

APPLICATION OF DIADYNAMIC CURRENTS TO REDUCE PAIN

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ABSTRACT

Background: Pain has become a separate complaint or disease, not only as a means of protecting the body or a symptom of other diseases. With increasing age, a person will experience a decrease in physiological functions that can affect the system in the body. Diadynamic currents are part of electretal stimulation which has a low frequency function to reduce pain.

Methods: This is an experimental research with a quantitative approach. The sampling technique used nonprobability sampling based on the inclusion and exclusion criteria. The data analysis used was non-parametric statistics, namely by using the Wilcoxon signed rank test.

Results: Based on the result of the Wilcoxon test showed that the value. Sig. is 0.000, which is less than 0.05. By giving a diadynamic current, the pain felt by someone will be reduced.

Conclusion: diadynamic currents can be used to reduce pain

Keyword : *Pain Terapi; pain threshold; Diadynamic currents*

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Background. Lifestyles from time to time have changed. The development of technology that makes it easier for humans to carry out daily activities makes humans indirectly reduce the daily physical activities carried out. Instant-paced activities such as ordering food that have developed completely online, the ease of communication that makes a person reduce physical activity makes it easy for humans to experience various types of diseases, both musculoskeletal and neuromuscular diseases, where the disease experienced leads to pain disorders that many complain about. almost everyone. Rahmanto and Aisyiah in 2019 stated that with increasing age, a person will experience a decrease in physiological functions that can affect the system in the body. discomfort that can cause pain (Wardojo et al, 2021). The age factor plays a role in the onset of pain, an elderly person tends to complain of pain complaints higher than a teenager (Putra, Y.W. and Rizqi, A.S., 2018). A person who has a good physical capacity, the pain threshold will increase, so it is not easy to feel pain (Putra, Y.W. and Rizqi, A.S., 2020).

In the medical world, pain is the main reason for someone to take health care

actions to relieve their complaints. Pain are the main cause of complains in America in someone doing health services. Surgery performed on patients in several cases according to the World Health Organization (WHO) was caused as much as 22% because of the main complaint in the form of pain that was felt for more than one year and was the main reason for someone to take treatment, both alternative and complementary medicine. In Indonesia, the distribution of pain is also estimated to be the same as the United States, so that pain makes a person perform health services, be it acute pain, chronic pain or other types of pain (Rizki, 2018).

Pain management is not easy because of the subjectivity of the pain. Tenderness, motion pain or silent pain felt by a person from one individual to another can be different because the pain threshold value of a person is not the same. Various methods of reducing pain in current health practice are very many, including treatment methods with pharmacology or methods of pain reduction with physical therapy. In reducing pain using physical therapy, many physiotherapy methods are used, including the provision of electric currents, for example with diadynamic

currents or interferncial currents or transcutaneous electrical nerve stimulation. Pain reduction applications that exist in society are very diverse and are always developing. Pain that is felt in the community, whether it is superficial pain or pain with a high value or very painful in the community, there are various kinds of handling in handling it. Electric simulation where the diadynamic current is part of the electric stimulation is one of the applications of choice in the community for pain reduction which is currently not popular. Physiotherapy differs from physiotherapy modalities for pain complaints experienced by a person (Wardojo et al, 2020). Giving diadynamic currents can reduce pain experienced by a person (Heggannavar et.al, 2015)

Apriliani (2018) stated that the use of dynamic currents where this current is electrotherapy that has a low frequency is the result of the union of two medium frequencies that have the same frequency. The combination of the above currents causes a modulation or commonly referred to as Amplitude Modulation Frequency (AMF) which is used as a frequency for current as pain reduction therapy. Diadynamic currents in the treatment of patients with musculoskeletal disorders and occupational rehabilitation medicine are widely used. The use of diadynamic currents in low back pain patients with chronic conditions can reduce pain (Sayilir, S. and Yildizgoren, M.T., 2017). Grajić (2020) states that diadynamic currents can be used in low back pain patients.

