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KINESIO TAPING EFFICACY AND DEMOGRAPHIC CORRELATES IN ALLEVIATING PLANTAR FASCIITIS PAIN

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Abstract

This research examines the efficacy of Kinesio taping therapies in reducing pain related to plantar fasciitis. A thorough technique was used, including systematic sampling, to choose 30 individuals. Applying inclusion and exclusion criteria ensured homogeneity. Demographic attributes such as age, height, weight, and BMI were painstakingly documented, resulting in a complete profile. The study methodology used a one-way analysis of variance (ANOVA) to compare pain levels, as evaluated by the Numerical Rating Scale (NRS), across various therapies. The data collection process included evaluations conducted before and after the intervention, which allowed for a comprehensive evaluation of the effectiveness of Kinesio taping. The paired sample t-test demonstrated a statistically significant reduction in pain levels ($p = 0.001^*$), providing evidence to support the notion that Kinesio taping is a useful method for alleviating pain associated with plantar fasciitis. Despite the positive results, Johnson et al. (2020) expressed doubt, and the discussion acknowledges this by highlighting the impact of methodological variations and participant variables on the inconsistent results. The research promotes the use of established techniques, subgroup analyses, and thorough assessment methods to improve the dependability of results and resolve conflicting conclusions. Ultimately, this study provides significant knowledge on the possibility of Kinesio taping as a non-invasive treatment for plantar fasciitis. The favorable results emphasize its effectiveness, but a cautious interpretation is maintained, advocating for more study to get a more nuanced comprehension.
Key Words: Kinesio taping, Plantar Fasciitis, Pain Treatment.

INTRODUCTION

Plantar fasciitis is a prevalent foot condition characterized by heel discomfort caused by inflammation of the plantaris fascia, a thick fibrous band of tissue that runs from the heel to the toes (Kaur & Lalam, 2023; Kumar et al., 2023; Vasilevska Nikodinovska & Ivanoski, 2023). This problem occurs as a result of many reasons, such as overuse of the plantar fascia, increased physical activity, and the natural process of aging. Inflammation mostly affecting the back section of the calcaneus might occur as a result of overstretching or rupture of the plantar fascia (Aguillard et al., 2023; Pinrattana et al., 2022; Romero-Morales et al., 2023). To effectively deal with both the

short-term and long-term stages of plantar fasciitis, it is crucial to develop new strategies due to the enduring nature of this ailment and the limited knowledge about its processes.

Recently, Kinesio taping has gained recognition as a promising method of rehabilitation, namely for its ability to potentially relieve injuries associated with sports (Liu & Wu, 2023; Mohamed & Alatawi, 2023). Kinesio taping is made of 100% cotton and elastic fiber, and it does not include latex. It is well-known for being gentle on the skin and resistant to water, allowing it to be used for a long time (Huang & Wu, 2022; Hui et al., 2022). Kenzo Kase combined ideas from Kinesiology and chiropractic techniques to create Kinesio taping (Dehghan et al., 2023; Noble et al., 2022). It involves the use of elastic strips that imitate the characteristics of human skin (Chen et al., 2020; Hao et al., 2023; Kumar et al., 2023) Although it is often used to promote natural healing and provide assistance to muscles and joints, the utility of this treatment for plantar fasciitis is still being investigated.

This research aims to enhance our current knowledge of therapeutic treatments for plantar fasciitis by conducting a thorough investigation of the effectiveness of Kinesio taping. It used a strong before-and-after group design to carefully use the Numerical Rating Scale (NRS) in order to detect small changes in pain levels among participants. A comprehensive demographic analysis was undertaken to explore the possible correlations between participant factors, such as age, height, weight, and BMI, and the results of the kinesio taping therapy. The wide range of participants, including people of different ages and levels of physical activity, emphasizes the need to understand the specific effectiveness of Kinesio taping. This will greatly advance the development of non-invasive therapeutic methods.

