

The Effect of Pre-Competition Lower Limb Sport Massage on Vertical Jump Height of Collegiate Female Volleyball Athletes

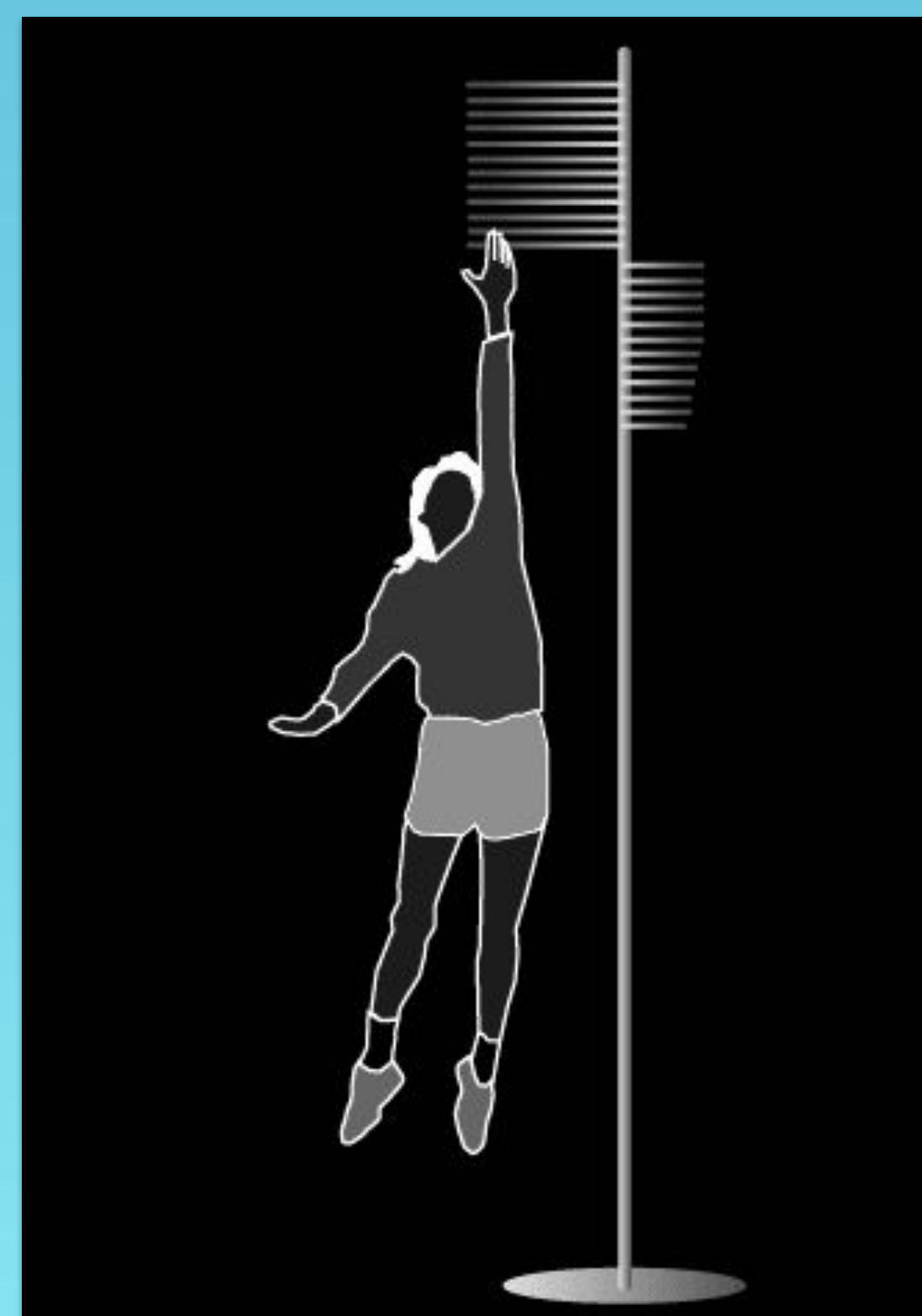
Abstract

The purpose of this study was to examine the acute effects of pre-competition massage, dynamic warm-up, combination of massage and a dynamic warm-up, and a placebo ultrasound on vertical jump height performance in collegiate female volleyball athletes. Vertical jump height was selected is a common performance assessment for measuring strength and power in sport, specifically volleyball (Mancinelli et al. 2006). Four different protocols: pre-competition massage (PM), traditional warm-up (WU), combination of a massage and traditional warm-up (CM), and a placebo ultrasound (PU) were administered in a randomized, counterbalanced, repeated measure. Twenty female NCAA Division I, volleyball athletes participated in the current study. Each subject completed each warm-up protocol with a 48-hour gap between training sessions. The Vertec™ unit was used to measure vertical jump displacement (MF Athletic Co. Cranston, RI).

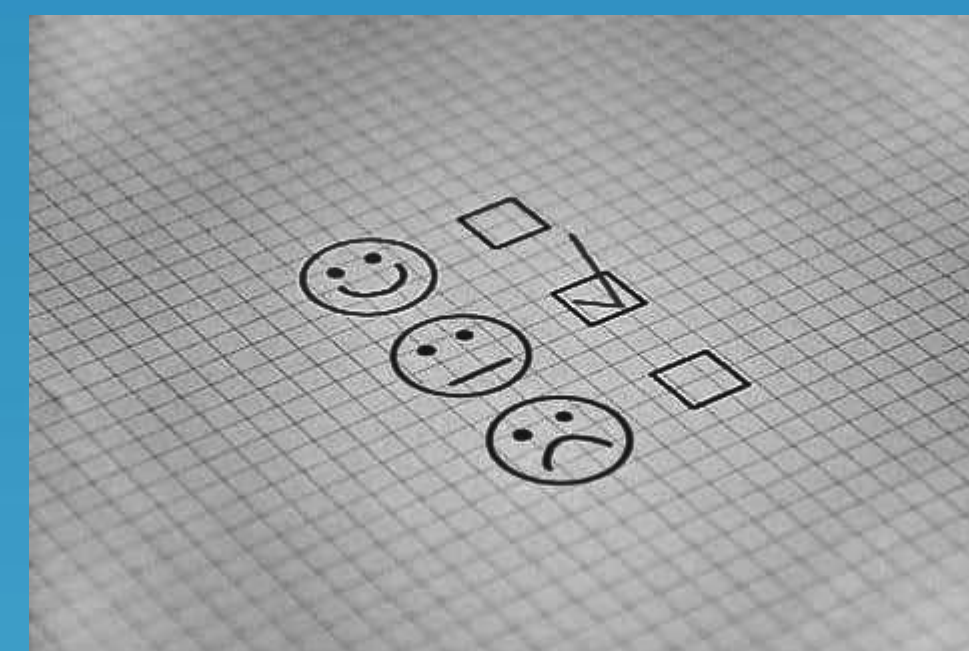
Introduction

Currently, the majority of studies on sports massage focus on post-event conditions specifically aiding recovery from intense exercise and the relieving of delayed onset of muscular soreness symptoms (Finklestein, n.d). Manual massage can be defined as a mechanical manipulation of body tissues with rhythmical pressure and stroking for the purpose of promoting health and well-being (Best et al. 2008).

Pre-event massage is often utilized to create a physiological and psychological sense of readiness for an athlete. Effects of pre-event massage include the delivery of oxygenated blood to the target musculature and hyperemia (Draper et al. 2004). Massage has been used for decades, with the first mention of it dating back to 2589 B. C. in Chinese medicine books (Moran et al. 2018) Sport massage has progressed since then as a way to improve athletic success, a recovery technique to assist athletes in recovering from competition, and a manual therapy intervention for sports-related musculoskeletal injuries (Moran et al. 2018)



Review of Literature



Recent research on the impact of massage on performance has focused on post-event massage:

