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## Physical Exercise Enjoyment and Relationships with Socio-Demographic Characteristics among Adults in Malaysia



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### ABSTRACT

It has been documented that, involvement in regular physical exercises will benefit participant's physical, mental, and social well-being. Many factors have been associated with practising exercise regularly, and enjoyment is a key factor. It is an important issue to investigate the relationship between feeling of enjoyment during physical exercise performances and socio-demographic factors. Five recreational areas in Shah Alam (Malaysia) were chosen. A cross-sectional study was conducted. Five hundreds adults while performing the exercise in these areas were interviewed, using reliable and valid questionnaire. In addition to socio-demographic information, 13 questions referring to various kinds of enjoyment feeling were included in this questionnaire. Each question of feeling enjoyment was measured by a seven-point scale, ranging from (1) strongly negative to (7) strongly positive feeling. Using the median score of the entire questions as the dependent variable versus each socio-demographic factor. The total median and interquartile range (IqR) score for the 13 items was 84.5(14.). Significant higher enjoyment feeling median (IqR) score were detected among male 86 (13), ever married 87(12), education of less than college 84(15) and un-employed 86(16). While smoking and co-morbidity status showed insignificance. Spearman's Correlation showed a significant correlation of enjoyment with the age,  $r=0.208$ ,  $p<0.001$ . No correlation was found neither with BMI nor household income. Therefore, Feeling of enjoyment during exercise performance has a significance relationship with individuals' gender, marital status, age, and education level and employment status. Active promotion of regular exercise, therefore, should be focus more on other group of population.

## INTRODUCTION

The World Health Organization (WHO) (2010) reported that physical inactivity is the fourth risk factor leading to mortality around the [1]. Involvement in physical exercises has been documented to benefits, the individual's physical, mental, and social well-being [2]. This health benefit is achieved when exercises are done regularly [3].

Many factors have been associated with practicing exercise regularly, and enjoyment is a key factor for motivated behaviour and sustained involvement in exercise [4]. According to Oxford dictionary, enjoyment is defined, as the state or process of taking pleasure in something or the action of possessing and benefiting from something. Thus, despite physical tiredness and exhaustion experienced during exercise, many people still enjoy doing regular exercise.

The positive role of physical exercise in prevention and /or treatment a huge numbers of medical health problems have been documented by many literatures. Dallin et al (2020), stated, that there is very strong evidence that the onset of at least 40 chronic diseases can be delay through lifelong exercise performance [5]. Almeida et al. (2014) detected that both moderate and vigorous physical exercise have an effect on decreasing the risk of, hypertension, stroke, cardiovascular disease, type 2 diabetes mellitus and also protecting against some cancers and osteoporosis [6]. Moreover, Neil Howlett et al. (2015), found that, even a relatively low amounts of physical exercises (92 min/week) performance being associated with three years increases of life expectancy and 14% reduction in risk of mortality [7]. Thus, the American College of Sports Medicine (ACSM) encouraging that "Every adult in USA during all, days of the week, should accumulate at least 30 minutes of moderate-intensity physical exercise [6]. The associated of physical exercise with somatic benefits are well documented, while strong evidence to support the relation between exercise and psychological well-being is less abundant [8-10]. The role of physical exercise in improving, as well as in the treatment of mental health, and psychiatric population have been documented by several studies, whereas relatively little room has given for improvement of normal population [6,9]. However, an epidemiological study detected, that physical exercise can prevent and/or delay the occurrence of psychiatric disorders and have therapeutic effects when used as supportive therapy [11]. Sufficient evidence was show up the effectiveness of physical exercise, in reducing anxiety, management of clinical depression, and improving physical self-perceptions, and self-esteem. Moreover, many evidences documented