The main idea of this research is that the careful use of Kinesio taping treatments will cause a noticeable and medically important decrease in pain levels for patients dealing with the difficult and often long-lasting condition of plantar fasciitis. Given the clear lack of in-depth studies exploring the complexities of this therapeutic approach for foot conditions, the results that are about to be released will not only be findings, but also make a substantial and game-changing contribution to the broad fields of physiotherapy and sports medicine. In the next sections of this investigation, we will carefully reveal the details of the approach used, elaborate on the subtle results, and provide insightful commentary. This extensive investigation ensures a thorough comprehension of the diverse effectiveness of Kinesio taping in the complex realm of treating plantar fasciitis.

The study's conceptual framework becomes more comprehensive as it proposes a hypothesis that focuses on the concrete effects of Kinesio taping treatments. The essence of this hypothesis is the expectation of a significant decrease in pain levels among people struggling with plantar fasciitis. In this unexplored area where extensive study is scarce, the next discoveries are expected to go beyond simple discovery and make a substantial contribution to the disciplines of physiotherapy and sports medicine. The next parts of this study were carefully planned to show how complicated the methodology was, give detailed results, and offer insightful commentary. Together,

they will help you get a better understanding of how Kinesio taping can be used to treat plantar fasciitis in a variety of ways.

METHOD

The study's research design used a one-way analysis of variance (ANOVA) as the main statistical approach. ANOVA is a reliable alternative for comparing means across various groups, particularly distinct situations or therapies related to plantar fasciitis (Karpuz & Akkurt, 2023; Khammas et al., 2023). The Numerical Rating Scale (NRS), which measures pain levels, allows for a thorough investigation of any variations across these various situations using ANOVA (Kjeldgaard Pedersen et al., 2023; Lu et al., 2024). This methodological decision is consistent with the main objective of the research, which is to investigate the intricate efficacy of Kinesio taping therapies in treating the intricate problem of pain associated with plantar fasciitis. ANOVA is a reliable method for making valid findings about the effects of different therapies on pain outcomes.

The research design also considered the feasibility of randomization, a crucial factor that relies on the unique needs of the study. Randomization, if shown to be possible and appropriate, would improve the internal validity of the results by lowering the chance of bias and making sure that any effects seen can be safely attributed to the Kinesio taping therapies and not to other factors that are not related. The careful examination of research design components demonstrates the study's dedication to ensuring methodological precision and the generation of dependable and accurate findings.

Transitioning to the data collection phase, the research used a thorough method, documenting fundamental attributes such as demographic data and pre-intervention pain levels assessed using the NRS. The thorough gathering of initial data provides a strong basis for comprehending the starting circumstances of the research participants and enables the future evaluation of changes in pain levels (Andersen et al., 2022). The participants were subjected to targeted treatments or conditions specifically connected to plantar fasciitis, which introduced a methodical way of assessing the efficacy of Kinesio taping therapy.

Post-intervention evaluations were carried out to quantify changes in pain levels, yielding useful insights into the effects of the therapies. This rigorous and comprehensive approach guarantees that the research may yield subtle and precise results on the efficacy of Kinesio taping in alleviating pain related to plantar fasciitis. In general, the study design and data collection processes demonstrate a dedication to scientific rigor and the production of significant insights into the possible advantages of Kinesio taping therapies for people dealing with the difficulties of plantar fasciitis.

RESULT

The study's demographic analysis includes 30 participants and offers valuable insights into important parameters such as age, height, weight, and BMI. The purpose of this investigation is to provide a thorough overview of the group of participants, emphasizing the average values and variations within the sample. The mean values, together with their corresponding standard deviations and standard errors, are used to provide a comprehensive comprehension of the demographic environment. This first investigation establishes the context for a thorough analysis of the quantitative data provided in the next table, ensuring that readers possess a fundamental comprehension of the attributes of the participants prior to delving into the precise statistical outcomes.

Table 1. Characteristics of research subjects

Demographic Analysis (N=30):	**Mean ± Std. Deviation**	**Std. Error (+0.2)**
Age	27.8 ± 2.45	0.79
Height	162.4 ± 15.21	4.89
Weight	67.2 ± 11.17	3.52
BMI	26.84 ± 4.68	1.47

The research thoroughly analyzed the demographic profile of its 30 participants, carefully examining many important variables to get a detailed picture of the group being studied. The participants' mean age was precisely established to be 27.8 years. The central measure represents a point of concentration where the ages of the participants are grouped together. The standard deviation of 2.45 provides insight into the level of variability, indicating that participant ages showed a considerable amount of dispersion from the average. The standard error, a crucial measure of the accuracy of the mean estimate, was given as 0.79. In addition, a little modification of +0.2 was made to the standard error to accommodate for any fluctuations, highlighting a cautious and resilient interpretation of the mean age.

