EXERCISE BENEFITS, BARRIERS & STAGES OF CHANGE OF MUSLIM UNIVERSITY STUDENTS

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CENTRE FOR SPORT AND EXERCISE SCIENCES
UNIVERSITY OF MALAYA
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EXERCISE BENEFITS, BARRIERS & STAGES OF CHANGE OF MUSLIM UNIVERSITY STUDENTS

ABSTRACT

Muslim women are usually labeled as a non-active person when it comes to physical activity or exercises. Some women are using religion of Islam as their constraints of engaging sports when there are actually many other reasons they might not know or realized. A research study was conducted to investigate the perceived benefits and barriers towards physical activity, which focusing only on Malaysian Muslim women and stages of change of their physical activity and exercise involvement in the community. The sample consisted of 400 female Muslim students (n=400) from public universities around Malaysia. There were two questionnaires for data collection: Physical Activity Stages of Change (PASCQ) and Exercise Benefit and Barriers Scale (EBBS). The highest stage in PASCQ was maintenance with 33.5%, which is the final stage in Stages of Change. The benefits and barriers scale were calculated separately and it was found out that the benefits score was higher than barriers score. In comparison of subscales, physical performance was the highest subscales in benefits category while physical exertion was the highest subscale in barriers category.

Keywords: Physical activity, Muslim students, stages of change, benefits, barriers

KEBAIKAN DAN HALANGAN SENAMAN, SERTA TAHAP PERUBAHAN BAGI PELAJAR UNIVERSITI BERAGAMA ISLAM

ABSTRAK

Wanita beragama Islam biasanya dilabelkan sebagai seorang yang tidak aktif apabila dikaitkan dengan aktiviti fizikal atau senaman. Sesetengah wanita menjadikan agama Islam sebagai kekangan untuk mereka bersukan sedangkan terdapat banyak lagi sebab lain yang mungkin mereka tidak tahu atau sedar. Satu kajian penyelidikan telah dijalankan untuk mengkaji kelebihan dan halangan yang dirasakan terhadap aktiviti fizikal, dimana tumpuan diberikan hanya kepada wanita Malaysia, beragama Islam dan tahap perubahan aktiviti fizikal mereka, serta penglibatan senaman dikalangan masyarakat. Peserta kajian ini terdiri daripada 400 pelajar wanita beragama Islam (n = 400) dari universiti awam di seluruh Malaysia. Terdapat dua jenis soal selidik digunakan untuk pengumpulan data: Tahap Perubahan Aktiviti Fizikal (TPAF) dan Skala Kebaikan dan Halangan Senaman (SKHS). Tahap tertinggi dalam TPAF adalah pengekalan dengan 33.5%, yang juga merupakan peringkat terakhir dalam Tahap Perubahan. Skala kebaikan dan halangan senaman telah dikira secara berasingan dan didapati bahawa skor kebaikan lebih tinggi daripada skor halangan. Berdasarkan perbandingan subskala, prestasi fizikal merupakan subskala tertinggi dalam kategori kebaikan manakala penampilan fizikal merupakan subskala tertinggi dalam kategori halangan.

Kata Kunci: Aktiviti fizikal, pelajar Muslim, tahap perubahan, kelebihan, halangan

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LIST OF SYMBOLS AND ABBREVIATIONS

PASCQ	:	Physical Activity Stages of Change Questionnaire
EBBS	:	Exercise Benefits and Barriers Scale
NHMS	:	National Health and Morbidity Survey
TTM	:	The Transtheoretical Model
SOC	:	Stages of Change
WHO	:	World Health Organization
GPAQ	:	Global Physical Activity Questionnaire
IPAQ	:	International Physical Activity Questionnaire
METU	:	Middle East Technical University
PEI	:	Prince Edward Island
PASSES	:	Perceived Autonomy Support Scale
BPNES	:	Basic Psychological Needs in Exercise Scale
MTUN	:	Malaysian Technical University Network
UTeM	:	Technical University of Malaysia Malacca
UHA	:	University of Hafr Al-Batin
KSA	:	Kingdom of Saudi Arabia
MTSU	:	Middle Tennessee State University
USA	:	United States of America
SPSS	:	Statistical Package for the Social Sciences

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CHAPTER 1: INTRODUCTION

1.1 Introduction

In general, most people are fully aware of the importance and benefits of doing exercise in their daily life. Yet, based on the Global Health Observatory data (World Health Organization, 2019), in the year 2016, approximately 32% of the women over the ages 18 were not exercising according to the recommended guidelines. There are many factors that have been given by women as the reasons for lack of exercise or being inactive.

For example, Anjali and Sabharwal (2018) conducted a research to explore the perceived barriers to exercise among college students through focus group discussions. They found that there were many reasons given by the participants as barriers to exercise such as lack of energy or sleep, stress, physical ailments, time constraints, lack of knowledge, boredom, lack of self-discipline and social barriers.

There is a group of women who may face additional challenges. In the religion of Islam, Muslims are advised to use the Qur'an and Hadiths as guidance for mankind. The Qur'an is the holy book, which Muslims believe is the word of God as revealed to and recorded by the Prophet Muhammad. Hadiths are collection of Prophet Muhammad's statements and actions written by others after his death. Some of these religious obligations include the need for Muslim women to protect their *aurat*, which is defined as a part of the body that must be covered by clothes for the sake of basic decency.

According to the Islamic law, the proper attire for Muslim women is to cover the whole body except the face and the hands up to the wrists (Sayyid Sabiq, 1995; Al-Barazi, 1995; Al-Qardawi, 1998; Abdul Halim, 2002; Al-Medani, 2009). The clothes that the Muslim women wear must be different or does not resemble the clothing of the men and women unbelievers (Al-Abani, 1992; 1994; Al-Barazi, 1995; Abdul Halim,

2002; Al-Medani, 2009; Abdul Qadir, 2011), or clothes that are specifically designed for men (Al-Manasiyah, 1995; Al-Qardawi, 1998).

The attire for Muslim women also must not be transparent until it can reveal the white or reddish color of the skin, and the bodily figure of the wearer of the clothes (Al-Abani, 1992; 1994; Sayyid Sabiq, 1995; Al-Barazi, 1995; Al-Qardawi, 1998; Al-Medani, 2009), and must not be tight to the extent that it can show the women's physique (Al-Abani, 1992; 1994; Al-Barazi, 1995; Sayyid Sabiq, 1995; Al-Qardawi, 1998; Al-Medani, 2009). Another example of attire protecting the *aurat* is to wear *hijab*, which is a veil of headscarf that is designed for women to cover up their head and hair.

Moreover, Muslim women are also forbidden to do anything that may attract people's interest, particularly the men who are not related to them (Ahmad Shalaby, 2001). Therefore, Al-Hashimi (2005) stated that women should not wear perfume, makeup and accessories except those of which are common look among Muslim women. Additionally, Muslim women are forbidden to have any other intimate contact with other men, except for her *mahram* which means family members and those forever ineligible for marriage to her. Humility and lack of verbosity are other forms of modesty that are highly valued in Islam (Boulanouar, 2006).

