

THE EFFECTS OF KINESIO TAPING ON MUSCULAR ENDURANCE OF DEEP NECK FLEXORS FOR SUBJECTS WITH FORWARD HEAD POSTURE : A PILOT STUDY

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The purpose of this study was to investigate the effects of Kinesio taping on head posture and muscular endurance of deep neck flexors for subjects with forward head posture. The subjects were two males (mean age 19.0 ± 1.4 years, mean body height 172.0 ± 5.6 cm, mean body weight 72.0 ± 18.3 kg) and three females (mean age 19.7 ± 2.0 years, mean body height 162.0 ± 2.0 cm, mean body weight 55.3 ± 6.6 kg) who agreed to participate in this study. The forward head posture was measured by postural assessment system, meanwhile the muscular endurance of deep neck flexors was measured by using the neck strength measure instrument while two taping methods applied to the subjects. The placebo taping method resulted in more improvement on neck flexor muscles endurance and head posture than traditional taping method. Placebo taping method may be better than the traditional taping method for correcting forward head posture and improving muscular endurance of deep neck flexors.

KEY WORDS: Kinesio taping, Forward head posture, Muscular endurance

INTRODUCTION: Kinesio taping (KT) has been theorized to be an effective treatment to restore muscle function and assist the postural alignment. Because of the change of life style, modern people usually have sedentary behavior. The poor muscular endurance may lead to the poor postures. There were few studies about the effect of kinesio tape on forward head posture (FHP) alignment and deep cervical flexors. Thereafter, our purpose was to investigate the effects of KT on muscular endurance of deep neck flexors for subjects with FHP

METHODS: 5 subjects were recruited in this study. The subjects were two males (mean age 19.0 ± 1.4 years old) and three females (mean age 19.7 ± 2.0 years old) who agreed to participate in this study. Custom-designed neck strength measure instrument (intra-class correlation= $0.968\sim 0.988$) (Figure 1A.) and postural assessment system (Figure 1B.) ($0.94\sim 0.95$) were used to measure cranio-vertebral angle (Figure 2) and muscular endurance respectively. KT was applied on levator scapulae and upper trapezius in traditional taping method (Figure 3A.) and applied on C7 to T3 in placebo taping method (Figure 3B.). Subjects will be measured for 3 times which are before taping, after taping and after 3 days taping. Subjects were demand to maintain maximal voluntary contraction of craniocervical flexion till fatigue (Figure 4). We quantified muscular endurance by investigating muscle fatigue time which defined the time of the muscle moment drop to 50% of its peak value. All subjects have to be evaluated their cranio-vertebral angle which is the angle between tragus and C7 by the postural assessment system.

RESULTS: The improvement of posture alignment percentage, placebo taping method was better than traditional taping method (before taping and after taping $7.03\% > 3.00\%$, before taping and after 3 days taping $16.37\% > 10.20\%$) (Figure 4). The improvement of muscular endurance percentage, placebo taping method was better than traditional taping method (before taping and after taping $163.57s > 67.15s$, before taping and after 3 days taping $257.46s > 118.10s$) (Figure 5). The difference between before taping and after taping and before taping and after 3 days taping was not significant ($p > 0.05$) (Table 1&2).

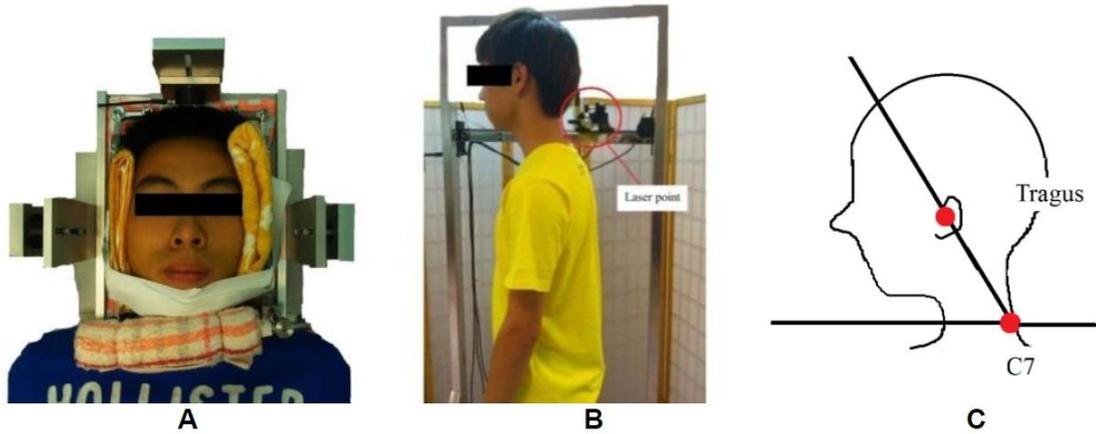


Figure 1A. The neck strength measure instrument B. Postural assessment system C. Cranio-vertebral angle