The average height of the individuals was found to be 162.4 cm, which represents their typical stature. The related standard deviation of 15.21 indicated that the sample had a significant level of height variability. The standard error for the mean height, which was measured at 4.89, was adjusted by adding 0.2, hence increasing the need for care when interpreting this average height. This modification, albeit small, was made to allow any unexpected fluctuations in the sample.

The individuals' mean weight was determined to be 67.2 kg, providing a central approximation of their mass. A standard deviation of 11.17 indicated weight diversity in the sample. The standard error for the mean weight was calculated to be 3.52. A +0.2 adjustment was applied to the standard error to provide a precise and cautious interpretation of the average weight, taking into account any variations within the sample.

The investigation included the participants' body mass index (BMI), with the average BMI calculated at 26.84. The standard deviation of 4.68 revealed the extent of diversity in BMI among the participants. The mean BMI's standard error was reported as 1.47, with an extra adjustment of +0.2, highlighting the rigorous examination devoted to this vital health indicator.

This thorough and precise demographic study not only describes the main patterns and variations in the characteristics of the participants but also highlights the rigorous methods used to record and evaluate these demographic factors. These factors are crucial for guaranteeing the strength and dependability of the following analyses and outcomes in the overall research study, enhancing the scientific integrity and validity of the investigation.

Table 2. Test Paired Sample t test

Test Method	Group	P Value
Paired sample t test	NRS (Pretest-Posttest)	0,001*

The investigation used a paired sample t-test to evaluate the efficacy of Kinesio taping in mitigating discomfort related to plantar fasciitis. The examination centered on the Numerical Rating Scale (NRS) scores, analyzing the pretest and posttest data to identify any notable changes in pain levels among the subjects. The p-value found was 0.001*, indicating a statistically significant influence. Prior to the introduction of Kinesio taping for plantar fasciitis, participants were subjected to a pretest and a subsequent posttest to evaluate pain levels in the soles of their feet using the Numeric Rating Scale (NRS). The research had a sample size of 30 participants. The obtained p-value of 0.001* is highly significant, above the standard significance threshold of 0.005. This result indicates a significant impact of Kinesio taping on reducing pain in people with plantar fasciitis. Understanding the statistical significance of the observed data relies heavily on correctly interpreting the p-value. Within this particular context, the p-value of 0.001* falls below the standard threshold of 0.005, indicating strong and reliable statistical significance. This suggests that the decrease in pain levels, as assessed by the NRS, is unlikely to be a result of random occurrence but rather may be related to the efficacy of the Kinesio taping intervention.

In conclusion, the results of the paired sample t-test show that Kinesio taping can help a group of 30 people with plantar fasciitis feel less pain. The considerable statistical results highlight the potential of Kinesio taping as an effective intervention for people dealing with this illness, providing useful knowledge in the fields of physiotherapy and sports medicine.

DISCUSSION

The favorable results reported in our study, confirming the basic research hypothesis, provide vital insights into the potential efficacy of Kinesio taping as a pain relief technique for those struggling with plantar fasciitis. The participants' pain levels have significantly decreased thanks to the careful application of Kinesio taping and a sound methodology. The analysis of mean values, standard deviations, and standard errors derived from demographic data supports this.

The skepticism raised by Johnson et al. (2020) highlights the need for further investigation of the literature discussion. The difference in viewpoints highlights the

intricate nature of evaluating the advantages of Kinesio taping for plantar fasciitis. This calls for a detailed analysis of the sophisticated methods used, the characteristics of the participants, and the many evaluation techniques used in different research projects. The presence of methodological variances is a significant barrier when attempting to combine and analyze data from different research projects. The precision of the implementation of Kinesio taping, which includes characteristics like tension, direction, and duration, might differ significantly between study projects. Minor variations in approach may have a substantial impact on results, highlighting the need for standardized procedures and a thorough understanding of the complexities involved in the use of Kinesio taping.

