

**COMPARISON OF SHOULDER MUSCLE LENGTH AND STRUCTURAL
ALIGNMENT IN HEMIPLEGIC PATIENTS WITH AND
WITHOUT SHOULDER PAIN**



JITTIMA CHAROENLIMPRASERT

**MASTER OF SCIENCE
IN MOVEMENT AND EXERCISE SCIENCES**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University

All rights reserved

**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

MAY 2008

**COMPARISON OF SHOULDER MUSCLE LENGTH AND STRUCTURAL
ALIGNMENT IN HEMIPLEGIC PATIENTS WITH AND
WITHOUT SHOULDER PAIN**

JITTIMA CHAROENLIMPRASERT

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF SCIENCE
IN MOVEMENT AND EXERCISE SCIENCES**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
MAY 2008**

**COMPARISON OF SHOULDER MUSCLE LENGTH AND STRUCTURAL
ALIGNMENT IN HEMIPLEGIC PATIENTS WITH AND
WITHOUT SHOULDER PAIN**

JITTIMA CHAROENLIMPRASERT

THIS THESIS HAS BEEN APPROVED
TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
IN MOVEMENT AND EXERCISE SCIENCES

EXAMINING COMMITTEE

Jorjin Ratanapinunchai

CHAIRPERSON

Assoc. Prof. Dr. Jorjin Ratanapinunchai

Aatit Paungmali

MEMBER

Dr. Aatit Paungmali

Prawit Janwantanakul

MEMBER

Assoc. Prof. Dr. Prawit Janwantanakul

8 MAY 2008

© Copyright by Chiang Mai University

ACKNOWLEDGEMENT

I would like to express my sincere appreciation and grateful thank to my thesis advisor, Assoc. Prof. Dr. Jonjin Ratanapinunchai for her valuable guidance and encourage me throughout this thesis.

I would like to express a great thank to Asst. Prof. Dr. Somporn Sungkarat and Dr. Witaya Mathiyakom to their valuable suggestions and helpful advices.

I would like to pay gratitude to Thai Red Cross and my colleagues at Thai Red Cross Rehabilitation Center for supporting of my study.

I would also like to thank Mr. Weeranun Yamrattanakul, Miss Siriporn Klangkhokkruad, Miss Benjamaporn Hancharoenkul, and Miss Nuttinun Pradubpong for their helping and facilitating in the data collection.

Especially, I would like to express a great thank to all patients who participated in my research.

Finally, I would like to give the special appreciation to my loving parents who stood by my side throughout my graduate career and has helped me strive to do my best and maintain a positive attitude throughout my study period.

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright © by Chiang Mai University
All rights reserved

Jittima Charoenlimprasert