

UNIVERSITI TEKNOLOGI MARA

**GENDER SPECIFIC LUMBAR
RANGE OF MOTION AND ITS
ASSOCIATION WITH TRUNK AND
HIP MUSCLE STRENGTH AND
FLEXIBILITY STRATIFIED BY
BODY MASS INDEX IN HEALTHY
ADULTS**

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MSc

July 2021

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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Faculty : Health Sciences

Thesis Title : GENDER SPECIFIC LUMBAR RANGE OF
MOTION AND ITS ASSOCIATION WITH TRUNK
AND HIP MUSCLE STRENGTH AND
FLEXIBILITY STRATIFIED BY BODY MASS
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ABSTRACT

A sufficient range of motion of lumbar is essential for various activities in our daily lives. In fact, muscle strength and flexibility as well as body mass index (BMI) may influence lumbar mobility of an adult. Thus, this study investigated associations between variables of range of motion (ROM), trunk and hip muscle strength and flexibility stratified using BMI by gender among healthy adults. One hundred and seventy-six participants (102 females and 74 males of 20 to 40 years of age) were tested for lumbar ROM (flexion, extension, rotation and lateral flexion) using back range of motion. For trunk and hip extensor strength the push-pull dynamometer was used while for the hamstring and hip flexor flexibility the sit and reach and modified Thomas test was applied. Significant correlations were observed between lumbar lateral flexion and trunk muscle strength in overweight/obese female participants ($p < 0.05$, $r = 0.35$), lumbar rotation and hip extensor strength in normal weight ($p < 0.05$, $r = 0.314$) female participants. There were correlations between lumbar rotation and lateral flexion and hamstring flexibility in overweight/obese ($r = 0.308$, $p < 0.05$) and normal weight ($r = 0.492$, $p < 0.05$) in male participants, respectively. Regression analysis revealed that trunk muscle strength significantly associated with lumbar lateral flexion for overweight/obese female participants ($R^2 = 0.122$) and hamstring flexibility were associated with rotation for overweight/obese in male participants ($R^2 = 0.136$). As a conclusion, the study results suggest that trunk extensor muscle strength and hamstring muscle flexibility should be addressed together with lumbar lateral flexion in overweight/obese females and the lumbar rotation in overweight/obese males.

ACKNOWLEDGEMENT

This work could not have been accomplished without the assistance of many people. Firstly, I would like to express my thankfulness to my supervisor Puan Kamaria Binti Kamaruddin for her continuous support and guidance throughout my Masters Program.

Indeed, this has been a very long and grueling journey for me. Nothing is more beautiful than a smile that has struggled through sweats and tears. Through the years of this program, Puan Kamaria provided me with invaluable tools and skills to reach a commendable level of knowledge and experience of doing a research.

My genuine and faithful thanks go to my beloved husband and my sons, Muhammad, Iman and Ashman who had been there so patiently throughout my tough years. My husband especially was the pillar of my strength that endlessly took care of the children when I was so busy with my thesis.

Last but not least, my parents 'mak and abah' who always prayed for me and my mother-in-law for their unrivalled and eternal love and moral support for me to reach my ambition for higher education. In fact, I am incapable to express my gratitude to both of them for their support and cheer to make my dreams come through.

Special thanks too to my colleagues and friends for helping me get through out of this journey. I would never forget Huda my Masters mate who was always with me through thick and thin in this Masters journey. A Special thank you also goes to Fatim for her invaluable help and advice.

Syukur Alhamdulillah.

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