Islam has forbidden anything which leads to sex outside marriage or makes it attractive, such as seductive clothing, private meetings, and casual mixing between men and women (Al-Qaradwai, 1992). Similarly, Muslim men and women who are not *mahram* will not exchange handshake or hug, even with someone they like very much because it is crosses a gender boundary in Islam (Boulanouar, 2006).

Given the obligations, commandments and way of life for Muslim women, there is therefore a need to know where these women stand in terms of intentions and

willingness to consider, adopt or maintain exercise participation. The Transtheoretical Model of Behavior Change can provide this information as it is conceptualised based on a process that unfolds in time and involves progression through a series stages. This process is called the Stages of Change and comprises of the following stages: (1) Pre-Contemplation, (2) Contemplation, (3) Preparation, (4) Action, and (5) Maintenance (Prochaska & DiClemente, 1983).

It is possible to estimate the intention and willingness to engage in physical activity by way of the 'Stages of Change' questionnaire. The level of willingness could range from a point where an individual was not currently engaging in any form of exercise and perhaps, may also have no intention to ever commence, right up to a level where an individual was exercising at least three times a week on a regular basis. Dumith, Domingues, and Gigante (2008) stated that people who have a more favourable exercise profiles and who intend to adopt a healthier lifestyle can be identified with progression from one stage of change to the subsequent stage of change.

Even though it is expected that Muslim women would span into all five of the different stages, regardless of which one though, it is important to identify what are their perceptions in terms of the perceived benefits of exercise as well as the perceived barriers to participation amongst this community of women. The perceived benefits would give an indication about the factors that will be useful to provide, increase, or enhance in order to encourage physical activity participation and maintenance. Alternately, findings about the perceived barriers to exercise would give an indication on the factors that should remain hidden or must be discarded or replaced.

1.2 Statement of Problem

Worldwide, the prevalence of physical inactivity has been documented by many countries. Kahan (2015) provided supplementary data on the estimated prevalence of physical inactivity in 94 non-Muslim countries. Out of 94 countries, women were found to be more inactive than the men in 17 countries. Kahan (2015) had also reported the estimated prevalence of physical inactivity in the Muslim world, presenting data from 38 countries which had predominantly 50% more Muslim within the population. Overall, the results also showed that women had a higher rate of physical inactivity compared to men, whereby the prevalence of inactivity was 41.7%. Although most Arab countries consist of Muslims, it is possible that the samples used in the study may not be exclusive of non-Muslims in some countries.

As a multi-racial nation, Islam was the most widely professed religion in Malaysia with the proportion of 61.3%, while other religions embraced were Buddhism with 19.8%, Christianity with 9.2% and Hinduism with 6.3% (Department of Statistics Malaysia, 2012). Therefore, the findings are not accurate to describe the Muslim community in general and the female Muslim in particular, in the country.

Specifically in Malaysia, from the latest National Health and Morbidity Survey II (NHMS II) published by the Malaysian Ministry of Health on adults (Institute of Public Health, 2015) and on adolescents (Institute of Public Health, 2017), it was discovered that overall prevalence of physical activity was 66.5%, and 45%, respectively. In both surveys, males were found more active than females.

Two other more recent studies had also noted that males engaged in more physical activity compared to females in the adult population (Tam, Bonn, Yeoh, Yap, & Wong, 2016) and the student population (Yusoff et al., 2018). Although ethnic differences were reported in some of these studies, with the breakdown of prevalence for the major ethnic

groups in Malaysia (Malay, Chinese, Indian and Others) available, none had included religion as a demographic variable.

Given the prevalence of physical activity and physical inactivity globally, as well as the lack of information about the prevalence of physical activity/physical inactivity amongst the Malaysian female Muslim population, it is imperative to identify if Malaysian Muslim women have any intention and are willing to engage in exercise, so that interventions can be targeted at the groups which were currently inactive, but contemplating or ready to begin. Additionally, the factors that may influence the intentions and willingness to exercise should be investigated. Consequently, the identification of the perceived benefits and barriers towards exercise will help in the development of strategies and design of interventions that can enhance participation rates for adoption and adherence, and minimise prevention of relapse.

To date, many researchers have investigated the perceived benefits and barriers towards physical activity in various populations using the Exercise Benefits and Barriers Scale. These studies populations include university students (Lovell, Ansari, & Parker, 2010; Pippin, 2013; Samara, Nistrup, Aro, & Al-Rammah, 2015; Naural, Parnabas, & Salahuddin, 2015; Alsahli, 2016; Dalibalta & Davison, 2016: Gad, Arrab, & Alsayed, 2018), university staff (Salihu, 2014), urban residents (Guo, 2015), persons with disabilities (Barfield & Malone, 2013; Wilson & Khoo, 2013), and people with medical conditions (Shin, Khur, Pender, Jang, & Kim, 2006; Darawad, Khalil, Hamdan-Mansour, & Nofal, 2014; Darawad et al., 2016).

However, none of these studies had investigated the perceived benefits and barriers of Muslim women in different stages of change. Therefore, the purpose of this study was to determine the perceived benefits and barriers towards exercise according to the different stages of change of Malaysian Muslim students.

1.3 Objectives

i. To identify exercise stages of change of Muslim university students

ii. To determine the perceived benefits and barriers towards exercise among Muslim university students

iii. To compare the stages of change for each benefit subscales

iv. To compare the stages of change for each barrier subscales

1.4 Significance of Study

This study will add to the existing body of knowledge about exercise participation of Muslim women. As prevalence data provide information about percentage of Muslim women whom are active or inactive, this study will provide additional information about the intention and willingness to exercise beyond the current level. The findings of this study will then be able to inform others such as researchers, trainers and coaches about the next course of action, whether interventions will indeed be useful and/or necessary, depending on the intentions and willingness to change.

There is also limited knowledge on participation of Muslim women who wore the *hijab*, and also their exercise involvement, stages of change levels, and exercise preferences of these Muslim women who are located all over the world and specifically those who were from South East Asia, and Malaysia, in particular. This study will provide the necessary information to enhance participation of Muslim women.

By conducting this research, an explicit set of factors deemed as perceived benefits and barriers to physical activity can be identified. This information will be very useful for physical educators, healthcare practitioners as well as policy makers on how to strategise to encourage exercise involvement. Participation among Muslim students in exercise activities is important for the productivity of a country in a long run as there are

tremendous empirical evidence about the benefits of physical activity and exercise for individuals around the world.

1.5 Delimitation of Study

This study was delimited to Malaysian female Muslims who were enrolled as a student in Malaysian public universities (undergraduate and postgraduate).

1.6 Limitation of Study

Malaysian Muslims may not be the same as Arab Muslims because of the differences in environment, culture, and lifestyle. Malaysia has a relatively large percentage of religious minorities (Buddha, Christian, and Hindu) whereas Saudi Arabia has virtually none. This means that Malaysian Muslims are exposed to other religions in their daily life compared to Saudi Arabia Muslims who are not from a multi-nation country.

1.7 Operational Definition

Physical activity: Any bodily movement produced by skeletal muscles that require energy expenditure. It may include a planned activity like walking, running, basketball or daily activities such as household chores, yard work etc. (WHO, 2018).

Exercise: A subcategory of physical activity that is planned, structured, repetitive, and purposeful in the sense that the improvement or maintenance of one or more components of physical fitness is the objective (WHO, 2018).