Figure 2A. traditional taping method B. placebo taping method

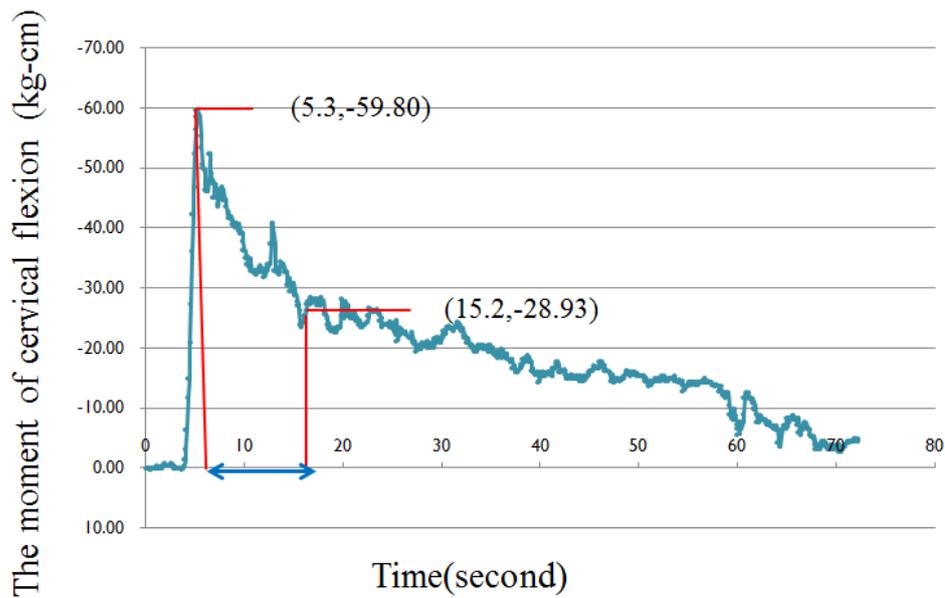


Figure 3: Muscle Fatigue Time

DISCUSSION: In this research, we applied KT on the levator scapulae and upper trapezius to alter FHP and investigated the change on deep neck flexors muscular endurance. The results

suggested that KT may be able to improve the FHP and then increase deep neck flexors muscular endurance (placebo > traditional taping methods). Our findings were similar to previous studies that indicated KT has positive effects to muscular performance and alignment. The results observed in this study may be explained by the fact that after correcting the sitting posture of subjects, KT was applied on C7-T3 spinal process. Because of the correcting the sitting posture of subjects, it generates a tension of KT that cause placebo method better than traditional method.

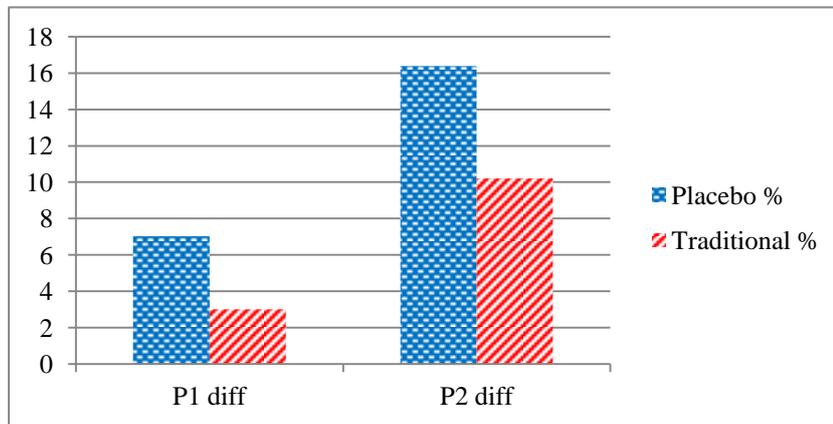


Figure 4: The improvement of posture alignment percentage

P1 diff= (post (immediately) – pre) / pre ; P2 diff= (post (after 3 days) – pre) / pre

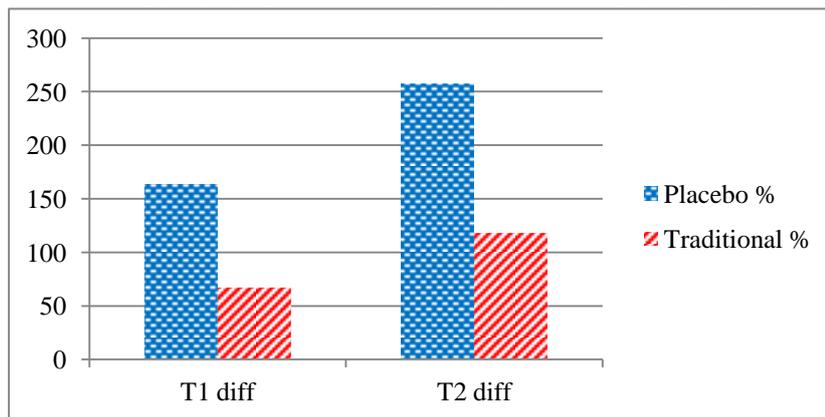


Figure 5: The improvement of muscular endurance percentage

T1 diff= (post (immediately) – pre) / pre ; T2 diff= (post (after 3 days) – pre) / pre

Table 1: The difference between before taping and after taping

	Before taping	After taping	After 3 days taping	p-value
P1	45.5(2.14)	47.11(2.63)	-	0.06
P2	45.5(2.14)	-	50.94(3.77)	0.09

P1: the difference between before taping and after taping in muscular endurance P2: the difference between before taping and after 3 days taping unit: degree

Table 2: The difference between before taping and after 3 days taping

T1: the difference between before taping and after taping in muscular endurance T2: the difference between before taping and after 3 days taping unit: seconds

	Before taping	After taping	After 3 days taping	p-value
T1	22.8(8.81)	46.94(23.64)	-	0.06
T2	22.8(8.81)	-	62.48(31.81)	0.06

CONCLUSION: Placebo taping method may be better than the traditional taping method for correcting forward head posture and improving muscular endurance of deep neck flexors.

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