

# Chronic Neuromuscular Pain Limit a Person's Movements

Barkin R\*

Department of Medicine and Health Sciences, Universiti Sultan Zainal Abidin, Malaysia

## Abstract

Neuromuscular Taping provides passive stretching through the application of a tape with eccentric properties encouraging flexibility and coordination and bettering range of movement in patients suffering with excessive muscle contraction due to different clinical conditions. It has been claimed that the effects may be due to the motor sensory and proprioceptive feedback mechanisms. It has been hypothesized that the application of neuromuscular taping is able to stimulate cutaneous mechanoreceptors. These receptors activate nerve impulses when mechanical loads create deformation. Their activation by an adequate stimulus causes local depolarization, which triggers nerve impulse along the afferent fibres travelling toward the central nervous system.

**Keywords:** Sclerosis; Upper limb; Lower limb; Nervous system; Mobility; Musculoskeletal pain syndrome

## Introduction

Neuromuscular Taping is a relatively new treatment which induces micro-movements by stimulating receptors in the skin. It is commonly used in the sports traumatology as well as patients with Multiple Sclerosis. Application of an elastic tape on the skin with a direct therapeutic effect both local and distant by reflex. The application of neuromuscular taping with an eccentric and de-compressive technique raises the skin and dilates the interstitial spaces and consequently improves circulation and absorption of liquids reduces subcutaneous pressure. Applications of this technique were found in multiple sclerosis and in Cerebral Palsy with encouraging results on gait pattern and upper limb functionality [1]. Results were also found to support the use of this type of taping application to improve the lower-limb functionality in subjects with JHS/EDS-HT. Also a pilot study and case series on sensorimotor deficits in Down Syndrome, the aim is to use motion analysis approach to evidence, in a quantitative way, the biomechanical alterations in a drawing test through the application of Neuromuscular taping, the drawing test permitted the participants to focus their attention on a distal joint, where the contribution of skin receptors in kinaesthesia assumes relevance as the muscle spindles usually have. These studies specific application processes of a neuromuscular taping in specific therapeutic areas it have already been shown a certain improvement in mobility and lymphatic drainage. The study was focused on back pain management, quantifying the efficacy of Neuromuscular Taping as a treatment method combined with physical therapy rehabilitation as a means of reducing pain symptoms in Musculoskeletal Pain Syndrome, Back Pain other degenerative conditions of spine [2]. The other aim is to quantify the use of neuromuscular taping in improving the quality of life of the people. Low back pain is the most prevalent musculoskeletal condition and the most common cause of disability in developed nations. The lifetime prevalence of LBP in developed countries is reported. LBP results in significant levels of disability, producing significant restrictions on usual activity and participation, such as an inability to work. Furthermore, the economic, societal and public health effects of LBP appear to be increasing. Low back pain is pain and stiffness in the lower back .it is bone of the most common reasons people miss work.

## Discussion

Low back pain is usually caused when alignment or muscle holding a vertebra in its proper position is strained. According to World Health Organization, Low Back Pain is responsible for a major portion of

people staying away from work or visiting a medical practitioner [3]. It is estimated that the world's population has at least one episode of back pain in their life time. This condition may cause a decrease in the quality of life of individuals, as well as deterioration in physical activity. Generally incidents of back pain most commonly occur in between ages 25 and 50 years. In many low income countries especially in Ethiopia lack of knowledge about the effect of physiotherapy services and having an attitude that physiotherapy is giving massage only, results in patients long term disability, dependency and increase in number of handicaps. The 1994 Ethiopian national population and housing census provides statistics on disability in Ethiopia [4]. This report revealed the total number of Ethiopians living with a disability to be 991,916 or 1.85% of the total population. Of these, 319,181 were physically disabled. It is acknowledged, however, that this census is likely to have underestimated the prevalence of disability in Ethiopia. In 2003, it was estimated that 7.6% of the population were living with a disability. Other study conducted in Ethiopia suggested that a total of 805492 disabled persons constitute 1.09% of the total population [5]. In addition, during the last twenty five years, the country has been suffering from external and internal conflicts that have precluded major foreign investments. The war wounded disabled people are estimated at 22,000 persons. War, poverty, ignorance, disease, harmful traditional practice and drought are the major causes of disability in Tigray region. The situation is especially aggravated by post civil war, inadequate nutrition, limited access to health care and absence of educational services, as well as by the high prevalence of harmful traditional practices. The presence of a disability can trap people in a life of poverty because of the barriers disabled people face to taking part in education, employment, social activities, and indeed all aspects of life. In the recent times the communicable disease has been controlled around the country where as the non-communicable disabling disease are on the raise [6]. Which includes the musculoskeletal and