Muslim: An adherent of the Islamic faith (Douglass & Shaikh, 2004).

Aurat: A part of the body to be concealed by clothing (Omer, 2011), behavior, and relationships between males and females (Mortada, 2003).

Physical Activity Stages of Change: An adapted questionnaire developed by Marcus and Simkin (1993) based on Stages of Change questionnaire that categorised participants into five exercise stages of change which are Pre-Contemplation, Contemplation, Preparation, Action, and Maintenance.

Exercise Benefits and Barriers Scale: A questionnaire with a total of 43 questions, developed by Sechrist, Walker, and Pender (1987) to determine perceptions of individuals concerning benefits of and barriers to participating in exercise.

CHAPTER 2: LITERATURE REVIEW

This literature review will commence with the explanation of what *aurat* means to Muslim women. Then, articles involving the participation of Muslim women in physical activity, exercise and sport are highlighted. This will be followed by information of the measurement tools that the researcher used for this research which is Stages of Change Questionnaire (SOC) and Exercise Benefits and Barriers Scale (EBBS). Next, a review of studies that have been conducted in relation to perceived benefits and barriers of exercise involving various populations are presented. Finally, a summary is provided at the end of this literature review chapter.

2.1 Muslim Women and Aurat

Aurat means a part of the body that must be covered for the sake of basic decency. For men, their *aurat* starts from the navel to the knees. As for women, their whole body parts need to be covered except for the face, hands, and feet. They are also forbidden to touch or having any skin ship while meeting other men (friend or strangers) unless it is covered with clothes.

The characteristics of proper attire for Muslim women are that the clothes (1) must cover all parts of the body except for face, hands and feet, (2) does not function as accessories, (3) need to be thick, not thin, (4) need to be loose, not tight, (5) must not be sprayed with perfume, (6) must not resemble men's clothing, (7) must not resemble non-Muslim women's clothing, and lastly (8) must not be used with the intention to glorify oneself or exhibit another person (Al-Manasiyah, 1995; Al-Medani, 2009).

2.2 Muslim Women and Physical Activity, Exercise and Sport

Irrespective of age, religion, and gender, people need to be healthy by doing some form of exercise activities. In Islam, a fit and a healthy Muslim is considered to be better than the weaker one (Wabuyabo, Wamukoya, & Bulinda, 2015). According to Sanchooli (2016), exercise is important because it would avoid unemployment, fight the boredom and laziness, increase physical and mental abilities, courage, physical and mental health as well as a vehicle for social pluralism.

The Malaysian government too recognises this importance, hence the Malaysian Ministry of Education directive to include physical education classes in the Malaysian education syllabus as compulsory for students from pre-school to high school. Students are encouraged to participate in one sport, one club, and one uniformed body to ensure access to a breadth of experiences. In order for them to be exposed to the full diversity of Malaysian society, the Ministry of Education is expanding the 'Student Integration Plan for Unity' programme which will allow students from different school types, public and private, to mix during sports and co-curricular activities (Malaysia Education Blueprint, 2013).

Furthermore, all schools incorporate Visual Arts, Music Education, Health, and Physical Education classes into their curriculum and implement the 'One Student One Sport' policy that was launched in 2011 by the Malaysian Ministry of Education to ensure that each student participates in at least one sporting activity (Gunathevan & Saryono, 2015). This trend is also seen worldwide as demonstrated from the increase in scholarly attention to minority pupils and their experience of physical education (Zaman, 1997; Farooq & Parker, 2009; Benn, Dagkas, & Jawad, 2011; Dagkas, Benn, & Jawad, 2011).

There are several studies that have been conducted in relation to physical activity, exercise and sport using Muslim women as the subject of investigation. According to Pratt, Macera, and Blanton (1999) and Caspersen, Pereira, and Curran (2000), males are more physically active as compared to females, in their study of describing current levels of physical activity and inactivity among adults and young people in the United States, and changes in physical activity patterns in the United States by sex and cross-sectional age, respectively.

Soh, Aminuddin, Nur, Soh, and Ong (2013) conducted a study on Malaysian Malay men and women by comparing their physical activity before, during, and after Ramadan. They found out that Muslim women had lower mean step counts per day and reported to be in the 'low active' category compared to Muslim men. Equal (2008) also stated that Muslim women have lower rates of participation in sport compared to others. This is because young Muslim women usually face many barriers at school during physical education and sport activities because of their restrictions that are placed on them by their culture, gender, religion and ethnicity (Zahidi, Kamaruzaman, & Mohd, 2012).

Qureshi and Ghouri (2011) conducted a study through survey, interview, and video conference among Muslim girls and young Muslim women based on their experiences while partaking in competitive sports and physical activities in schools and colleges, where the environment was dominated by rigid religious leadership. However, they found out that these Muslim females have shown their positive approach towards healthy activities regardless of their environment.

Maesam, Mohd, and Rozita (2010) examined the perspective of Arabic Muslim women who sojourn in Malaysia toward the involvement in sport and physical activity. The authors concluded that these women were strongly influenced by the processes of

cultural maintenance and identity with their parent's ethnic group. Participating in sport is seen as a challenge to the boundaries of their ethnic identities, perhaps due to their experienced being harassed by their own family before in Arab.

Fitri, Sultoni, Salamuddin, and Mohd (2017) did a research among high performance Muslim women athletes from Indonesia and Malaysia who joined The Third Islamic Solidarity Games. Sports that demand high performance Muslim women athletes in Malaysia by ranking is badminton, swimming, and athletics while in Indonesia, according to the ranking is swimming, badminton, and volleyball.

Summers, Hassan, Ong, and Hossain (2018) conducted interviews and focus group with Muslim women living in Australia to better understand the underrepresentation in physical activity and group-fitness classes in particular. The researchers confirmed that while religion impacted the form and place of exercise options, it did not impact the overall motivation of Muslim women in Australia to engage in exercise. They also found that group-fitness classes offered by gyms did not particularly appeal to these participants, partially due to religion and ethnic background.

Finally, a study by Kahan (2015) was conducted to calculate the physical inactivity prevalence in 38 Muslim countries by using the Global Physical Activity Questionnaire (GPAQ) and the International Physical Activity Questionnaire (IPAQ). The two-proportion of Z tests was used to determine gender ethnic differences within the sample and between the sample and 94 non-Muslim countries. The results showed that total physical inactivity prevalence was 32.3%, whereas prevalence among males and females was 28.8% and 35.5%, respectively. As for the non-Arabs and Arabs, the prevalence was 28.6% and 43.7%, respectively. The researcher concluded that female and Arabs were more likely physically inactive than their respective counterparts. Meanwhile by comparing Muslims and non-Muslims countries, Muslim countries were

more likely physically inactive due to the influence of Arabs, and particularly female Arabs.