that aerobic, and resistance exercise boosts mood status, and can increase cognitive function, particularly in older adults [6]. Several authors have confirmed that the effect of aerobic physical exercise in reducing depressive symptoms is as effective as antidepressant medication (sertraline) [12]. Interestingly, several researchers have confirmed that physical exercise, and antidepressants both of them were promote the increase synthesis of Brain-derived neurotrophic factor (BDNF) [13,14]. BDNF is a key factor for neurogenesis establishment and neuronal survival. In recent years, BDNF has been used as a biomarker in psychiatric disorders, such as major depressive disorder (MDD)[11]. BDNF level has been shown to be lower in patient groups, than in healthy individuals. Moreover, a combination of exercise and antidepressants provided an inverse response of decreased BDNF synthesis which associated with a depression. Therefore, several scientists suggested that exercise considered as an effective treatment for depression [13,14].

Interestingly, WHO (2007) has reported that, by 2020 the MDD will be the second leading cause of devastating disease [15]. Evrim et al (2019), reported that MDD, is one of the leading causes of global disease burden, [11]. Meanwhile, Silveira (2013) stated that of the MDD population unfortunately, less than 25% of them have access to these treatments. Therefore, to reduce symptoms of depression, they have been advocated that, physical exercise as an efficient alternative treatment, since it reduces cost of hospitalizations and drugs, as well as may also improve health and physiological responses [14].

The contribution of physical exercise on psychological health is still unclear and inconclusive [16]. Nevertheless, neuroscientists around the world agree that physical exercise is the best medicine to maintain healthy brain throughout lifespan due to many reasons. These include increased, blood flow, glucose and lipid metabolism which bring nourishment to the brain and the release of BDNF (Evrimental 2019) [11]. In addition, the neuroscientists identified that physical exercise improves the microstructures of white matter in the brain leading to faster neural conduction between brain regions and superior cognitive performance [13,14, 17, 18].

Numerous studies have demonstrated, that physical exercise can have a positive influence on mood state, and self-esteem levels, in both gender at any age. They identified that these effects of exercise on mood state may not be as universal [8, 16, 19]. Thus our question was, what factors make people differently enjoy exercise performance and how these factors affecting enjoyment.

We hypothesized that there was a variation in the feeling of enjoyment during performing the physical exercise with various socio-demographic factors. Thus, this study was conducted, aiming to explore the relationship of enjoyment feeling during physical exercise performances. With different socio-demographic factors.

## **SUBJECTS AND METHODS**

For testing the reliability and validity of the questionnaire a pilot study was conducted before lodging the main project. Ethical approval was obtained from the Institutional Ethical Committee. Using the single proportion formula, taking the prevalence of exercise, 60% in consideration of 20% nonresponse, the calculated sample size was 445 individuals.

Five recreational areas/parks, located in Shah Alam, Malaysia, were randomly chosen. These recreational areas/parks are located at sections; 1, 2, 7, 9, and 14 of Shah Alam. A cross-sectional study was carried-out at those recreational areas/parks. Throughout the period of study, each selected recreational area/park was visited during weekdays as well as weekend. Five hundred adult persons, aging 18 years old and above, who were performing the exercise in one of those five recreational areas/ parks areas were collected. Pregnant women were excluded. A verbal informed consent was obtained from each participant in this study. A Direct face to face interview of each participant was carried-out by the researcher, using a validated questionnaire with Cronbach's alpha of 0.92. The questionnaire was structured, with no open questions. From each participant, several information were obtained including; socio-demographic characteristics (*age, sex, ethnicity, marital status, educational status, employment status, working days per week, number of hours working per day*), medical history (*presence and type of chronic disease*) in addition the tobacco smoking status (*non-smoker, current smoker, or ex-smoker*) from each participant were obtained.

