

UNIVERSITI TEKNOLOGI MARA

**EFFECTS OF SUPERVISED
MODERATE AEROBIC EXERCISE
INTERVENTION ON
TOBACCO WITHDRAWAL
DURING TEMPORARY SMOKING
ABSTINENCE**

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ABSTRACT

Exercise is an adjunct therapy for smoking cessation to improve tobacco withdrawal symptoms (TWS). The TWS occurs following smoking abstinence and is a barrier to quit smoking. This study investigates the effects of exercise intervention on TWS, physiological symptoms, psychological symptoms, and stress-pleasure related hormones, including serum cortisol, serum beta-endorphin, and plasma adrenaline. The selected hormones are potentially involved in regulating TWS. This study was also exploring the experience of an exercise intervention on abstinence-related feelings. This study consists of three phases: validation of the study instrument, an intervention and qualitative study. Validation study involves the validation process for the intervention study instruments, including the Subjective Experience Exercise Scale (SEES), Theory of Planned behaviour (TPB) for smoking cessation and Smoking Cessation Quality of Life (SCQoL). The intervention study was carried out USING a convenience sampling method. Thirty healthy smokers (n=30) were recruited for a moderate aerobic exercise intervention programme three times per week for two months and detraining for two weeks. Then, the 14 smokers (n=14) who underwent the intervention programme were interviewed for the qualitative study based on the Health Belief Model constructs. For the validation study, (n=152) smokers participated in the SEES questionnaire, (n=185) smokers in TPB for smoking cessation and (n=258) for SCQoL. The data underwent exploratory and confirmatory factor analyses. The intervention study measures including psychological, physiological symptoms and stress-pleasure related hormones were analysed using Repeated Measure ANOVA for measuring the impact of exercise at baseline, post-intervention and post-detraining, and correlation at the post-intervention. The result of the qualitative study was analysed using thematic analysis. This study produces a valid and reliable instrument for this study. The intervention study found a significant reduction in TWS (craving component) $F_{(2, 58)} = 5.26, p < 0.01, \eta^2 = 0.15$, significant reduction of desire to smoke in QSU Brief $F_{(1.39, 40.42)} = 4.18, p < 0.05, \eta^2 = 0.12$, improved mood using SEES including significant increase in positive well-being $F_{(1.64, 47.6)} = 4.02, p < 0.05, \eta^2 = 0.12$, reduction of psychological distress $F_{(1.30, 37.75)} = 3.93, p < 0.05, \eta^2 = 0.12$, reduced fatigue $F_{(1, 29)} = 3.70, p < 0.05, \eta^2 = 0.11$, significant increase in peak expiratory rate $F_{(2, 58)} = 7.46, p < 0.001, \eta^2 = 0.21$ and significant increase adrenaline $F_{(2, 56)} = 4.42, p < 0.05, \eta^2 = 0.14$. Unfortunately, this study found a significant reduction in the intention to quit post-exercise intervention $F_{(1, 29)} = 3.00, p < 0.01, \eta^2 = 0.54$. The qualitative study found that most participants perceived benefits and self-efficacy toward an exercise intervention on TWS. In conclusion, supervised moderate aerobic exercise intervention significantly improves craving in TWS, psychological symptoms, physiological symptoms and stress-pleasure related hormones. Thus, this type of exercise possibly aids in reducing TWS and their related symptoms during actual smoking cessation, and it is recommended to be considered when designing the future smoking cessation programme.

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CHAPTER ONE

INTRODUCTION

1.1 Research background

According to the World Health Organization, tobacco use has become a significant public health problem worldwide, with 7 million deaths per year. In the year 2018, over 34.2 billion adults of the world's population are smokers. These numbers represent 13.7% of all adults: 15.6% of men, 12.0% of women (Centers for Disease Control (CDC), 2020). Furthermore, about 1600 youngsters start to smoke every day (CDC, 2020).

George Institute of Global Health (2010) also reported that 30% of the world's smokers are from Asia-Pacific (Tan, 2012). According to the World Health Organization (WHO), almost 80% of the world's one billion smokers are from low to middle-income countries, including the Western Pacific Region (Control tobacco, control disease, 2012). In 2012, the Asian continent recorded the highest smokers prevalence, about more than 35% of the total smokers (Islami, Stoklosa, Drope, & Jemal, 2015).

Globally, it was reported that smoking was associated with 8 million deaths (WHO, 2019). From 1997 until 2017, smoking was consistently listed as among the most potential cause of death for non-communicable diseases (Stanaway et al., 2018). Smoking prevalence was high in developing countries (Kuang et al., 2018). It became the leading risk of males' total death and is projected to cause premature death among 50% of a billion people alive today (Britton, 2017). Total tobacco-attributable deaths are projected to rise year by year. By 2030, it is expected that approximately 10 million mortalities from smoking-related diseases will occur (Lim et al., 2018).

In Malaysia, a data survey in 2019 reported that about 21.3% or 4.8 million adults (15+ years old) continue to use tobacco each day (IPH, 2019). Of these, male smokers' prevalence is 40.5%, and female is 1.2%. Therefore, male and female smokers' prevalence was slightly reduced compared to the previous year (IPH, 2019).

Tobacco also causes approximately 45% of hospital deaths or approximately more than 20,000 deaths a year (Malaysian Healthcare Performance Unit, 2019; Tan,