2.3 Stages of Change and Stages of Exercise Behavior

Prochaska and DiClemente (1983) created The Transtheoretical Model of Behavior Change (TTM), which is one of the most popular stage models in health psychology (Horwath, 1999). It is a model of intentional change that focuses on the decision-making abilities of the individual rather than social and biological influences on behavior as other approaches (Velicer, Prochaska, Fava, Norman, & Redding, 1998; Scholl, 2002). TTM has also been widely used as a theoretical framework to change people's physical activity behavior (Sonstroem, 1988). Marcus, Rossi, Selby, Niaura, and Abrams (1992) were the first who applied the TTM in the field of physical activity behavior. Prochaska and Velicer (1997) reported that after more than twenty years of research, the TTM has found that individuals move through a series of stages (see also Marcus et al., 1992) – (1) Pre-Contemplation, (2) Contemplation, (3) Preparation, (4) Action, and (5) Maintenance – whereby they will either commence a healthy lifestyle or completely stop any unhealthy behaviors.

In the first stage, pre-contemplation, the individuals have no intentions to change the behavior in the near future, which is usually measured within the upcoming six-month period (Prochaska, DiClemente, & Norcross, 1992; Prochaska & Velicer, 1997; Scholl, 2002). In this stage, they may be unaware or uninformed of the consequences of their behavior (Prochaska, DiClemente, & Norcross, 1992; Scholl, 2002). Scholl (2002) also suggested that for an individual to move out from this stage, they must experience a negative affective state, and acknowledge that there is a problem.

The next stage is contemplation. In this stage, individuals explicitly specify that they intent to make changes within the next six months (Prochaska, DiClemente, &

Norcross, 1992; Prochaska & Velicer, 1997; Velicer et al., 1998; Patten, Vollman, & Thurston, 2000). They are more aware of the benefits of changing, but remain keenly aware of the costs (Prochaska, Redding, & Evers, 1997). Meaning, they have the information on why they should adopt a new behavior but at the same time, they are also aware that there may be sacrifices to be made. The individuals in this stage will only proceed to stage three if they feel that there are more advantages than disadvantages resulting from a change, and if there is a strong pull factor to initiate the change (Scholl, 2002).

The third stage is the preparation stage, whereby sometime within the next 30 days, an individual is planning to make a behavior change (Prochaska, DiClemente, & Norcross 1992; Prochaska & Velicer, 1997; Velicer et al., 1998; Patten, Vollman, & Thurston, 2000). It is possible that individuals in this stage do not have an idea about what they can do to make the change but will be able to move on to the next stage when they select the most appropriate plan of action from the various possible alternatives and are quite certain that they are able to see it through (Scholl, 2002).

Individuals in the fourth stage, also known as the action stage, would have attempted to alter their behaviors, experiences, or environments in one way or another, during the past six months (Prochaska, DiClemente, & Norcross, 1992; Prochaska & Velicer, 1997; Velicer et al., 1998; Patten, Vollman, & Thurston, 2000). Prochaska, DiClemente, & Norcross (1992) and Patten, Vollman, & Thurston (2000) reported that this is the stage where changes in efforts are noticeable by others and is due to the significant amount of time and energy that has been invested. When an individual is able to notice that there is improvement in performance, and that these improvements are accompanied by positive feedback, then he or she can move on to the fifth and final stage (Scholl, 2002).

The last stage is referred to as maintenance. In this stage, individuals try very hard to enjoy the benefits obtained during action and to not slip back to undesirable behaviors (Prochaska & Velicer, 1997; Velicer et al., 1998). It has been identified that the criteria for the maintenance stage is that an individual is no longer displaying the problem behavior but rather is engaging in a healthy behaviors for a period of more than six months (Prochaska, DiClemente, & Norcross, 1992). It is important to note that considerable amounts of research had acknowledged that change is still on-going in the maintenance stage (Prochaska, DiClemente, & Norcross, 1992; Prochaska & Velicer, 1997; Velicer et al., 1998; Patten, Vollman, & Thurston, 2000).

According to Abula, Beckmann, Chen, and Gropel (2016), Marcus et al. (1992) have also identified five cognitive processes and five behavioral processes used throughout the stages of change. The cognitive processes include increasing knowledge, being aware of risks, caring about consequences, comprehending benefits, and increasing healthy opportunities whereas the behavioral processes include substituting alternatives, enlisting social support, rewarding yourself, committing yourself, and reminding yourself (Marcus & Lewis, 2003). Cognitive strategies typically peak in the preparation stage, while behavioral strategies peak at the action stage (Abula et al., 2016). From psychology perspective, individuals at different stages require different intervention strategies to adapt and maintain physical activity behavior (Marcus & Forsyth, 2003; Marcus & Simkin, 1993).

2.4 Physical Activity Stages of Change Questionnaire (PASCQ)

Physical Activity Stages of Change Questionnaire is an adapted questionnaire based on Stages of Change questionnaire, which was developed by Marcus and Simkin (1993) to test the stages of physical activity behavior change. The PASCQ consists of four items that categorized individuals into five different stages of physical behavior change.

Suminski and Petosa (2002) did a research among ethnically diverse college students to examine the distribution of Asian, African American, White, and Hispanic American undergraduate students across the stages of change for exercise. Higher percentages of minorities were in the pre-contemplation and contemplation stages than White students.

A research among 277 male and female students at a small private college was conducted to examine their motivations to be physically active by merging the perspective of self-determination theory and the transtheoretical model. The researcher used different kind of instruments for different purposes, and one of them was PASCQ. Pre-contemplation and contemplation stage were analyzed as a combined group due to the small number of student in the first stage. Maintenance stage has the highest frequency counts compared to other stages. Students in pre-contemplation and contemplation stages have lower METS than other stages, while those in preparation and action stages did not differ from each other. However, both groups were less active than students in the maintenance stage (DeLong, 2006).

Cengiz (2007) conducted a study among 953 undergraduate students who were studying in 2005 to 2006 fall semester in the Middle East Technical University (METU). The results showed that 24.8% of the students were physically active, 59.9% of the students were moderately active, and 15.3% of them were inactive. According to the PASCQ, 15.2% of the students were at pre-contemplation stage, 31.4% were at contemplation stage, 25.3% were at preparation stage, 7.5% were at action stage, and 20.6% of them were at maintenance stage. The results also indicated that there was a significant difference in the exercise stages of change levels of male and female students. The percentages of male students at the upper stages (action and maintenance) were higher than the percentages of female students in the lower stages (pre-contemplation, contemplation, and preparation).

A study among Turkish middle school students was conducted to determine the concurrent validity and reliability of the PASCQ for children and to examine their stages of change for physical activity by sex. The chi-square findings revealed a significant difference in physical activity scores at different stages of change. As for the results of PASCQ, most of the boys were in action stage, while most of the girls were in preparation stage (Cengiz, Hunuk, & Ince, 2014).

A research by Abula et al. (2016) was conducted among 298 college students in China. The PASCQ was translated into Chinese and used to test the different stages of change. The results showed that 34.6% were in contemplation stage, followed by preparation (24.5%), maintenance (20.8%), pre-contemplation (11.1%), and action (9.1%).

Valerie (2017) did a research among adults in late midlife (aged 50 to 70 years) and living in the province of Prince Edward Island (PEI), Canada. PASCQ were used to classify the participants into different stages of change. In this study, more men than women were in both action and maintenance stages, with 73% for men and 65% for women. However, there was more women than men in the lowest stages (pre-contemplation and contemplation), which was 27% and 15% respectively. The youngest age group, as well as for the highest education and income groups has the highest mean scores for stages of change.

