on the application of simulated dry needling [11].

The debate most often revolves around the relationship between acupuncture and dry needling, because the mentioned methods have a lot of similarities, but also significant differences. Although some experts in the practice believe that dry needling is a subcategory

of acupuncture and that the trigger points are actually acupuncture Ashi points, nevertheless therapists who use dry needling monitor local reactions, while acupuncturists monitor the reaction of the whole body because acupuncture has a wider range of indications and is not limited to myofascial pain [15, 16].

## Conclusion

Neck pain, reduced functionality and reduced mobility have become significant global public health problems according to prevalence data. Based on the available research results, it can rightly be concluded that physiotherapeutic intervention in these patients should include the application of dry needling of trigger points, as it improved the quality of life of such mostly chronic patients. Existing evidence points to the effectiveness of dry needling in pain relief both immediately after treatment and for a long period after it. Although the available literature supports the application of dry needling therapy in the treatment of trigger points, we believe that additional research is necessary to obtain stronger evidence of the effectiveness of this therapy, given that often low-quality methodology and heterogeneity of results negatively affect the current level of evidence. After collecting these results, it should be considered to include dry needling in guidelines and a multimodal approach in the treatment of neck pain.

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## Suva punkcija u terapiji cervikalnog bola: pregled literature

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Bol u vratu, s obzirom na svoju rasprostranjenost i stopu invaliditeta, predstavlja značajan javnozdravstveni problem i smatramo da je u njegovom liječenju neophodna promocija novih efikasnih metoda. Među brojnim terapijskim mogućnostima opisanim do sada, jedna je i suva punkcija. Ovaj pregled literature ima za cilj da analizira koliko se korišćenje suve punkcije pokazalo efikasnim u liječenju bolova u vratu. Postojeći radovi ukazuju na mogućnost dobrog odgovora pacijenata pri upotrebi suvih punkcija u liječenju bolova u vratu, pa smatramo da ovoj mogućnosti treba posvetiti više pažnje u praksi i istraživanjima.

**Ključne riječi:** suva punkcija, cervikalgija, bol, liječenje