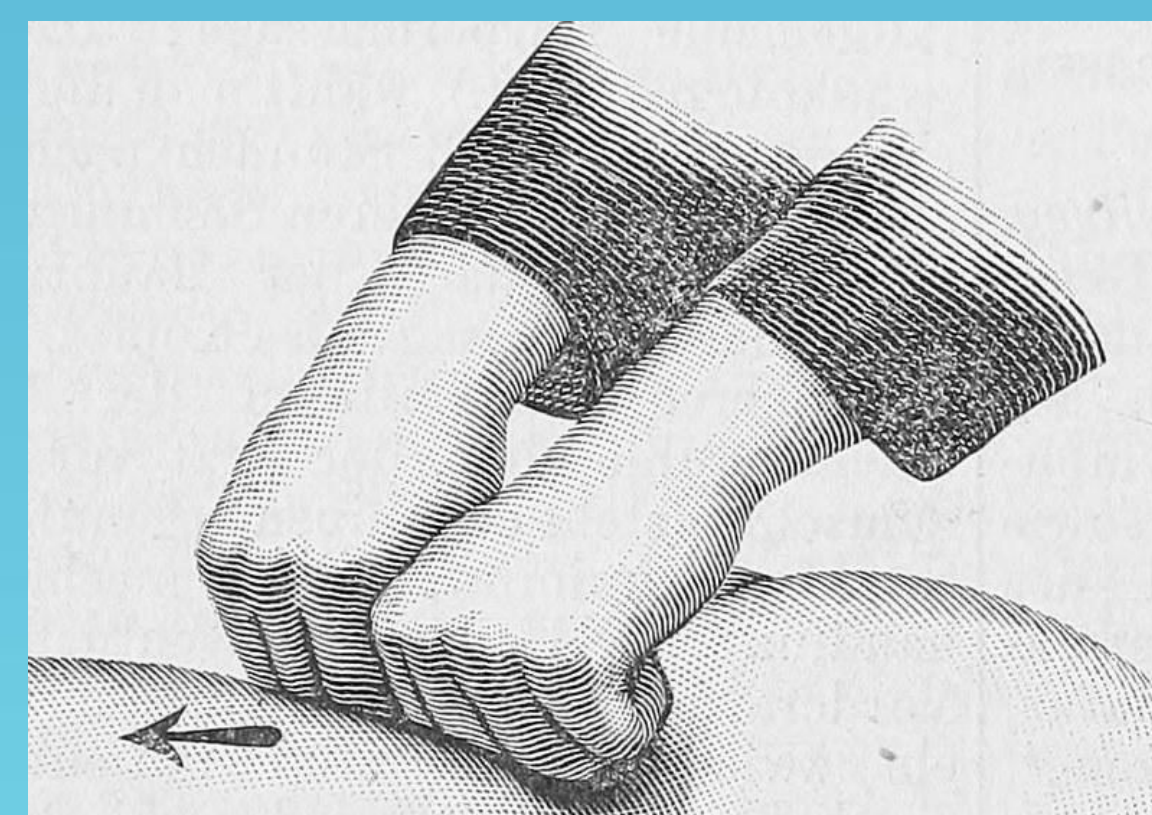
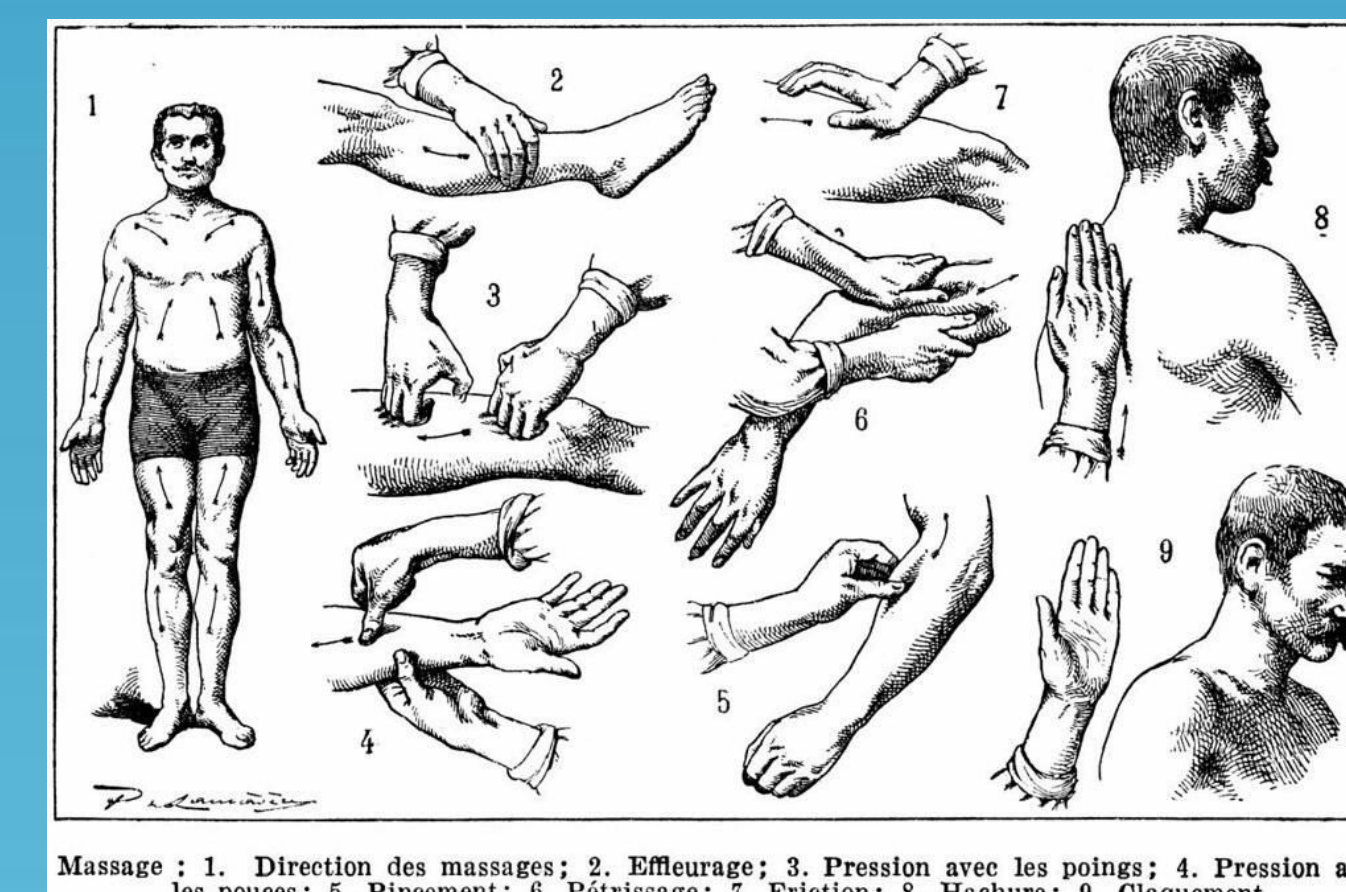
- Evaluating grip strength
- Endurance
- Mood condition
- Delayed onset muscle soreness