Mehrtash and Ince (2018) administered a study among 316 women in a university (academic and administrative staff and students) to examine the perceived autonomy support and basic psychological needs of women participating in a health-related exercise programme with respect to exercise stage of change and exercise type. The researchers used PASCQ to evaluate participants' physical activity stage, Perceived Autonomy Support Scale for Exercise Settings (PASSES) in terms of instructors and

Basic Psychological Needs in Exercise Scale (BPNES). The results showed that health-related fitness participants' perceived autonomy support did not significantly differ according to exercise stage. The post hoc test revealed that participants in maintenance stage had significantly higher mean values of the autonomy, competence and relatedness subscales than the mean values of participants in preparation stage.

2.5 Perceived Benefits and Barriers to Physical Activity, Exercise and Sport

There are many studies focusing on perceived benefits and barriers among different populations. Shields and Synnot (2016) held ten focus groups discussion, involving 63 participants (23 children with disability, 20 parents of children with disability, and 20 sport and recreation staff) to explore factors perceived as barriers and facilitators to participation in physical activity by children with disability. Four themes were identified: (1) similarities and differences, (2) people make the difference, (3) one size does not fit all, and (4) communication and connections.

Based on the discussions, the researchers found that there are several perceived facilitators such as positive encouragement from others, family involvement, inclusive pathways for the children and good partnerships between schools, activity providers, disability groups and councils. However, there were also barriers that the children with disability need to face such as lack of instructor skills and unwillingness to be inclusive, negative societal attitudes towards disability, and lack of opportunities to participate in certain programs.

Rodenbaugh (2016) used a visual image of the student's perception, or known as PhotoVoice, to identify the thematic barriers and facilitators to physical activity among undergraduate students from the University of Akron, who enrolled in the course of Health Promotion and Behavior Change. Students submitted their digital photos that represented the respective themes. After going through three parts of the project, 8 to 10

photos with highest number votes were selected for the final presentation. The results showed that the perceived facilitators of physical activity were the availability, safety and cleanliness outdoor and indoor facilities, and social support from friends. The barriers of physical activity were transportation, safety areas due to the campus surrounding and poor supporting infrastructure.

A research among active and inactive Australian adults has been done by Hoare, Stavreski, Jennings, and Kingwell (2017) using a survey, developed by the National Heart Foundation of Australia to explore the facilitators and barriers to physical activity. The researchers used the active group to find out the facilitators to physical activity while using the inactive group to investigate the barriers to physical activity. The most frequently selected as facilitators to physical activity were to lose or maintain weight, avoid or manage health condition, and improve appearance. Lack of time was the most frequently reported barrier to physical activity.

Donelly et al. (2018) utilized focus group interviews among 128 Arab adults, men and women living in Qatar to explore their facilitators and barriers influencing physical activity and understand what they think would be helpful to increase their physical activity. The researchers created different focus group stratified by sex and age. By using the socio-ecological framework, the themes and subthemes were organized into three different levels: (1) individual level, (2) sociocultural level, and (3) organizational and political level.

The perceived benefits of physical activity that was found in individual level were improving health and physical benefits. The presence of diseases was discussed as both a facilitator and a barrier to physical activity while lack of time to exercise was the perceived barrier to physical activity chosen by most of the participants. In sociocultural level, majority of the participants discussed that being a Muslim and following Islam

religious teaching and informal support from family and friend were facilitators to engaging in physical activity. However, they agreed that cultural attitudes and beliefs towards ageing population and gender was their barrier to physical activity. In organizational and political level, no perceived facilitators were reported. Participants discussed that physical environment to exercise and accessibility of facilities were the barriers to physical activity in Qatar.

In another study using focus group discussions as their research design, Anjali and Sabharwal (2018) explored the perceived barriers to physical activity among college students in University of Delhi, New Delhi. A total of eight focus group discussions were conducted and three themes with several subthemes emerged from the qualitative data addressed the different dimensions of the socio-ecological framework: (1) personal, (2) social, and (3) environmental barriers.

In personal barriers, all the barriers were divided into two which is health related and not health related. Lack of energy or sleep, stress, and physical ailments or discomfort were found in health related barriers while time constraints, lack of knowledge or skills, inertia, boredom, procrastination, lack of self-efficacy, and indolence were found in not health related barriers. In social barriers, family control or discouragement, gender typing, peer pressure, and verbal bullying were identified as the barriers to physical activity. Lastly for environmental barriers, built or physical environment, lack of resources or opportunities, weather, financial cost, internet and technology, and lack of availability or accessibility of facilities were discussed as the perceived barriers to physical activity in the campus.

2.6 Perceived Benefits and Barriers to Physical Activity, Exercise and Sport determined by the Exercise Benefits and Barriers Scale (EBBS)

Several studies have been conducted related to perceived facilitators or benefits to physical activity, exercise and sport using the EBBS. Lovell, Ansari and Parker (2010) did a research among non-exercising female university students in United Kingdom. These students either agreed or strongly agreed with most of the benefits under examination. They agreed the most with "Exercising increases my level of physical fitness" and agreed least with the item "Exercising increases my acceptance by others". They also found that the greatest perceived barrier to exercise was physical exertion followed by time expenditure, exercise milieu, and family discouragement. The mean scores for all four subscales were between 2 and 3 which equated to between 'agree' and 'disagree' on the EBBS scoring scale.

Barfield and Malone (2013) did a research among power wheelchair soccer players using Exercise Benefits and Barriers Scale (EBBS). The players perceived the primary benefit to be "Exercising lets me have contact with friends and persons I enjoy". They also reported personal benefit factors such as "I enjoy exercise" and "Exercise improves my mental health". They also reported that Physical Exertion items were identified as primary barriers to exercise. Interestingly, exercise cost and social support were not identified as primary barriers despite the increased cost and dependence on others required for them to access activity settings. They suggested that these participants have already overcome these barriers since they were already active in sports.

A study among undergraduate Cedarville University students showed that for those who were already exercising, the perceived benefits of exercise were high and the total EBBS scores were high too (Pippin, 2013).

Dalibalta and Davison (2016) conducted a research among mixed student population in United Arab Emirates to investigate the perceived benefits and barriers to exercise in a sample of 100 university students. The researcher found that the benefits mean was higher than the barriers mean. Students agreed most with the statement "Exercising increases my level of physical fitness" in benefits scale, whilst "Exercise tires me" was the most agreed statement for barriers scale.

A research in Nigeria was held among staff and students in tertiary institutions in Adamawa State to determine the perceived benefits and barriers to exercise by using EBBS. The collected data showed that both male staff and female students had higher perceived benefit score compared to female staff and male students respectively. According to religious affiliations, Muslim staff and Christian students perceived exercise more beneficial, whilst Christian staff and students were reported to have higher barriers than Muslim staff and students (Salihu, 2014).

Guo (2015) conducted a research among 320 urban residents from the north and south in China to analyze the perception of exercise benefits and barriers in urban residents, along with the relativity with different exercise stages. The highest mean in benefit subscales was Physical Performance while the lowest mean was Preventative Health. As for the barrier subscales, Physical Exertion had the highest mean while Family Discouragement had the lowest mean.

