Journal of
Novel Physiotherapies
ISSN: 2165-7025

Short Communication Open Access

Adapted Linear Excursion Measurement Device Assessment of Cervical Resting Posture in Supposedly Healthy People

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Abstract

Cervical resting posture is a crucial factor in understanding and managing various neck-related conditions, including musculoskeletal disorders and pain. Accurate measurement and analysis of cervical posture are essential for healthcare professionals seeking to improve patient outcomes and guide treatment strategies. In this study, we present an innovative approach to measuring cervical resting posture using an adapted linear excursion measurement device. This device offers precise and reliable data on cervical posture in both the sagittal and coronal planes. We describe the device's design, functionality, and application, emphasizing its potential to enhance clinical assessments and inform treatment plans for individuals with cervical-related issues. Our findings underscore the significance of adopting technology-driven solutions for improving cervical posture evaluation and ultimately advancing patient care.

Keywords: Cervical trip point; Direct outing estimating gadget

Introduction

Posture is the relationship between a segment and a body part that is related to other segments that are adjacent to it; and the connection that exists between each and every part of the human body. Neuromuscular coordination, equilibrium, and biomechanical efficacy are all reflected in it. A posterior concave arc, or lordosis, is the biomechanical ideal configuration for the human cervical spine [1]. Numerous studies have shown a link between chronic pain in the musculoskeletal system and improper posture, which is characterized by the loss or reversal of the normal cervical lordosis. The cervical spine goes about as the intersection between the head and the storage compartment. Skeletal mal-alignment or changes in alignment can indicate muscle lengthening or shortening as well as strength imbalances between agonists and antagonists of muscles . Unreasonable or unusual muscle strain, required when strange stances are kept up with over the long haul, can prompt muscle fit and agony .

Grimmer, the inventor of the Linear Excursion Measurement Device, presented a method for defining poor posture and objectively assessing cervical resting posture [2,3]. In this review, a variation of this instrument was utilized to evaluate and find out the take a huge risk torment among understudies and the requirement for more prominent consciousness of legitimate ergonomics with the end goal of diminishing the probability of creating cervical postural issues.

Obviously there is a requirement for solid techniques to evaluate unbiased stance of head and neck impartially. According to a number of studies, improper cervical resting posture over time is a risk factor for the onset of neck pain. Unfortunate head act is viewed as wasteful, expanding the repulsive force load on cervical designs, prompting strange and compensatory exercises by them, and bringing about torment. This unfortunate stance is portrayed by incredibly huge and additionally tiny cervical outing points at both the upper and lower cervical area, estimated involving the direct journey estimating gadget as verified by Grimmer.

The device comprises a lightweight frame with adjustable head and chin supports for patient comfort. Sensors are strategically placed to capture linear excursions in both the sagittal and coronal planes. A digital interface provides real-time data visualization and recording during cervical resting posture assessment (Figure 1). The device offers enhanced accuracy and reproducibility compared to traditional manual methods.

Discussion

The instrument LEMD was used in this study to access the typical cervical resting posture among undergraduates of college of Health Sciences and Technology, Nnamdi Azikiwe University, Okofia campus, with a view of ascertaining their likelihood or disposition to neck pain. This is based on the premise that chronic adoption of poor posture by these students would impact on their cervical resting posture. This instrument has also been tested for its temporal stability and reliability in the Nigerian environment. In this study was investigated the temporal stability and reliability of the computed sagittal cervical excursion angles obtained at two selected landmarks, i.e. the superior most tips

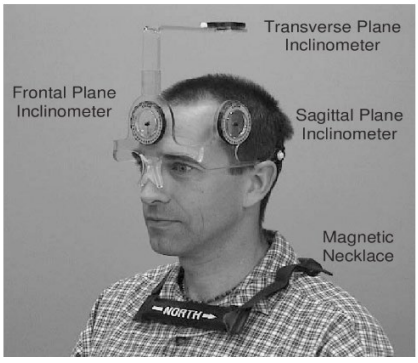

Figure 1: The adapted linear excursion measurement device.

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Received: 01-Aug-2023, Manuscript No. jnp-23-113347; **Editor assigned:** 03-Aug-2023, Pre QCNo. jnp-23-113347 (PQ); **Reviewed:** 17-Aug-2023, QC No. jnp-23-113347; **Revised:** 22-Aug-2023, Manuscript No. jnp-23-113347 (R); **Published:** 29-Aug-2023, DOI: 10.4172/2165-7025.1000621

Citation: Manga A (2023) Adapted Linear Excursion Measurement Device Assessment of Cervical Resting Posture in Supposedly Healthy People. J Nov Physiother 13: 621.

of helix of the ear and the spinous process of C7, from an adaptation of LEMD in apparently healthy individuals. It also investigated the influence of time of day on the measurement obtained from the device. From the results, found the LEMD to be cost effective, time efficient and reliable in agreement with Grimmer but with weak temporal stability in this environment [4-8]. It was then concluded that it could be used by physiotherapists in the treatment setting for assessing and quantifying improvement with intervention in patients with cervical spine problems but with improvement to increase the temporal stability. Evidence to specifically associate particular cervical resting postures with pain has been provided largely by single case studies or anecdotal reports, in which correction of perceived poor posture by realigning the position of the head with respect to the gravitational line effects a decrease in headache and/or neck pain. A significant difference was found between males and females in the movement at the upper cervical spine, gotten from the measured excursion angles but not at the lower cervical spine resulting from significant differences that existed in the horizontal and vertical distance measurements from which the excursion angles were calculated. This is somewhat in agreement with Grimmer who suggested that gender-specific mechanisms underlie development of habitual resting head posture. This might have also been due to an error arising from the hair-do of certain female subject or from the tester due to fatigue or error due to parallax.

Conclusion

The assessment of cervical resting posture is a fundamental aspect of understanding and addressing various neck-related conditions. This study introduced an innovative and adapted linear excursion measurement device designed to provide precise and reliable data on cervical posture in both the sagittal and coronal planes. Through its design, functionality, and application, this device has demonstrated significant potential to enhance clinical assessments and guide treatment strategies for individuals with cervical-related issues. Our findings emphasize the importance of embracing technology-driven solutions to improve the accuracy and reproducibility of cervical posture evaluation. This adapted measurement device offers healthcare professionals a valuable tool to obtain comprehensive data, allowing for more informed decisions in patient care and treatment planning. By facilitating more precise assessments of cervical posture, the device contributes to the development of tailored interventions and better outcomes for individuals with musculoskeletal disorders, pain, and related conditions. As healthcare continues to advance, innovations like the adapted linear excursion measurement device hold the promise of optimizing cervical posture assessment and, ultimately, improving the quality of life for patients with neck-related issues. Further research and clinical integration of such technology-driven solutions are warranted to explore their full potential and benefits in enhancing cervical posture evaluation and patient care.

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