Alongside, this questionnaire includes 13 questions (items) referring to several kinds of the feeling of enjoyment experienced by the participant during his/her involvement in a physical exercise performance. Each item was assessing the enjoyment feeling, from extreme negative versus extreme positive feeling. The items were "I feel"; *hate, enjoy; bored, interested; dislike, like; not deeply involved, deeply involved; not fun, fun; tiring, energizing; depressed, happy; unpleasant, pleasant; bad physically, good physically; frustrated, not frustrated; not satisfying,*

*satisfying; not exciting, exciting; and not refreshing, refreshing.* Assessment the response for each question was carried-out by using a seven-point - scale, ranging from (1) strongly negative feeling to (7) strongly positive feeling. The sum of scores, mean and median of these 13 enjoyment feeling reactions were calculated, and then used as the dependent variable versus each sociodemographic characteristic (independent variable). Weight and height of each participant were recorded for calculating the body mass index (BMI). The BMI was measured as weight in kg/m<sup>2</sup>.

Using SPSS version 22, all data were screened for missing data, outliers, normality. Descriptive statistics (frequency, percentage, and means, median and interquartile range (IQR) are carried out. Mann-Whitney Kruskal-Wallis and Spearman's Correlation regression tests were implemented to measure the median score differences and correlations between the variables "feeling of enjoyment during exercises performance and socio-demographic factors.

## **RESULTS**

Of the 500 answered questionnaires, only 477 were in complete status. Table 1 exhibited the socio-demographic profile of the 477 participants. The majority were (91.8%) Malay, only 8.2% were Non-Malay, (Chinese, Indian, others). About 80.8% of the participants were free from any chronic disease. High percentage (76.3%) of the participants were never smoked in his or her life, while only 14.7% were currently still smoker. The mean age of all respondents was 32.7 years (range 18-67 years). Females comprise 54.1% of the participants. The educational achievement was tilted towards high level of education (73.2%), including university (58.2%) and college (15 %) educational certificate, while only 9 (1.8%) had no formal education. Almost 2/3 (65.4%) were employed at the time of enrolment. Weekly they work 1-7 days with a mean working hours as 8.6 hours/day, and 21.2% were students. Approximately half of study participants (48.6%) were unmarried. The mean BMI of all participants was 24.64 kg/m<sup>2</sup> ranging 11.07-48.8. kg / m<sup>2</sup>.

**Table No. 1: Socio-demographic profile of 477 adults performing regular physical exercise at Shah Alam Parks, Selangor Malaysia**

Socio-demographic characteristics	Characteristics	No. of persons	Percentage %
Ethnic	Malay	438	91.8
	Non- Malay	39	8.2
Gender	Male	219	45.9
	Female	258	54.8
Marital Status	Married	235	49.3
	unmarried	232	48.6
	divorced/widow	10	2.1
Marital Status	Ever Married	245	51.4
	Never-married	232	48.6
Education	No formal education	8	1.7
	Primary	8	1.7
	secondary	112	23.5
	College	70	14.7
	university	279	58.5
Education	low education*	128	26.8
	High education**	349	73.2
occupation	Retired	19	4.0
	Housewife	27	5.7
	employed	312	65.4
	Students	101	21.2
	Not employed	18	3.8
Occupation	Employed	312	65.4
	Not employed +Retired+ housewife	64	13.4
	Students	101	21.2
Smoking Status	Current smoker	71	14.9
	Never smoked	364	76.3
	Ex-smoker	42	8.8
Smoking Status	Never smoke	364	76.3
	Ever smoke	113	23.7
Disease status	Have chronic disease	93	19.5
	No chronic disease	384	80.5
Exercise during	Weekdays only	43	9.0
	Weekend only	196	41.1
	during both	238	49.9
Body Mass index Kg/m <sup>2</sup>	Mean (Range)	24.64 (11.07-48.8) Kg/m <sup>2</sup>	
Age (years)	Mean (Range)	32.66 (18-67) years	

\*Low education = no formal education + prim+ secondary

\*\*Higher education = college+ university

The overall median and interquartile range (IqR) score for the whole 13 items was 84.5(14.). All study population were categorized into Malay or non-Malay group. Malay people demonstrated the lower feeling of enjoyment, showed median (IqR)) score 84(14) compared to non-Malay 87 (12). However, this difference was not significance,  $p= 0.10$ . Detail results were provided in Table 2a. Significantly higher enjoyment median (IqR) score was detected 86 (13), among male participants compared to the females 84 (16),  $p=0.015$ . Ever married group (widow, divorced, and currently married responders) showed significantly greater median (IqR) score of exercise enjoyment 87(12), compared to never married (unmarried) responders 83.5(19),  $p=0.001$  in Table 2a.

