

**UNIVERSITI TEKNOLOGI MARA**

**THE EFFECTS OF CRYOTHERAPY ON STATIC  
AND DYNAMIC BALANCE AMONG GYMNAST**

**By**

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**DECLARATION OF ORIGINAL WORK**

**BACHELOR OF SPORTS SCIENCE (HONS)**

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## ABSTRACT

**Introduction:** Balance is the ability to maintain upright and in a position of equilibrium. Balance consists of two types which are static balance and dynamic balance. Static balance is balance maintained while standing without moving as measured by the balance error scoring system (BESS) test. While dynamic balance is balance maintained while performing as measured by the star excursion balance test (SEBT). Balancing is a very important component for gymnast athletes to perform well in competition. **Objectives:** The purpose of this study is to investigate the effectiveness of cryotherapy on static and dynamic balance among gymnast athletes. **Methodology:** There were 30 subjects who participated in this study, which consist of male and female gymnast athletes. All the athletes were in the age range of 13 to 17 years old. The subjects were equally divided into two groups; ice group (n=15) and without ice group (n=15). The dependent variable in this study was Balance Error Scoring test on a firm surface, Balance Error Scoring System on foam surface and Star Execution Balance Test. **Result:** Based on One Way repeated measures ANOVA, the result showed that the mean and standard deviation of pre test and post test on a firm surface for no ice group (M=4.15, SD=0.95) to (M=4.11, SD=5.08). The mean and standard deviation for ice group (M=4.58, SD=0.79) to (M=5.08, SD=0.80). There was a significant difference of cryotherapy from pre test and post test between groups ( $p < 0.05$ ). While the result mean and standard deviation of pre test and post test on foam surface for no ice group (M=4.11, SD=0.94) to (M=4.03, SD=0.91). The mean and standard deviation for ice group

(M=4.46,SD=0.77) to (M=5.01,SD=0.89). There was a significant difference of cryotherapy from pre test to post test between groups ( $p<0.05$ ). Then, the mean score for pre test and post test of dynamic balance test for no ice group (M=595.87,SD=42.85) to (M=587.07,SD=44.65). The mean score for ice group (M=602.80,SD=38.82) to (M=694.47,SD=42.96). There was a significant difference of cryotherapy from pre test to post test between groups ( $p<0.05$ ). **Conclusion:** As a conclusion, application of cryotherapy has an impact on balancing performance among gymnast athlete.

## **TABLE OF CONTENT**

<b>CONTENTS</b>	<b>PAGE</b>
<b>AFFIRMATION</b>	
<b>ACKNOWLEDGEMENT</b>	<b>i</b>
<b>TABLE OF CONTENT</b>	<b>ii</b>
<b>DECLARATION</b>	<b>iv</b>
<b>LIST OF TABLES</b>	<b>v</b>
<b>LIST OF FIGURES</b>	<b>v</b>
<b>ABSTRACT</b>	<b>vi</b>
<b>CHAPTER ONE; INTRODUCTION</b>	
1.1 Background of the Study	1
1.2 Problem Statement	3
1.3 Research Objective	4
1.4 Hypotheses	4
1.5 Operational Term	4
1.6 Limitation	4
1.7 Delimitation	5
1.8 Assumption	5
1.9 Significant of Study	5
<b>CHAPTER TWO; LITERATURE REVIEW</b>	
2.1 Cryotherapy	7
2.1.1 Tissues Affected by Cryotherapy	8
2.1.2 Methods of Applying Cryotherapy	11
2.2 Balance	12
2.2.1 Sensory Components of Balance	13
2.2.2 Components of Balance	15
2.3 Cryotherapy on Balance	18