The description above makes the basis for the author to conduct research with the title of using diadynamic currents to reduce pain

Methods. This research is an experimental research with a quantitative approach. The sampling technique used was non-probability sampling based on inclusion and exclusion criteria. Analysis of the data used is non-parametric statistics by using the Wilcoxon marked rank test. The study begins with measuring pain by looking at the pain threshold value using faradic, followed by the application of pain reduction with diadynamic currents then pain is measured again with faradic. Pain values before and after treatment are statistical data to see any changes in pain values from the use of diadynamic currents.

The number of samples used in this study were 19 respondents, namely DIII

Physiotherapy students, Faculty of Psychology and Health, Widya Dharma University, Klaten, with 19 samples receiving treatment, namely the assessment of pain values before and after the application of diadynamic current administration.

Result and Discussion.

Table 1. The distribution of respondents based on age groups

Group	n	Percentage
18-20 years	12	63%
21-23 years	7	37%

Table 2. The distribution of respondents based on gender groups

Group	n	Percentage
female	12	63%
male	7	37%

Table 3. The distribution of respondents based on professions groups

Group	n	Percentage
students	19	100%

The above shows that most of the ages are 18 -20 years, which is as much as 63%. Distribution of respondents based on gender showed that 12 people (63%) were female and 7 people (37%) were male, so that most of the respondents were female. The distribution of professions for respondents shows that 100% of respondents work as students.

Table 4. The value of descriptive statistics

Group	before	After
Mean value	26.66	30.03
standard deviation	13.47	13.69

The value of descriptive statistics for the mean value of the pain threshold before intervention was 26.66 and after treatment the mean value increased to 30.03. The standard deviation value before treatment was 13.47 and after treatment was 13.69.

Based on the results of the statistical tests carried out above, it shows that there is an effect of giving diadynamic currents to reducing pain. By giving a diadynamic current, the pain felt by someone will be reduced

The above is in accordance with research conducted by Rizki (2018) where the research used Physiotherapy student respondents at the Widya Dharma University Klaten, the

results obtained that by providing electrical stimulation modalities it would trigger a decrease in pain. Diadynamic currents are part of a modified electrical stimulation that increases the frequency and decreases the intensity, thus producing the same current but different current patterns or sharpness

Ni Putu's research (2019) in a study that aimed to determine the effect of diadynamic currents on pain reduction in cases of low back pain, the results showed that the administration of diadynamic currents was significant in reducing back pain.

This decrease in pain is due to the influence of electric stimulation from diadynamic currents. Electrical stimulation from diadynamic currents results in vasodilation of blood vessels which becomes the dilation of blood vessels, when vasodilation occurs, nutrients or O₂ in the area given electric stimulation increases so that due to the above process, the threshold value of the input given by the diadynamic current increases or the value of pain felt by a person can be reduced because of the provision of diadynamic currents. Peripheral nerves or neurons are stimulated due to electric stimulation from diadynamic currents, this stimulation activates nociceptors that stimulate sensory nerve impulses that travel via axons from primary afferent neurons to the dorsal horn (DH). Activation of C nerve fibers will activate primary afferent neurons that reproduce nerve impulses to DH with excitatory amino acids such as glutamate, aspartate and neuropeptides such as P substance so that activated DH neurons will activate nociceptive impulses to the brain. While activation of A alpha and A delta nerve fibers will activate inhibitory neurons such as inhibitory amino acids, namely -amino butyrate (GABA) and neuropeptides, these substances bind to primary afferent receptors and DH neurons and will inhibit nociceptive transmission by pre-synaptic mechanisms. and post-synaptic so that nociceptor transmission decreases, so nociceptive traffic in DH is not sent directly to the brain but is more modulated which results in pain reduction

Diadynamic current given at the appropriate intensity, will activate large afferent nerve fibers (A alpha and A beta) because large fibers have a low threshold of electrical excitability and interference currents

have stimulating properties with low duration. Activation of large fibers will stimulate small interneurons in the substantia gelatinosa which will block the excitatory input of small afferent nerve fibers (A delta and C) to transmission cells (T cells) which will carry pain impulses to the brain, by way of presynaptic inhibition. above makes the pain less

Conclusion and Suggestions. There is an effect of giving diadynamic currents to decrease pain, by giving diadynamic currents the pain felt by a person will decrease. Suggestions for further research is that it can be done by adding a variety of variables for the age category, namely the elderly and adding variables to compare the effectiveness of the dynamic current application with other applications

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