

The Effect between Static Stretching and Pre-Event Massage on Kicking Speed Score among University Taekwondo Athletes

Mohamad Nizam Mohamed Shapie ¹, Intan Nur Marlina Khiri ²

^aFaculty of Sport Science & Recreation, Universiti Teknologi MARA (UiTM)

^bSeni Gayung Fatani Malaysia Association

Abstract

This study has been conducted to identify the effect of different athlete's preparation methods between static stretching and pre-event massage on kicking speed score among taekwondo athletes. Forty-five taekwondo athletes aged between 21 to 26 years old were selected to participate in this study. Subjects were divided into control group (N=15), static stretching (N=15) and pre-event massage group (N=15). All groups followed a supervised 10 seconds kicking speed test in the pre-test and post-test. Paired t-test was utilized to determine the significance at a 95% confidence level ($p=0.05$) of kicking speed score between the three groups. The control ($p\text{-value} = 0.499$) and static stretching groups ($p\text{-value} = 0.458$) showed no improvement compared to pre-event massage group ($p\text{-value} = 0.001$) that showed changes in the kicking speed number. This study found that pre-event massage intervention was more efficient in assisting speed of kicking to enhance performance compare to static stretching group.

Keywords: *combat sports, taekwondo, sport massage, martial arts, exercise-training*

Introduction

The application of correct technique is crucial in order to win a game. Thus, it is important for every athlete to perform at optimal or highest performance during competition. The athletes need to undergo high intensity training program in order to excel in competition.

There are many ways that the athletes can maintain their physical condition such as a proper warm up and cooling down during training, apply sport massage therapy for recovery process; and also upgrading knowledge/information regarding methodology on how to recover fast from high intensity training in order to prepare for their next training regime.

Arabaci (2008) reported that the acute effects of pre-event lower limb massage on explosive and high speed motor capacities and flexibility in sport massage involved some techniques that manipulated fiber arrangement, promote better blood flow in veins and helped to remove biological wastes such as lactic acid. It also increased muscle ROM and reduces muscle fatigue. Current research study the effect between static stretching and pre-event massage on kicking speed score among taekwondo athletes

Materials and Methods

Forty-five participants (24 male, 21 female) with a mean age of 23.42 ± 1.55 y, body weight 62.42 ± 12.57 kg and height $1.63 \pm .07$ m completed pre- and post-test sessions of 10 seconds kicking speed test. All subjects were Universiti Teknologi Mara (UiTM) taekwondo athletes that free from injury at least one year of involvement or experience in taekwondo games. Ethical approval was granted by the institutional ethics committee

The subject was randomly divided into 3 groups; independent groups which were control group, pre-event massage group and static stretching group. The 10 seconds kicking speed test was measured for pre-test (without intervention) and post-test (with intervention). The control group was examined by doing pre-test and post-test (without intervention).

First session was pre-test (without intervention). The first whistle was blown that indicated the beginning of kicking test. Then the stop watch was timed for 10 seconds. The subject kicked the kicking target as fast as possible using only turning kick technique. Each of the kick was count using the tally counter. After 10 seconds, the whistle was blown once again that indicated the subjects to stop kicking. The amount of kicking was recorded in a scoring form to be analyzed. After the first session's ends, second session which was post-test (with intervention) started. Subjects were given pre-event massage and static stretching according to their group. The post-test of control group, subject was not received neither static stretching nor pre-event massage.

For pre-event massage group, the subjects received effleurage, petrissage, friction massage and tapotement on athlete's lower body part for 5 minutes. For static stretching group, the subject did the lower body static stretching such as hamstring stretch, calf stretch, hip and thigh stretch, adductor stretch, groin stretch and quadriceps stretch respectively for 12 seconds for each stretching technique. The 10 seconds kicking speed test was repeated towards the subject. All data that have been recorded was analyzed in data analysis process.

The reliability analysis has been done for 10 seconds kicking speed test. Reliability analysis used in this research was the Intra-class Correlation (ICC). The test-retest reliability analysis measured the kicking speed score of pre-test and post-test for to the three groups. The kicking speed score was compared from repeated testing of the same subjects with the same test. The result of intra-class correlation (ICC) showed 0.849 for all group. The correlation in pre-event massage group was quite high. There was a strong correlation between test and retest result.