\*Corresponding author: Barkin R, Department of Medicine and Health Sciences, Universiti Sultan Zainal Abidin, Malaysia, Tel: 01 096658236, E-mail: barkin@gmail.com

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neurological disorders? In order to resolve this situation the health sector is focusing on the healthy life living which includes, healthy eating habits, regular exercises and regular medical evaluation. Thereby the physical therapy and rehabilitation is given priority for effective management. But Lack of knowledge about physiotherapy services specifically NMT directly affect access to get physiotherapy services. Conservative opinion may also influence health and economic status of the family member. Even when physiotherapy services are available, patients who lack accurate information about the relevant treatment options may not get the service because they do not know they are eligible for the service. In many circumstances where patients are legally entitled to have physiotherapy services especially NMT, are not available for a range of reasons like health system problems (lack of trained providers, concentration of facilities in urban areas, negative provider attitudes, use of inappropriate or outdated methods, lack of authorization for providers or facilities and cultural and over all poor socioeconomic status [7]. This risky practice leads to increasing morbidity and mortality. Neuromuscular taping has been used as a therapeutic material in Europe and USA since 10 years back, but it is new to our Hospital and even our country as a whole. Since 6 months back we introduced this new treatment material to Ayder Comprehensive specialised Hospital to help specifically the disabled war veterans and people of Tigray, Ethiopia. In order to apply to the patients this material, throughout the country we planned to measure its efficacy. It is already evaluated in more developed countries, so there is no need of pilot study to obtain preliminary data upon which to base a subsequent pivotal study of the device. Neuromuscular taping has been used as a therapeutic material in more developed countries; so many pilot studies have already been done on various clinical conditions like pain multiple sclerosis, phantom pain and other systemic problems. In this study, subjects were treated for back pain and followed up for a period of 6-8 weeks [8]. With a wide range of limitations, the result after series of statistical process shows evidence of reduction of parameters pain in single blinded comparative study. Moreover, when compared to the group posttest value which also indicative of effective treatment modalities was used in pain reduction so which implies conventional physiotherapy for back pain is also effective in reducing the pain. Furthermore, comparison between the groups to find the effective treatment modality, the Visual analogue scale pain values compared between the two groups it was found to insignificant as the P Value showed no significance between group A & B respectively. As back pain can cause temporary physical disabilities to understand the pattern of disabilities post back pain, Oswestry Low Back Pain Disability index was included in this study [9]. Oswestry Low Back Pain Disability index values were expressed in Mean  $\pm$ SD. The result shows a marked variation between the pretest Oswestry Low Back Pain Disability index value and posttest, Oswestry Low Back Pain Disability index value among the groups A&B. To determine the significance of the treatment impact, the correlation coefficient analysis was done between groups and it shown statistically significant. Here by based on the result it can be concluded that the group A is more effective in reduction of disability post back pain and can be considered as a treatment protocol for back pain. In contrast with Neuromuscular taping application was also shown to be effective as follows, it is non-invasive and is not a time-consuming Procedure; thus, it is cost-effective while not requesting specific patient collaboration. Its hypothetical mechanism of action, if merely speculative, should be that neuromuscular taping may play a role as a sensitive input that is integrated by the central nervous system and used for assisting motor program execution process known as sensory-motor integration. It has recently has been hypothesized that taping seems to stimulate cutaneous mechanoreceptors resulting in

physiological changes in the taping area, so based on these facts that Neuromuscular taping has some superficial placebo effect on pain reduction in case of back pain. Moreover, recent study on Neuromuscular taping which concludes that a symptom of post amputation pain suggested that while using the conventional physiotherapy with neuromuscular taping the pain intensity can be reduced very effectively when compared to the conventional physiotherapy management. Furthermore we cannot compare our results with other literature results because of lack of research done on this study NMT on back pain. This data report could be considered an observational pilot study with the prospect to inform clinical practice [10]. Further randomized controlled investigations on more subjects are certainly needed to assess effectively the effects of Neuromuscular taping intervention on movement and back pain. In this study on low back pain and conventional physiotherapy intervention, Oswestry Low Back Pain Disability has been found reducing significantly in experimental group whereas compared to the controlled group. As the disability and the pain factor is reducing, considering the fact NMT can be included as one among the physiotherapeutic modality used for the treatment of Back Pain. Introduction of new intervention such as neuromuscular taping in terms of back pain management itself is a very challenging.

## Conclusion

The investigation of such studies and their result will help for further research prospective. This study performed on patients with a symptoms of back pain related to neuromuscular skeletal issues suggested that while using the conventional physiotherapy with neuromuscular taping in pain reduction of back pain patient rather individual efficacy of neuromuscular taping is not significant.

## Acknowledgement

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## Conflict of Interest

None

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