All of which are thought to be affected by muscle tension and tissue adhesion (Draper et al. 2004).

There are many types of massage originating from all around the world, such as:

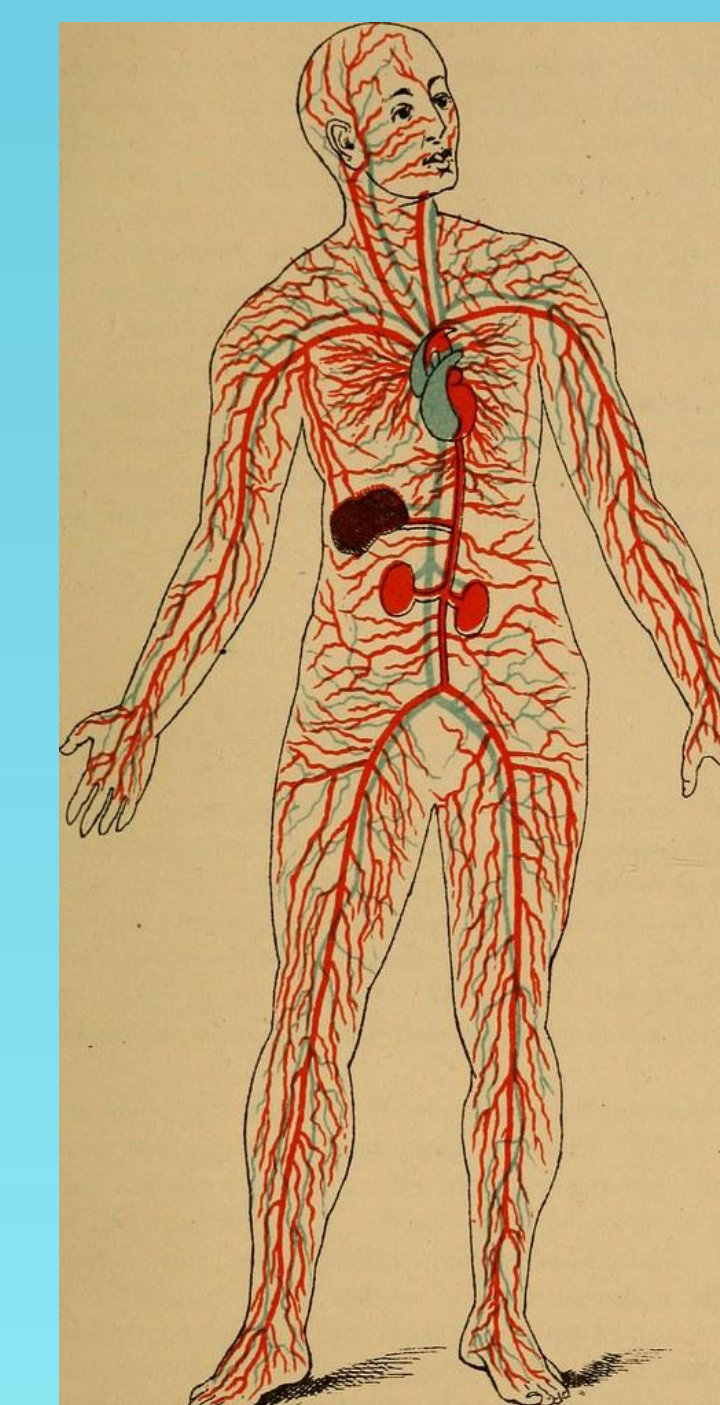
- Swedish massage
- Indian massage
- Traditional Chinese Massage
- Traditional Thai massage

It is important to note that different techniques of manual massage have contrasting functions (Zhong et al. 2019).



The most popular and widely used manual sports massage is Swedish massage:

- Petrissage
- Effleurage
- Tapotement (Zhong et al. 2008).



Blood flow to muscle enhances:

- The delivery of oxygen
- The delivery of protein and other nutrients
- Increases muscle temperature
- Increases blood pH (Cafarelli et al. 1992).

Methods

This research study involves the administration four different protocols: Pre-competition massage (PM), traditional warm-up (WU), combination of a massage and traditional warm-up (CM), and a placebo ultrasound (PU). These protocols were administered in a randomized, counterbalanced, repeated measure designed experiment.

Twenty female NCAA Division I, volleyball athletes with an average age of 20 were recruited via email to participated in the current study, all successfully completing the four testing sessions.

The massage procedure consisted of a brief, 15-minute sport massage that consisted of techniques that are often used in clinical settings, such as petrissage, tapotement and effleurage. Participants completed a standardized warm-up protocol. The pre-competition massage protocol was combined with the warm-up protocol discussed above. The placebo ultrasound consisted of a 10-minute ultrasound treatment using the Ultrasound Therapy Machine [Chattanooga Vectra® Genisys 2796K, Vista, CA]. The ultrasound system intensity was set to 0.00 w/cm2.

Baseline measurements were taken prior to receiving any procedure. After finishing their specific protocol, each participant performed three trials of the vertical jump assessment using a Vertec™ unit to measure vertical jump displacement (MF Athletic Co. Cranston, RI). Each subject completed each warm-up protocol with a 48-hour gap between training sessions. There were several limitations to this study, the most significant being that the athletes could not be giving their best effort because they were aware that they were participating in a study and because they could have been afraid of injuring themselves.

Acknowledgements

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