

UNIVERSITI TEKNOLOGI MARA

**POSTURAL STABILITY IN PEOPLE
WITH CHRONIC OBSTRUCTIVE
PULMONARY DISEASE (COPD): A
CASE CONTROL STUDY**

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CONFIRMATION BY PANEL OF EXAMINERS

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ABSTRACT

Current evidence suggests that individual with Chronic Obstructive Pulmonary Disease (COPD) are reported to fall frequently. Research into the deficits of postural stability of individuals with COPD has focused on postural steadiness (static and dynamic stability). However, there remains a lack of studies focused on postural sway in individuals with COPD. Therefore the purpose of this study was to compare the postural stability (Postural sway, static and dynamic stability) measures between individuals diagnosed with COPD and normal healthy subjects. A total of 30 subjects of individuals with COPD and 30 normal age-matched healthy subjects were assessed for postural stability. Outcome measures such as Single Leg Sand Test (SLST), Functional Reach Test (FRT) and Postural stability index (PSI) using BT4 balance board were measured. Individuals were tested for three different tasks such as open eyes, closed eyes and focusing on a single sport using BT4 balance board. Data were not normally distributed. Significant differences were tested using a non-parametric Wilcoxon rank test. There was no significant difference for the demographic variables such as age and Body Mass Index (BMI) at $P > 0.05$. A significant decline of postural sway parameters was observed in individuals with COPD group as against healthy age-matched group ($P < 0.05$). Static and dynamic components were also deteriorated in individuals with COPD subjects. Postural sway and static and dynamic components were compromised in individuals with COPD. Additionally, it yielded those simple measures of outcome measure can also be used to detect changes in the balance constituents. Hence, fall prevention strategies should be incorporated in individuals with COPD. These findings have further necessitated the role of preventive strategies and rehabilitation in managing individuals with COPD.

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CHAPTER ONE

INTRODUCTION

This chapter provides fundamental information for the study. This section includes an interrelated discourse between background of the study, problem statement, and rationale of the study. This section also includes statements of the general and specific objectives, hypotheses, assumptions, limitations, and finally the statements of the definition of terms that were defined operationally for this study.

1.1 BACKGROUND OF THE STUDY

Chronic Obstructive Pulmonary Disease (COPD) is a progressive disease which results in irreversible pulmonary damage (Roig et al., 2009). According to the global burden of disease, COPD is projected to rank third place by 2020. Along with pulmonary damage, the obstructive disease also exhibits non respiratory manifestation which includes skeletal muscle dysfunction, systemic inflammation, nutritional depletion and malnutrition and its foster deteriorations to activities of daily living (ADLs) (Agusti, 2005).

Evidence suggests that individuals with COPD exhibits balance deficits as one of the non-respiratory manifestation which leads to falls (Beauchamp et al., 2009, Roig et al., 2009). In general, postural stability can be categorized in to Postural sway, static and dynamic stability and this can be collectively named as a constituent of postural stability. In relation to postural stability, postural steadiness refers to control of posture under static conditions and postural stability is a term used for dynamic postural response during volitional activity. Studies have concluded that maintaining optimal postural stability is required to maintain posture, mobility, and functional activities of daily living even among normal healthy subjects (Crisafulli et al., 2014).

Evidence has also suggested that individuals who are older with a diagnosis of COPD are sustained to have falls as compared to individual who are older without COPD due to impairment in postural stability (PS). A cross-sectional study which was carried out on chronic diseases also confirmed that COPD was one of the leading clinical condition which was associated with number of falls, second only to