Results

Table 1: Test-retest results of difference kicking speed score of between pre- and post-test in groups. Result shown as mean (SD), t, df and p-value.

		Mean (SD)	T	df	p
Control Group	Pre-Test	19.60 (0.99)	.695	14	.499
	Post-test	19.47 (1.25)			
Static Stretching Group	Pre-Test	19.80 (1.37)	-.764	14	.458
	Post-test	20.00 (1.70)			
Pre-Event Massage Group	Pre-Test	21.20 (2.46)	-4.298	14	.001
	Post-test	22.27 (2.16)			

Table 1 shows kicking speed score between pre-and post-test among three difference group (control, static stretching and pre-event massage group). Results showed non-significant improvements ($p > 0.05$) in kicking speed score between pre-and post-test among control and static stretching group. However, only pre-event massage group showed significant improvement score for post-test ($M = 22.27$, $SD = 2.154$) compared to pre-test of pre-event massage ($M = 21.20$, $SD = 2.455$), $t(14) = -4.298$, $p = 0.001$.

Discussion

There were no significant changes in kicking speed score after static stretching intervention as proven by the results. The excitability of muscle can also be reduced via static stretching by activating the Golgi tendon organ in the muscle such as in this research it focuses more on lower body which were the hip flexors, calf muscle, hamstrings and quadriceps. The previous study of Gulick, D., Berge, B., Borger, A., Edwards, J., & Rigterink, J. (2006) that stated

static stretching help elongate muscles to increase flexibility and are more appropriate at the end of practice when the muscles are warm (during the cooling down session).

The pre-event massage group had shown the greatest difference in the mean score indicating that pre-event massage intervention was the best preparation method for increases the kicking speed. The previous study by Arabaci (2008) had supported this statement by stated that sport massage involved some techniques that manipulate the fiber arrangement, promote better blood flow in that veins and help to remove biological wastes such as lactic acid.

Combat sport such as taekwondo can be characterized as an explosive, aggressive and closed-contact sport (Kazemi, M., Perri, G., & Soave, D., 2010). Usually after a bout (match), athletes will be facing another bout in the same day. Athletes need to recover their body quickly so that they can perform at optimal level in the next bout of competition. There were cases where athletes could not recover from the fatigue and proceed to the next round with high stress level, muscle tightness, increased heart rate and increased anxiety. This will affect his performance towards the game and the victory always favours those who were ready physically and mentally.

Moraska (2005) stated that the ability of an athlete to recover from a physical effort was important during training or competition. The greatest advantages of pre-event massage for the subjects were to overcome fatigue, to reduce recovery time, feeling confident and less pain (Jooste & Khumalo, 2012). By applying the pre-event massage, it does not only helps to reduce the anxiety level, but also helps in increasing the range of motion, increase speed ability, lowers the blood pressure and heart rate, promotion relaxation effects to the tension in muscle (Moraska, 2005).

Conclusions

The study showed that the pre-event massage showed greater effectiveness in kicking speed score before training compared to static stretching and control group that have no impact on lower body kicking-speed performance. It can be concluded that intervention of pre-event massage before training was the most effective preparation method for university taekwondo athletes and should be included in the training program of the athletes.

References

- Arabaci, R. (2008). Acute effects of pre-event lower limb massage on explosive and high speed motor capacities and flexibility. *Journal of Sports Science & Medicine*, 7(4), 549-555.
- Gulick, D., Berge, B., Borger, A., Edwards, J., & Rigterink, J. (2006). Quad Rugby: A Strength and Conditioning Program for the Elite Athlete. *Strength & Conditioning Journal*, 28(4), 10-18.
- Jooste, K., & Khumalo, V. (2012). Sportsmen's experience of the impact of massage by somatologists in enhancing aerobic performance. *African Journal for Physical, Health Education, Recreation & Dance*, 18(3), 499-509.
- Kazemi, M., Perri, G., & Soave, D. (2010). A profile of 2008 Olympic Taekwondo competitors. *Journal of the Canadian Chiropractic Association*, 54(4), 243-249.
- Moraska, A. (2005). Sport Massage : A comprehensive review. *The Journal of Sports Medicine and Physical Fitness*, 45(3), 370-380.

Corresponding Author's Email: nizam7907@salam.uitm.edu.my