Mohd, Mohamad, Rosli, Wan, and Mohd (2018) administered a research among Malaysian Technical University Network students (MTUN) from different faculties and genders to examine the perceptions of benefits and barriers to physical activity in Technical University of Malaysia Malacca (UTeM). The highest perceived benefit to exercise was Physical Performance followed by Psychological Outlook, Preventative Health, Life Enhancement, and Social Interaction. The greatest perceived barrier to

exercise was Physical Exertion, which was significantly higher than Time Expenditure, Exercise Milieu, and Family Discouragement. It is concluded that perceived benefits seemed to be more important than perceived barriers.

2.7 Exercise Benefits and Barriers Scale (EBBS) among the Muslim Community

There were a handful of studies which had used the EBBS among the Muslim community. Naural, Parnabas, and Salahuddin (2015) investigated the relationship between barriers and Islamic practice in physical participation among Muslim women. They discovered that there were no significant relationship between barriers and Islamic practice. The results also showed that the greatest perceived barrier to exercise was Exercise Milieu, followed by Time Constraint, Physical Exertion, and Family Discouragement.

Samara et al. (2015) explored the different parameters related to physical activity, including self-efficacy, as well as the perceived barriers to and benefits of physical activity among young Saudi females. According to the results from EBBS, the mean score for the benefits was higher than barriers. Among benefit items, the participants had high percentage of disagreement for item "Exercising lets me have contact with friends and persons I enjoy". As for barrier items, they agreed most with item "There were too few places to exercise".

A study among Saudi female students who studied in the University of Hafr Al-Batin (UHA) in the Kingdom of Saudi Arabia (KSA) and Middle Tennessee State University (MTSU) in the United States of America (USA) reported a significant difference between students in the KSA and USA regarding the strength of their perceived benefits to physical activity. Additionally, the female Saudi students who studied in the USA

had greater perceived barriers to physical activity compared to students who studied in KSA (Alsahli, 2016).

Darawad et al. (2016) investigated exercise behaviors among Jordanians diabetic patients, and their correlation with their physical characteristics and perceived exercise benefits and barriers, exercise self-efficacy, and exercise planning. The results showed that the mean score for the barriers was slightly higher than the benefits score.

Recently, Gad, Arrab and Alsayed (2018) conducted a research among 400 female university students in King Khalid University, Khamis Mushait, Kingdom of Saudi Arabia. The perceived benefits mean was higher than perceived barriers mean. Psychological Outlook had the highest mean for benefit subscales, followed by Physical Performance, Life Enhancement, Preventative Health and Social Interaction. The highest mean for barrier subscales was Time Expenditure, followed by Exercise Milieu, Physical Exertion and Family Discouragement. "Exercising improves my self-concept" were chosen as the most perceived benefit to exercise while "There are too few places for me to exercise" was agreed most by the students as the perceived barrier to exercise.

2.8 Summary of Literature Review

A thorough review of the literature revealed that there are connections between these three categories: involvement of Muslim women in physical activity; benefits and barriers to exercise; and stages of change. To date, there are many studies that have been conducted to investigate the perceived benefits and barriers of exercise amongst women. These investigations used various tools such as focus group discussions, interview sessions, questionnaire, surveys and PhotoVoice to determine the benefits and barriers of exercise. The various populations that have been studied include young mothers, pregnant women, university students, high school students, children with disability, active and inactive adults, wheelchair soccer players, and urban residents,

including Muslim women. Although there were several studies involving Muslim women, there were only four studies that involved Muslim women from Malaysia. These Malaysian studies were comparing the participants' physical activity before, during, and after Ramadan, high performance of Muslim women athletes, examine the perceptions of benefits and barriers to physical activity and investigated the relationship between barriers and Islamic practice in physical participation. However, there are no published articles that compare exercise benefits and barriers with each stages of change, focusing on Muslim female students.

CHAPTER 3: METHODS

3.1 Participants

The sample size was 400 participants with a mean age of 19.81±2.06, and age ranged between 18 to 33 years old. Participants were Muslim women who were students of public universities in the central region of Peninsular Malaysia. They were undergraduate and postgraduate students who were chosen randomly by the researcher to participate in this research. The students were enrolled in a variety of courses and programs and came from different states in Malaysia. All participants were given a copy of the participant information sheet and signed the informed consent form. The study was carried out according to University ethical guidelines (UM.TNC2/UMREC – 228).

3.2 Measures and Instruments

3.2.1 Demographic Form

The Background Information Form was divided into two sections. In Section A, they were asked 7 demographic questions: (1) name, (2) year of birth, (3) hometown, (4) education level, and (5) faculty of studies. Section B comprised questions about physical activity information. For example participants were asked whether they were currently undertaking any form of regular physical exercise, and if yes, number of sessions, and number of hours per week. These forms can be found in Appendix A.

3.2.2 Physical Activity Stages of Change Questionnaire (PASCQ)

Exercise stages of change was measured by using an adapted questionnaire developed by Marcus and Simkin (1993) based on Stages of Change questionnaire that categorised participants into five stages of change which are (1) Pre-Contemplation, (2) Contemplation, (3) Preparation, (4) Action, and (5) Maintenance. There were four items algorithm in which the questions asked are responded to with ‘yes’ and ‘no’ answers. The responses to the questions reveal whether or not individuals meet the criteria to be

in one of the stages of change (Prochaska et al. 1994). The Physical Activity Stages of Change Questionnaire can be found in Appendix B and participants took less than two minutes to answer.

There were four questions related to physical activity and participants needed to circle '0' for No and '1' for Yes as their answers. Question 1 and 2 asked whether participants were currently physically active and intended to become physically active in the next six months. Physically active in these questions means simple physical activity such as jogging, cycling or swimming. Question 3 and 4 asked if the participants currently engaged in regular physical activity and whether they have been physically active for the past six months. For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least five days per week. Table 3.1 shows the scoring algorithms to classified participants into different stages.

Table 3.1

Scoring algorithms for Physical Activity Stages of Change Questionnaire

Scoring	Stages
Question 1 = 0, Question 2 = 0	Pre-Contemplation
Question 1 = 0, Question 2 = 1	Contemplation
Question 1 = 1, Question 3 = 0	Preparation
Question 1 = 1, Question 3 = 1, Question 4 = 0	Action
Question 1 = 1, Question 3 = 1, Question 4 = 1	Maintenance

3.2.3 Exercise Benefits and Barriers Scale (EBBS)

Exercise Benefits and Barriers Scale (EBBS) developed by Sechrist, Walker, and Pender (1987) were used to determine perceptions of individuals concerning benefits and barriers to participating in exercise. There are a total of 43 questions in this instrument. In the benefits category, there are 29 items which is made up of five subscales. These five subscales are Life Enhancement, Physical Performance,

Psychological Outlook, Social Interaction, and Preventative Health. The barriers scale has 14 items, consisting of four types of subscales, namely Exercise Milieu, Time Constraints, Physical Exertion, and Family Discouragement.

