

**UNIVERSITI TEKNOLOGI MARA**

**THE RELATIONSHIP  
OF MUSCLE FUNCTIONS  
WITH FUNCTIONAL  
PERFORMANCES  
AND KINESIOPHOBIA  
IN OLDER PERSONS  
WITH LOW BACK PAIN**

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## ABSTRACT

This study aims to 1) compare muscle functions and functional performances among gender in institutionalized older persons with and without low back pain (LBP); 2) to determine the association between muscle functions and functional performances; 3) to determine the association between kinesiophobia with pain, muscle functions and functional performance in older persons with LBP. A cross-sectional study and correlation study involving older persons living in the public funded institutions was performed. Anthropometric characteristics (BMI, waist circumference) and functional performances (lower limb function, balance and mobility, hand function) were measured. The muscle functions (muscle strength of abdominal and back) were assessed using a Baseline® Mechanical Push Pull Dynamometer and muscle control (TrA and multifidus) was measured by using a pressure biofeedback Unit. The pain intensity and the level of kinesiophobia were measured using the Numerical Rating Scale and Tampa Scale of Kinesiophobia, respectively. Data were analyzed using the ANOVA, Pearson's correlation, multiple linear regressions and multivariate linear regression. The results showed the functional performances did not show significant differences between females with and without LBP as well as males with and without LBP ( $p>0.05$ ). For muscle functions, significant differences were found between females with and without LBP for abdominal muscle strength ( $p=0.006$ ) and back muscle strength ( $p=0.07$ ). Significant correlations were found between abdominal muscle strength and hand function ( $r=0.377$ ), back muscle strength and hand function ( $r=0.396$ ) in females with LBP, back muscle strength and lower limb function ( $r=0.393$ ) in males with LBP, as well as multifidus control and lower limb function ( $r=0.363$ ) in females with LBP (All,  $p<0.05$ ). Regression analysis showed abdominal ( $p=0.041$ ) and back muscle strength were significant predictors of hand function ( $p=0.049$ ). Multifidus control was a significant predictor of lower limb function in the female with LBP ( $p=0.047$ ). No significant correlations were found between kinesiophobia with pain and muscle functions (All,  $p>0.05$ ). Kinesiophobia was significantly correlated with mobility and balance ( $p=0.038$ ). Regression analysis showed that kinesiophobia was a significant predictor of mobility and balance ( $p=0.038$ ). In conclusion, this study demonstrates that older women with LBP exhibit poorer muscle functions compared to older women without LBP. Muscle functions were associated with functional performance in older persons with LBP. Muscle functions only predicted functional performances in the older females with LBP. Kinesiophobia was associated and predicted mobility and balance in older persons with LBP. Kinesiophobia should be continuously assessed in clinical settings to recognize the obstacles that may affect patient's compliance towards a rehabilitation program in older persons with LBP.

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# CHAPTER ONE

## INTRODUCTION

### 1.1. Introduction to Chapter

This chapter explains about the background of this study and objectives in conducting this study. In addition, this chapter also describes the problem statement and its significance to conduct this current study. Lastly, the last part of this chapter also briefed about the terminologies used in this study.

### 1.2. Background of the Study

In recent years, there is a growing interest of studies on older persons among researchers, in accordance with the increasing population of older persons worldwide. Population aging has become a phenomenon in the developing countries, including Malaysia, in which Malaysia are currently experiencing marked increase in the number of population of older persons (Elsawahli, Ahmad, & Ali, 2016). In 2016, about 2.8 million out of total Malaysian citizen (31 million) were older persons and it is estimated that Malaysia will be an aging country in 2035 when this population increases up to 15% (Mydin, 2016). A few factors were identified as a contributing factor of increasing aging population, including improving health care systems as well as low fertility and mortality rates (Ambigga et al., 2011; Elawahli et al., 2016). Apart from the increasing aging population, older persons are also living longer, and this phenomenon has been proven by the life expectancy of older persons. Based on the Department of Statistics Malaysia (2010), the life expectancy among Malaysian increased to 77.2 years for women and 72.5 years for men.

As the number of older population increases, the number of older persons that would live in the institutions is expected to increase (Mafauzy, 2000). Based on surveys from the Department of Social Welfare in 2012, 175 registered nursing homes can only provide the care for about almost 6000 older persons. Recently, institutionalization of older persons has become the current trend in Malaysia, due to lack of financial and social support from their families. In addition, the increased