Effects of Thai massage on physical fitness in soccer players

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Abstract. [Purpose] The aim of this study was to determine the effects of Thai massage on physical fitness in soccer players. [Subjects and Methods] Thirty-four soccer players were randomly assigned to receive either rest (the control group) or three 30-minute sessions of Thai massage over a period of 10 days. Seven physical fitness tests consisting of sit and reach, hand grip strength, 40 yards technical agility, 50-meter sprint, sit-ups, push-ups, and VO₂, max were measured before and after Thai massage or rest. [Results] All the physical fitness tests were significantly improved after a single session of Thai massage, whereas only the sit and reach, and the sit-ups tests were improved in the control group. [Conclusion] Thai massage could provide an improvement in physical performance in soccer players.

Key words: Thai massage, Physical fitness, Soccer players

INTRODUCTION

Massage is frequently used as warm-up and recovery techniques in sports competitions for athletes. It can provide several physiological and neuromuscular benefits to the body such as an increase in blood flow, a reduction in muscle tension and neurological excitability, a decrease in muscle soreness, an increase in flexibility, and an increase in a sense of well-being1). Gentle mechanical pressure provided by massage can change neural excitability as characterized by a reduced amplitude of H-reflex2). It was also found to increase parasympathetic activity3), reduce stress hormonal levels4), increase muscle compliance and range of joint motion5), decrease passive stiffness6) and active stiffness7), increase the arteriolar pressure and muscle temperature by rubbing, which helps to increase blood flow7), and decrease anxiety and improve mood state after massage-facilitated relaxation8). These benefits of the massage were suggested to help athletes to enhance physical performance and reduce the risk of injury during competition1). Thai massage is well recognized and used to enhance physical fitness for soccer players in Thailand. However, there is little scientific evidence to support the suggestion that massage could enhance physical fitness in any sports. Since soccer is one of the contact sports that requires players to have a variety of physical fitness levels during competitions, we decided to investigate the acute effects of Thai massage on physical fitness in soccer players.

SUBJECTS AND METHODS

A 10-day crossover design was used in the present study. The Ethics Committee of Khon Kaen University approved the research protocol with the criteria based on the Declaration of Helsinki and good clinical practices (ICH GCP) (No. HE562078). Written informed consent was obtained from all subjects at the beginning of the study. The study was conducted in the 34 soccer players from Nakhon Phanom Province, Thailand. The players were randomly allocated to either the Thai massage (TM) group or the control (resting) group using a simple randomized allocation. This was followed by a 3-week washout period, after which each subject was crossover assigned to the other group. A summary of the study design, subject recruitment, and participation is shown in Fig. 1.

Thirty-four soccer players (age, 26.02 ± 3.89 years; body mass, 66.74 ± 7.09 kg, height, 174.03 ± 4.33 cm; BMI, 22.00 ± 1.79 kg/m²) from Division 2 of the Football Association of...
Thailand under the Patronage of His Majesty the King were recruited to participate in the study. All participants provided written informed consent prior to the study. Any of the subjects who had the following precautions for Thai massage were excluded: fever with a body temperature over 38.5 °C, uncontrolled hypertension, hypersensitivity to pain, fracture, and joint dislocation.

Whole body Thai massage was applied to each of the subjects in the massage group for 30 minutes at 25 °C. Three sessions of massage, which covered four body parts, the shoulder (5 minutes), back (5 minutes), arms (10 minutes), and legs (10 minutes), were applied (once every 3 days) within a period of 10 days. The massage was given by two certified traditional Thai massage therapists who had two or more years of experience and were tested for quality of Thai massage skills prior to the study.

The subjects in the control group were instructed to rest for the same period of time in the same laboratory room as those for the treatment group. They had three 30-minute rest sessions (once every 3 days) over a period of 10 days.

Seven physical fitness tests, including the sit and reach (flexibility), handgrip (strength), 40 yards technical (agility), 50-meter sprint (speed), sit-ups, push-ups (muscle endurance), and VO2 max tests were performed before and after the intervention. All analyses were performed on the basis of the intention-to-treat principle. All outcome measures are presented as means ± standard deviations (SD).

RESULTS

All of the physical fitness tests showed significant improvements after a single session of Thai massage (Table 1), whereas only the sit and reach, and sit-ups tests showed improvements in the control group. Analysis of the period effect and carry over effect revealed that the first tests of VO2 max, handgrip strength, 40 yards technical test did not affect the test in the second sequence (Table 1).

However, when the mean changes for all outcome measures were compared between the two groups, we found no significant difference (Table 2).
Discussion
This study showed that a single session of Thai massage could likely provide improvements in physical fitness and flexibility in soccer players. This could be due to Thai massage reducing muscle tension and increasing blood flow. In line with our results, a previous study showed that massage associated with myofascial trigger points increased the body flexibility in patients with back pain. The potential mechanisms of Thai Massage are probably due to the release of muscle tension and the stimulation of proprioceptors of muscles and enhancement of the reduction in muscle spasm and adhesion in the tissues being massaged. Thai massage using deeper pressure than effleurage massage could reduce muscle tension and improve blood and flexibility in soccer players. This could be due to Thai massage providing some psychological benefits that promote recovery. Massage is known to enhance the positive mood states and psychological well-being. In the current study, the players who received a massage could sleep well and recover from fatigue quickly. On the day after a massage, most of the players felt very fresh and did well on agility and sprint tests. Thus, Thai massage could be used as a recovery technique for athletes.

The limitation of having large standard deviations as compared with the corresponding means resulted in there being no significant differences in comparisons between the two groups (Table 2). Therefore, further study, a longer period of investigation such as 20 days is suggested to confirm these short-term effects in soccer players. Thai massage may have a modest effect that helps to improve the parameters of physical fitness examined in this study, in the same way as other types of massage used to aid physical performance prior to exercise. This can be seen in Table 2, which shows that the means for all the parameters of the Thai massage group were a little higher than those of the control group.

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Table 1. Physical fitness parameters (mean ± SD) of the Thai massage (TM) and control groups

| Parameters                  | Sequence I (A-B) | Sequence II (B-A) |
|-----------------------------|------------------|-------------------|
|                             | TM               | Control           | TM               | Control           |
| Pre/Post                    | Pre              | Post              | Pre              | Post              | Pre              | Post              |
| VO2 max (ml/kg/min) (n = 34) | 1.19 ± 2.86      | 0.61 ± 2.25       | −0.58 (−0.36 to 1.53) |
| Grip strength (kg./BW) (n = 34) | 0.03 ± 0.04     | 0.004 ± 0.01      | −0.03 (−0.04 to −0.01) |
| 40 yards technical test (sec) (n = 34) | −0.34 ± 0.58   | −0.22 ± 0.50      | 0.12 (−0.07 to 0.32) |
| Push-ups (number/min) (n = 17) | 2.11 ± 2.18     | 1.41 ± 1.58       | −0.70 (−2.03 to 0.62) |
| Sit-ups (number/30 sec) (n = 17) | 1.88 ± 2.17     | 1.06 ± 1.19       | −0.82 (−2.05 to 0.40) |
| 50-meter speed (sec) (n = 17) | −0.23 ± 0.36    | 0.02 ± 0.31       | 0.21 (−0.02 to 0.44) |
| Sit and reach (cm) (n = 17) | 1.61 ± 1.65     | 1.51 ± 1.43       | −0.1 (−1.17 to 0.98) |

* significant improved when compared with the pre-test value (p < 0.05)
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