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Effects of Different Kinesio Taping Methods on Neck Muscles Strength for Clients with Mechanical Neck Disorders

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SUMMARY

We employed a new taping technique, called myofascial trigger points (MTPs) taping, on clients with mechanical neck disorders (MND) and compared its effect on muscular torque of neck flexors and rotators bilaterally with the traditional taping method. Eleven participants (5 males and 6 females) joined this study. The including criterion was the client with MND and their neck disability index between 15-24 points (moderate stage). Two different taping methods were applied on the bilateral trapezius and the neck erector spinae, represented the traditional and MTPs methods respectively. Participants remained taped condition for three days and then preceded strength measurements of deep neck muscle as post-treatment evaluation. One month later, participants were taped the other taping method. The measured muscular moments were normalized by dividing participant's body weight. Repeated measured ANOVA and t-test were used for statistical analysis.

Both taping methods, MTP (0.31 in.lbs/kg) vs. traditional (0.35 in.lbs/kg) significantly increase ($P < 0.05$) the clients' neck flexors moment compared with pre-taping (0.28 in.lbs/kg). The MTPs taping method (0.45 in.lbs/kg) has significantly greater ($P < 0.05$) muscular moments in extension direction compared to the traditional taping method (0.39 in.lbs/kg). Both kinesio taping methods can improve the neck muscular moments for clients with MND, especially while using the MTPs taping method.

INTRODUCTION

Most studies showed the relation in computer using and the etiology for neck-shoulder disorder. About 20-30% of computer user had neck disorders and more than 50% of them would be disturbed more than 6 months. Non-specific neck pain may be caused by repetitive work, excessive static muscles contraction, or maintained at extreme irregular posture for a long period. Previous studies suggested neck-shoulder pain will be improved after localize muscles strengthening and relaxing.

Kinesio taping has been shown the possible effective in the treatment of musculoskeletal pain in clinical settings for several years. MTPs taping method is a transverse tapping to severe pain area. A case report showed MTPs taping could improve myofascial pain and had better effect than massage

and modality. However, its effect on the muscular function was still unknown. The aim of this study was to compare the effect on muscular torque of neck flexors and rotators bilaterally between the MTPs and the traditional taping methods for clients with MND.

METHODS

There were 11 participants (5 males and 6 females) with MND joined this study. The including criterion was their neck disability index between 15-24 points (moderate stage). Participants lay on the bed and the head was fixed in the custom-made neck muscle moments measurement system (Figure 1). This system could measure movement moments of neck in two planes, i.e. sagittal and transverse plane, representing flexion, extension and bilateral rotation respectively. They were asked to complete three times and each time for ten seconds.



Figure 1: Custom-made neck muscle moments measurement system.

Two different taping methods were applied on the bilateral trapezius and the neck erector spinae, represented the traditional and MTPs methods respectively. Participants remained taping condition for three days without uncomfortable and then preceded moments measurements of neck muscle as post-treatment evaluation. One month later, participants were taped the other taping method, and the procedure of experiment was same as the previous one. The measured muscular moments were normalized by dividing participant's body weight. Repeated measured ANOVA and t-test were used for statistical analysis. (Figure 2 a, b)

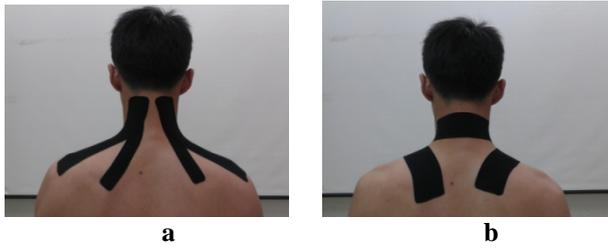


Figure 2: a. Tradition tapping method, b, MTPs tapping method

RESULTS AND DISCUSSION

Both taping methods, MTP (0.31 in.lbs/kg) vs. traditional (0.35 in.lbs/kg) could significantly increase ($P<0.05$) the clients' neck flexors moment compared with pre-taping (0.28 in.lbs/kg). The MTPs taping method (0.45 in.lbs/kg) has significantly greater ($P<0.05$) muscular moments in extension direction compared to the traditional taping method (0.39 in.lbs/kg). (Table1)

The improved muscular torque may be the taping effects, related to input the sensory to induce the muscle's activation from the skin stimulation. However, it is also possible from the pain reduction due to the tension in the tape provided afferent stimuli, facilitating pain inhibitory mechanisms, called gate control theory.

CONCLUSIONS

Both kinesio taping methods can improve the neck muscular moments for clients with MND, especially while using the MTPs taping method.

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Table 1: The moment values during different movement in tradition and MTPs tapping methods

Movement	Post-MTPs	Post-tradition	F	P - value
Flexion	0.31 (±0.07)	0.35 (±0.14)	3.287	0.076
Extension	0.45 (±0.14)	0.39 (±0.29)	6.981	0.011*
Rotation to right	0.25 (±0.06)	0.24 (±0.08)	0.560	0.458
Rotation to left	0.24 (±0.09)	0.19 (±0.06)	3.556	0.066

Note: * $p<0.05$, ** $p<0.01$, Unit: in • lbs / kg