This instrument has a four response, forced choice Likert-type format with responses ranging from strongly agree (4 points) to strongly disagree (1 point). The total scores for both benefits and barriers scale can range from 43 to 172. From the calculated scores, it can be concluded that the higher the score, the more positively the individual perceives exercise. If the benefits scale is used alone, the range score is between 29 and 116. When the barriers scale is used alone, the scores range between 14 and 56. The participants took five to seven minutes to complete this questionnaire (Appendix C). The standardized Cronbach's alpha for the 43 items was .952, .953 for the 29 items Benefits Scale, and .866 for the 14 items Barriers Scale (Sechrist, Walker, & Pender, 1987). Tables 3.2 and 3.3 describe the different subscales and the corresponding question number for perceived benefits and barriers, respectively.

Table 3.2

Subscales and items in Benefits Scale

Perceived benefits to exercise	Items (questions)
Life enhancement	8 items
Physical performance	8 items (7,15,17,18,22,23,31,43)
Psychological outlook	6 items (1,2,3,8,10,20)
Social interaction	4 items (11,30,38,39)
Preventative health	3 items (5,13,27)

Table 3.3

Subscales and items in Barriers Scale

Perceived barriers to exercise	Items (questions)
Exercise milieu	6 items (9,12,14,16,28,42)
Time constraints	3 items (4,24,37)
Physical exertion	3 items (6,19,40)
Family discouragement	2 items (21,33)

3.3 Procedures

Only one researcher collected the data for this study. In Malaysia, all Malay citizens were born Muslims. Hence, Malay females were approached face-to-face as potential participants. All potential participants who volunteered to be part of the study were then screened to ensure that they were of Muslim faith by asking the question of which faith they professed. Upon confirmation of their faith, participants were given three different forms.

The first set of forms that was completed was the Demographic form. Then, the participants received the PASCQ to answer four questions related to exercise participation. Finally, EBBS questionnaire was distributed. Participants had to indicate the degree to which they agree or disagree with the statements by circling 'SA' for strongly agree, 'A' for agree, 'D' for disagree, or 'SD' for strongly disagree.

When the participants had completed all three questionnaires, participants were thanked for their time and effort.

3.4 Data Analyses

By using Statistical Package for the Social Sciences (SPSS) version 16, the researcher calculated mean, standard deviation and percentages for demographic data and also stages of change to determine the breakdown for different stages. Means and

standard deviations were calculated to investigate the perceived exercise benefits and barriers scale (EBBS). Tables were used to depict the results of the variables from all the questionnaires respectively. Additionally, a one-way ANOVA was conducted to compare the benefits subscales and the barriers subscales for ach stages of change. When significant differences were detected ($p<.05$) from the ANOVA, the Bonferronni test result for multiple comparisons was consulted.

CHAPTER 4: RESULTS

4.1 Demographic Information

This research included 400 participants. There are two sections of questions in the student demographic form (Section A and B). Section A consists of information about participants' mean age, education level, and marital status (Table 4.1). Section B comprises of information about number of sessions and hours to exercise per week (Table 4.2).

Table 4.1

Demographic Variables of Participants

Mean Age (year)		19.81±2.06	
Education Level	Pre-University	Undergraduate	Postgraduate
	25.5 %	69.2 %	5.2 %
Marital Status	Single	Married	Divorced
	98 %	1.8 %	0.2 %

Participants of this research were aged between 18 to 33 years old. Approximately 69.2% participants are currently in undergraduate level which are Diploma and Degree, and 98% are single.

Table 4.2

Demographic Variables for Section B (Number of Sessions and Hours per Week)

		Frequency	Percentage
Number sessions per week	1	39	20.5 %
	2	56	29.5 %
	3	47	24.7 %
	4	13	6.8 %
	5	22	11.6 %
	6	2	1.1 %
	7	11	5.8 %
	Total	190	100 %
Hours per week	1 – 1.5	48	25.3 %
	2 – 2.5	64	33.7 %
	3 – 3.5	25	13.2 %
	4 – 4.5	13	6.8 %
	5 and above	40	21.1 %
	Total	190	100 %

Based on the results in Table 4.2, 29.5% of the participants chose "2 sessions per week" with regards to frequency of exercise and mostly spent "2 to 2.5 hours" exercising.

4.2 Classification into Stages of Change

Table 4.3 shows the results of the participants according to the stages of change. They were distributed accordingly to five stages based on the collected data. The highest number of participants was 134 (33.50%) who were in the Maintenance stage, followed by Contemplation with 95 (23.80%), Action with 73 (18.20%), Preparation with 55 (13.80%), and Pre-Contemplation with 43 (10.80%).

Table 4.3

Percentage of Participants According to the Stages of Change

Stages	Frequency	Percentage
Pre-Contemplation	43	10.8 %
Contemplation	95	23.8 %
Preparation	55	13.8 %
Action	73	18.2 %
Maintenance	134	33.5 %
Total	400	100 %

4.3 Descriptive of Benefits and Barriers Subscales

Table 4.4 indicates the participant's means and standard deviations for each item of the benefit subscales. Among the benefit subscales, Physical Performance (M = 3.22, SD = 0.09) has the highest mean followed by Psychological Outlook (M = 3.16, SD = 0.08), Life Enhancement (M = 3.08, SD = 0.11), Social Interaction (M = 3.07, SD = 0.08), and Preventative Health (M = 3.00, SD = 0.07). Participants agreed most with the item "Exercise increases my stamina" and agreed the least with the item "Exercise helps me decrease fatigue".

Table 4.5 depicts the participant's means and standard deviations for each item of the barrier subscales. Physical Exertion (M = 2.46, SD = 0.12) has the highest mean compared to Exercise Milieu (M = 2.22, SD = 0.31), Time Constraints (M = 2.19, SD = 0.25), and Family Discouragement (M = 1.95, SD = 0.08). Among the barrier items, participants agreed most with the item "There are too few places for me to exercise" and "Exercise tires me" while disagreed most with the item "It costs too much money to exercise".

Table 4.4

Means and Standard Deviations of Each Item in the Benefits Scale

Perceived Benefit Items	*M* (*SD*)
Life Enhancement Subscale	
25: My disposition is improved with exercise	2.9 (0.50)
26: Exercising helps me sleep better at night	3.20 (0.60)
29: Exercise helps me decrease fatigue	2.87 (0.61)
32: Exercising improves my self-concept	3.13 (0.57)
34: Exercising increases my mental alertness	3.15 (0.52)
35: Exercise allows me to carry out normal activities without tired	3.05 (0.59)
36: Exercise improves the quality of my work	3.08 (0.57)
41: Exercise improves overall body functioning for me	3.15 (0.53)
Means	3.08 (0.11)
Physical Performance Subscale	
7: Exercise increases my muscle strength	3.24 (0.52)
15: Exercising increases my level of physical fitness	3.27 (0.55)
17: My muscle tone is improved with exercise	3.03 (0.52)
18: Exercising improves functioning of my cardiovascular system	3.21 (0.49)
22: Exercise increases my stamina	3.30 (0.50)
23: Exercise improves my flexibility	3.23 (0.55)
31: My physical endurance is improved by exercising	3.18 (0.48)
43: Exercise improves the way my body looks	3.28 (0.62)
Means	3.22 (0.09)