**Table No. 2a: The relationship of physical exercise Feeling of Enjoyment with socio-demographic characteristics of 477 adults performing exercise at Shah Alam Parks, Selangor Malaysia**

Variables		N (%)	Median (IqR)	P value
Ethnic	Malay	438 (91.8)	84 (14)	0.100 <sup>a</sup>
	Non-Malay	39 (8.17)	87 (12)	
Gender	Male	219 (45.9)	86 (13)	0.015 <sup>a</sup>
	Female	258 (54.1)	84 (16)	
Marital status	Ever Married	245 (51.4)	87 (12)	0.001 <sup>a</sup>
	Never-married	232 (48.6)	83.5 (19)	
Education levels	High education	349 (73.1)	84 (15)	0.043 <sup>a</sup>
	Low education	128 (26.8)	87 (13)	
Occupation <sup>#</sup>	Employed	312 (65.4)	85.4 (13)	<0.001 <sup>b</sup>
	Retired+ housewife	64 (13.4)	86 (16)	
	Students	101 (21.2)	80 (20)	
Smoking status	Never smoke	364 (76.3)	85 (15)	0.7 <sup>a</sup>
	Ever smoke	113 (23.7)	84 (13)	
Health status	Have chronic disease	93 (19.5)	86 (17)	0.254 <sup>a</sup>
	No chronic disease	384 (80.5)	84 (13)	

<sup>a</sup>Mann Whitney

<sup>b</sup>Kruskal Wallis <sup>#</sup> Significantly difference for Employed and Student ( $p=0.001$ , Student and retired( $p=0.004$ ))

<sup>c</sup>Higher education = college+ university Low education = no formal education + prim+ secondary

Interestingly, by using Spearman's Correlation, we found that with the increased age of the participant, the feeling of enjoyment increases, reflecting statistically a direct significant correlation of the enjoyment feeling scores with the age of respondents.  $r=0.208$ ,  $p<0.001$ . On the other hand, with the increased BMI level as well as monthly household income, feeling of enjoyment is increasing but this relationship was not significant,  $r=0.065$ ,  $p=0.116$ , and  $r=0.041$ ,  $p=0.371$  respectively Table 2b.

In respect to the educational attainment, by categorizing the respondents' educational attainment into two groups; low educational (no formal education+ primary +secondary), and high educational (college +university) group. Our study detected that the median (IqR) score of enjoyment feeling during exercise performance was significantly lower among the group with high educational level 84(15) than those with lower educational level 87(13),  $p=0.043$ . Table 2a.

Using Kruskal-Wallis test, the unemployed individuals showed significantly the highest median scores of a feeling of enjoyment during exercise performance 86(16); next are the employed group 85(13). While the students showed the lowest median score of enjoyment, 80 (20),  $p<0.001$  showed in Table 2a.

The smoking status of the participants was categorized into two groups; never smoke (not smoke at all) and ever smoke (ex-smoker and currently smoker). From a statistical point of view, the median (IqR) score of enjoyment feeling for the total 13 items was greater 85(15) among never smoke than ever smoke 84(13) group, however, this difference was not significant,  $p=0.7$ .

Participants claiming to have one or more chronic diseases, their feeling of enjoyment median score of the total 13 feeling items was 86(17) greater than 84(13) those having no chronic disease. However, this variation was not significant,  $p=0.254$ . Table 2a.