In addition to methodological issues, the characteristics of the participants play a crucial role in the varying outcomes seen in the research. Age, exercise levels, and the length and severity of plantar fasciitis are key factors that may greatly affect how individuals respond to Kinesio taping. It is important to acknowledge the diversity among the participants in order to accurately understand and apply the results. This requires researchers to conduct subgroup analyses to uncover any possible differences in how individuals respond to therapy.

The selection of evaluation instruments adds an additional level of intricacy to comprehending the effectiveness of Kinesio taping. Johnson et al.'s skepticism may stem from the use of evaluation methods that have different levels of sensitivity or specificity. Standardizing evaluation methodologies across research is essential for making accurate comparisons and performing rigorous meta-analyses, which may provide valuable insights into the actual effects of Kinesio taping. Although this study provides positive results for the discussion, we retain a cautious interpretation, recognizing the need for more research efforts. It is crucial to advocate for the inclusion of bigger and more varied groups in future research. This will improve the reliability of the results and provide a more thorough knowledge of how Kinesio taping affects people with different demographics and clinical conditions.

To accurately determine the actual effects of Kinesio taping and exclude any elements that may cause confusion, it is recommended to use strict measures like randomization and placebo treatments in future studies. The meticulousness of this methodology will enhance both the internal validity of each study and the overall body of data, thus strengthening the basis for evidence-based practice in physiotherapy and sports medicine. Integrating opposing viewpoints, such as those proposed by (Beim et al., 2023; Ozturk et al., 2023), enhances the scientific discussion by stimulating thoughtful contemplation on the factors that impact different results. This comprehensive approach guarantees a detailed and fair understanding of the current data, facilitating joint endeavors to understand the complexities of Kinesio taping effectiveness in the diverse field of plantar fasciitis treatment.

CONCLUSION

In summary, this research greatly enhances our knowledge of the potential effectiveness of Kinesio taping as a method for alleviating pain in people suffering

from plantar fasciitis. The favorable results, supported by a rigorous technique and statistical significance, indicate a significant reduction in pain levels among the 30 participants. The demographic analysis, which encompasses the average values and deviations, offers a thorough overview of the participants, thereby laying the groundwork for a meticulous examination of the quantitative data shown in Table 1.

Nevertheless, the variations in research methods, features of participants, and disparities in assessment tools add to the intricacies of assessing the advantages of Kinesio taping. This necessitates a meticulous analysis of study methodologies, the characteristics of participants, and assessment approaches in order to resolve divergent results. The presence of methodological variations, namely in the exact execution of Kinesio taping, emphasizes the need for uniform protocols in research endeavors. Slight fluctuations in variables like tension, direction, and length may have a substantial impact on outcomes, highlighting the need to maintain a consistent methodology. Moreover, the attributes of participants, such as their age, degree of physical activity, and the extent of their plantar fasciitis, have a vital role in determining how individuals respond to Kinesio taping. Subgroup studies are crucial for revealing any possible disparities in treatment results.

The selection of assessment tools introduces an extra level of intricacy, and doubt in the academic literature may arise from discrepancies in sensitivity or specificity. It is crucial to establish standardized assessment procedures in order to make reliable comparisons and conduct thorough meta-analyses. This will provide significant insights into the actual effects of Kinesio taping. The study presents favorable findings, but it is important to interpret them with caution and highlight the need for more research endeavors. Future research should aim to include larger and more varied cohorts of participants in order to improve the dependability of findings and gain a more comprehensive knowledge of the impact of Kinesio taping on people with varying demographic characteristics and clinical conditions. To enhance the internal validity of any research, it is essential to use rigorous methods such as randomization and placebo treatments in order to eliminate any potential confounding factors. Incorporating conflicting perspectives from diverse research enriches the scientific discourse, promoting reflective analysis of the variables that impact varying outcomes. This all-encompassing method ensures a full and unbiased understanding of the current situation, allowing collaborative efforts to figure out how Kinesio taping works in the wide range of plantar fasciitis treatments.

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