



UNIVERSITI TEKNOLOGI MARA

**COMPARISON BETWEEN COLD WATER IMMERSION AND
SPORTS MASSAGE IN MUSCLE RECOVERY AMONG ELITE
SOCCER PLAYERS**

**NUR RABIATULNABILAH BINTI REBINOR
2017697238**

**BACHELOR OF SPORTS SCIENCE (HONS)
FACULTY OF SPORTS SCIENCE AND RECREATION
UNIVERSITI TEKNOLOGI MARA SARAWAK**

JULY 2019

TABLE OF CONTENT	PAGES
LETTER OF TRANSMITTAL	i
DECLARATION	ii
APPROVAL PAGE	iii
TABLE OF CONTENT	iv
ACKNOWLEDGEMENT	vii
LIST OF TABLES	viii
LIST OF FIGURES	ix
APPENDICES	x
ABSTRACT	xi
CHAPTER 1 INTRODUCTION	
1.1 Background of study	1
1.2 Problem statement	4
1.3 Research questions	6
1.4 Research objectives	6
1.5 Hypothesis	7
1.6 Significance of study	8
1.7 Limitation of study	9
1.8 Delimitation of study	10
1.9 Definition of study	11

Abstract

The main purpose of this findings was to identify either cold water immersion or sports massage are the fastest towards muscle recovery on delayed onset muscle soreness. Sample size for this study was 18 (N=18) male elite soccer players and age between 18-19 years old. Delayed onset muscle soreness was measured by range of motion (ROM) immediately after match, 30 minutes, 24 hours and 48 hours after cold water immersion and sports massage treatments. The result from the findings stated that cold water immersion and sports massage showed significant improvement in muscle recovery on range of motion. The most effective method was sports massage because it showed the greater difference in mean than cold water immersion. This suggests that sports massage is a faster recovery method for delayed onset muscle soreness and may improve musculoskeletal system thus improving sports performance.

Keywords: Delayed Onset Muscle Soreness, Range of Motion, Goniometer, Cold Water Immersion, Sports Massage, Muscle Recovery

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

In elite soccer leagues worldwide, there is a very big quantity of professional games per season, including national, regional and global matches. There were several teams from Spain that even played up to 70 competitive games during the 2009 to 2010 season, and then some of the players also competed in the Federation International Football Association or FIFA, World Cup in South Africa as well. These game take a toll on a player can lead to fatigue, marked by declining physical performance for the following hours and days (Andersson, Raastad, Nilson, Paulsen, Garthe & Kadi 2009); Ispirlidis Fatouros, Jamurtas, Nikolaidis, Michailidis, Douroudos, Margonis, Chatzinikolaou, Kalistratos, Alexiou & Taxildaris (2008).

In general, individuals can suffer from post physical activity intensive muscle soreness, as mentioned by Shaw, Shaw, & Brown (2009). Unexpected increases in the volumes of exercise will lead to enhanced muscle soreness (Ali, Koushkie, Asadmanesh, & Salesi, 2012; Barros Galvão, Borba Costa dos Santos, Borba dos Santos, Cabral, & Monte-Silva, 2014; Best, Hunter, Wilcox, & Haq, 2008; Delextrat, Calleja-González, Hippocrates, & Clarke, 2013). Delayed onset of muscle (DOMS) was often linked to this muscle soreness and is often detrimental to physical exercise performance. In addition, at a certain time in the competition cycle, the performance of athletes is hindered by this condition to reach maximum levels (MacDonald,

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This study examined the comparison between cold-water immersion and sports muscle recovery massage among elite soccer players in research. This chapter provides an overview of earlier research based on a comparison between cold water immersion and sports massage in muscle recovery among elite soccer players.

2.1 Delayed Onset Muscle Soreness

Rossato, Bezerra, Silva, Santana, Malexzam and Carpes (2015) mentioned that the human performance results were widely detected among athletes and may cause harm or damaged by delayed onset muscle soreness. After exercise and peaks happened in 24 hours and 48 hours after training, delayed onset muscle soreness would gradually be improved. Few studies suggested that a varied range biochemically-changed, inflammatory responses can cause muscle pain rather than muscle damage because the exact etiology of the delayed onset muscle soreness (DOMS) was doubtful (Contro, Mancuso & Proia, 2016).

Kanda, Sugama, Hayashida, Sakuma, Kawakami, Miura, Yoshioka, Mori, and Suzi (2013) stated that delayed onset muscle soreness (DOMS) were recognized as the effect of mechanical and metabolic stress due to physical activity but the actual