**Table No. 2b: The relationship of physical exercise Feeling to reaction's scores with socio-demographic characteristics**

Variables	r	P value*
Age (years)	0.208	<0.001
Income/ month	0.041	0.371
BMI kg/m <sup>2</sup>	0.065	0.116



\*Spearman's Correlation

## DISCUSSION

There is a continues increasing evidences supporting that engagement in physical exercise regularly has the positive affecton the physical, psychological, mental health, and social well-being [2,3]. The benefits of physical exercise on psychosocial state may equal if not surpass the physiological benefits [8, 18].

The affect as defined by Eva et. al (2013) is a subjective characteristic of an individual's feeling state, and described along two dimensions positive, negative [19]. Silveira et. al (2013), have reported that a strength of exercise can reduce a depressive symptom and improve quality of life, including pain, vitality and social effective,[14]. The current study has detected that the overall mean  $\pm$  SD (79.71 $\pm$  14.63) as well as the median (IqR) 84.5(14.) score, for the whole 13 items of the enjoyment feeling were directed toward high (more than 86%) positive. This finding supporting McAuley et. al (2005) and Deirdre et. al (1998) who were identified a direct correlation of physical exercise and psychological wellbeing, self-esteem, self-efficacy and cognitive functioning [20], and an indirect correlation of physical exercise with depression anxiety, and stress [8,11, 21].

Several hypotheses regarding the exercise impacts on mental health were also suggested. Physical exercise likely produces its benefits through a different mechanism [18]. Meenakshi (2013) stated that increasing exercise performance has a positive effect on increases levels of the mood-regulating chemicals, like Serotonin and Beta-endorphins. Serotonin contributes an important role in the regulation of mood and sleep. About 20% of Serotonin is synthesized in the central nervous system. Beta-endorphins play role in reducing pain and can even induce euphoria [22]. In addition, in temporal lobes the hippocampus which is necessary for making new memories, and it is one of the few places where neurogenesis (generation of new neurons) happens. In people exposed to high levels of stress, neurogenesis appears to be less active, thus forgetfulness becomes more prominent in such person. Therefore, regular physical exercise performance helps to decrease stress and consequently improve individual's memory. Additionally, the hippocampus shows a incredible angiogenic (formation of new blood vessels) and Neuroplasticity (neurons and neural networks capacity to change their connections and

behaviour in response to, sensory stimulation, development, new information, dysfunction or damage, [22].

Our study detected that the feeling of enjoyment was significantly in direct correlation with increased age of respondent, as shown in the study done by Guohua et al. (2013), whereby the elderly subjects display a superior response of enjoyment feeling than younger with physical exercise [3]. It was reported that, with a normal aging process of individual, the hippocampus will change, hence the cognitive may decline in old age [22]. Interestingly, Meenakshi (2013) detected experimentally, that decline in neurogenesis level, of old aged mice, was reversed to 50% by running. Therefore, he concluded that there is a positive effect of exercise on increased hippocampal neurogenesis, which leads to improving learning and memory [22]. Several explanations could be given to our finding; with increasing age, persons may be amply interested in physical exercise or appreciated its consequences so make it as importance in their lives. Most of elderly people are performing an exercise for short period. It is confirmed that participating in vigorous intensity physical exercise for 150 min per week is correlated to improved physical and cognitive health [6]. Type of exercise, different age group was practicing the different type of the exercises may play a role, Deirdre et al., (1998), as well as Kirk et al. (2010) suggested that the exercise-induced increases in BDNF resulting from aerobic exercise but not from stretching exercise [8,23]. Additionally, Guohua et al. (2013) reported that Baduanjin (Chinese exercise) training have constant benefits for symptoms of, type 2 diabetes Mellitus, hyperlipidemia, depression, depression, osteoarthritis, and spinal problems [3] particularly our study detected that participants have one or more chronic diseases their median score of feeling of enjoyment for the 13 items was greater than those free of any chronic disease. Moreover, greater of independence daily living activities among older adults may also contribute to an additional factor for a feeling of enjoyment [14]. We found that unemployed individuals (Retired and housewife) showed significantly highest median score of enjoyment feeling during exercise performance, while the students showed the lowest. Our finding contradicting with Deirdre et al. (1998) who had concluded from his meta-analysis, that aerobic exercise was effective in decreasing anxiety, particularly among employed chiefly those suffering of chronic work stress [8, ]. Best explanations for this finding; most of unemployed were at old age, with or without chronic diseases, may have mental distress, and as physical exercise may play a significant role in the management of mild-to-moderate mental distress [14]. Surprisingly the student population

showed the lowest median score of enjoyment. The best explanation for such finding, that they may practice exercise longer period and/ or more frequent than others. Cockerill & Riddington (1996) detected that engagement in physical exercise for more than four times per week, showed higher level of tension, depression, and anger, compared to those who exercised two to three times a week [24]. Additionally, Rejeski (1994) had confirmed the dose-response relationship of physical exercise with physiological improvement, while, in terms of psychological effects, they failed to detect such relationship [25]. Moreover, the possible benefit of physical exercise in reducing depression, stress and anxiety has been showed only in few studies [2,3], where's our students most probably psychological were normal. Contradicting Eva et al. (2013) who's stated that regular engagement in physical exercise among women been linked with several specific well-being including enthusiasm and meaningful feelings of positive energy [19]. Our study gave evidence that feeling of enjoyment during exercise was significantly greater in males compared to females. On the other hand, our result agreed with Deirdre et al. (1998) and Allgood & Conley (2002) who were noticed that, physical exercise exerts a significant effect on young men, with stress but not young women [8, 26]. This finding could also be explained by what Hamer et al. (2002) stated, that many women, feel a burden to create equilibrium between their heavy work demands and practicing exercise. Thus they will develop a sense of guilt burden and obligation toward engaging in physical exercise, which might not be optimal for one's greater well-being [27]. Physical exercise performance in addition to improve physical health academic performance will improve also [28]. Interestingly our study found that the low educated participants (have the certificate of less than college), their feeling of enjoyment was significantly higher than their counter group. This could be attributed that, first, high educated individuals may experience opposing for loads on their time from educational, profession, and family responsibilities perhaps at the cost of time and resources that spent to regular exercising performance. Second, some people may not feel adequately capable for physical exercise, feeling either not physically unsuitable or not skilled enough to exercise, or they may have health restrictions that act as a barrier to exercise. Our participants having chronic disease showed (insignificant) higher median score of enjoyment feeling than their counter group. This finding could be explained by what Meenakshi (2013) had stated that not only the physical limitations of the disease would benefit from the exercise performance, but the memory skills of the individual fighting this disease and cognition of the individual can also improve [22]. Another explanation

that diseased persons they are performing physical exercise as a function of feedback from, their doctors and consultants [29]. Additionally, type of the disease they have may play a role as stated by Neil, et al. (2015), that the behavior changes techniques that are noticeable in diabetic patients may be unlike those persons with CVD or cancer or health individuals [7].

Ever married responders showed significantly greater enjoyment feeling compared to never married. The best explanation for this finding that quality of life, social contact, and self-esteem may progress by physical exercise [14]. Moreover, Meenakshi (2013) stated that physical exercise most reliably have a positive effects of on the executive functions connected with the frontal lobe of the brain [22]. The frontal lobe controls the processes called "mentalizing". Mentalizing is the ability to understand another's mental processes, upon which our socialization is based [22]. Furthermore, it may also contribute to increased independence in activities of daily living in older adults.

## **CONCLUSION**

Our study concluded that feeling enjoyment while performing physical activity has a significant relationship with the old age, male, married, lower education and unemployed individuals. Students, employed as well as the highly educated person significantly showed the lowest feeling of enjoyment. Therefore, participation in regular exercise is needed to encourage and improve among those groups. Further research is needed to examine adherence to perform a regular exercise among these group to maintain health.

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## **Competing interests**

It is hereby declared that there is no conflict of interest pertaining to this paper.

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