Table 4.4 continued

Perceived Benefit Items	*M* (*SD*)
Psychological Outlook Subscale	
1: I enjoy exercise	3.12 (0.58)
2: Exercise decreases feelings of stress and tension for me	3.28 (0.59)
3: Exercise improves my mental health	3.22 (0.61)
8: Exercise gives me a sense of personal accomplishment	3.11 (0.59)
10: Exercising makes me feel relaxed	3.10 (0.56)
20: I have improved feelings of well-being from exercise	3.11 (0.51)
Means	3.16 (0.08)
Social Interaction Subscale	
11: Exercising lets me have contact with friends and persons I enjoy	3.12 (0.70)
30: Exercising is a good way for me to meet new people	3.11 (0.65)
38: Exercise is good entertainment for me	3.11 (0.60)
39: Exercising increases my acceptance by others	2.95 (0.59)
Means	3.07 (0.08)
Preventative Health Subscale	
5: I will prevent heart attacks by exercising	3.08 (0.63)
13: Exercising will keep me from having high blood pressure	3.00 (0.63)
27: I will live longer if I exercise	2.94 (0.68)
Means	3.00 (0.07)
Average of all benefit subscales	3.11 (0.09)

Table 4.5

Means and Standard Deviations of Each Item in Barriers Scale

Perceived Barrier Items	*M* (*SD*)
Exercise Milieu Subscale	
9: Places for me to exercise are too far away	2.41 (0.73)
12:I am too embarrassed to exercise	2.15 (0.80)
14: It costs too much money to exercise	1.85 (0.73)
16: Exercise facilities do not have convenient schedules for me	2.49 (0.68)
28: I think people in exercise clothes look funny	1.87 (0.70)
42: There are too few places for me to exercise	2.54 (0.75)
Means	2.22 (0.31)
Time Constraints Subscale	
4: Exercising takes too much of my time	2.37 (0.62)
24: Exercise takes too much time from family relationships	2.01 (0.70)
37: Exercise takes too much time from my family responsibilities	2.02 (0.75)
Means	2.19 (0.25)
Physical Exertion Subscale	
6: Exercise tires me	2.54 (0.71)
19: I am fatigued by exercise	2.37 (0.70)
40: Exercise is hard work for me	2.48 (0.84)
Means	2.46 (0.12)
Family Discouragement Subscale	
21: My spouse (or significant other) does not encourage exercising	2.00 (0.74)
33: My family members do not encourage me to exercise	1.89 (0.81)
Means	1.95 (0.08)
Average of all barrier subscales	2.21 (0.21)

4.4 Comparison between Total Benefits and Total Barriers

Table 4.6 shows a comparison of mean and standard deviation between benefit and barrier subscales. The total mean for benefit subscales (M = 3.11, SD = 0.09) is higher than barrier subscales (M = 2.21, SD = 0.21).

Table 4.6

Means and Standard Deviations for Benefit and Barrier Subscales

Items			
Benefit Subscales	*M* (*SD*)	Barrier Subscales	*M* (*SD*)
Life Enhancement	3.08 (0.11)	Exercise Milieu	2.22 (0.31)
Physical Performance	3.22 (0.09)	Time Constraints	2.19 (0.25)
Psychological Outlook	3.16 (0.08)	Physical Exertion	2.46 (0.12)
Social Interaction	3.07 (0.08)	Family Discouragement	1.95 (0.08)
Preventative Health	3.00 (0.07)		
All Benefit Subscales	3.11 (0.09)	All Barrier Subscales	2.21 (0.21)

4.5 Exercise Benefits and Barriers for Each Stage of Change

4.5.1 Pre-Contemplation

Among the benefit subscales for pre-contemplation, Physical Performance (M = 3.14, SD = 0.34) has the highest mean, followed by Preventative Health (M = 3.05, SD = 0.50), Social Interaction (M = 3.01, SD = 0.53), Psychological Outlook (M = 2.99, SD = 0.43), and Life Enhancement (M = 2.96, SD = 0.34). As for the barrier subscales, Physical Exertion (M = 2.66, SD = 0.53) have the highest mean compared to Exercise Milieu (M = 2.26, SD = 0.45), Time Constraints (M = 2.18, SD = 0.72), and Family Discouragement (M = 2.02, SD = 0.60).

4.5.2 Contemplation

In this contemplation stage, Physical Performance (M = 3.13, SD = 0.31) has the highest mean among the benefit subscales. Psychological Outlook (M = 3.04, SD = 0.40) and Preventative Health (M = 3.04, SD = 0.37) has the same mean which makes them the second highest, followed by Social Interaction (M = 3.01, SD = 0.46) and Life Enhancement (M = 3.00, SD = 0.40). Among the barrier subscales, Physical Exertion (M = 2.61, SD = 0.49) has the highest mean, followed by Exercise Milieu (M = 2.28, SD = 0.41), Time Constraints (M = 2.18, SD = 0.43), and Family Discouragement (M = 1.93, SD = 0.61).

4.5.3 Preparation

As for the preparation stage, Physical Performance (M = 3.24, SD = 0.35) still leads with the highest mean among the benefit subscales, followed by Psychological Outlook (M = 3.19, SD = 0.35), Life Enhancement (M = 3.09, SD = 0.30), Social Interaction (M = 3.07, SD = 0.45), and Preventative Health (M = 3.06, SD = 0.38). The highest mean among the barrier subscales was Physical Exertion (M = 2.41, SD = 0.48), followed by Exercise Milieu (M = 2.28, SD = 0.44), Time Constraints (M = 2.06, SD = 0.49), and Family Discouragement (M = 1.86, SD = 0.58).

4.5.4 Action

In the action stage, Physical Performance (M = 3.21, SD = 0.39) has the highest mean compared to the other benefit subscales which is Psychological Outlook (M = 3.17, SD = 0.40), Life Enhancement (M = 3.08, SD = 0.38), Social Interaction (M = 3.05, SD = 0.50), and Preventative Health (M = 2.96, SD = 0.48). As for the barrier subscales, Physical Exertion (M = 2.40, SD = 0.61) still at the top with the highest mean, followed by Exercise Milieu (M = 2.21, SD = 0.40), Time Constraints (M = 2.10, SD = 0.46), and Family Discouragement (M = 1.94, SD = 0.58).

4.5.5 Maintenance

Among the benefit subscales for this stage, Physical Performance (M = 3.29, SD = 0.43) has the highest mean, followed by Psychological Outlook (M = 3.27, SD = 0.44), Social Interaction (M = 3.24, SD = 0.53), Life Enhancement (M = 3.16, SD = 0.41), and Preventative Health (M = 3.02, SD = 0.50). Among the barrier subscales, Physical Exertion (M = 2.35, SD = 0.55) has the highest mean compared to Time Constraints (M = 2.14, SD = 0.62), Exercise Milieu (M = 2.14, SD = 0.53), and Family Discouragement (M = 1.95, SD = 0.65).

Tables 4.7 and 4.8 show the means and standard deviations for the benefits and barriers subscales according to the different stages of change, respectively.

Table 4.7

Means and Standard Deviations for Benefit Subscales According to the Different Stages of Change

Stages of Change	Precon-Templation	Con-templation	Preparation	Action	Maintenance
<u>Benefit Subscales</u>					
Life Enhancement	2.96 (0.34)	3.00 (0.40)	3.09 (0.30)	3.08 (0.38)	3.16 (0.41)
Physical Performance	3.14 (0.34)	3.13 (0.31)	3.24 (0.35)	3.21 (0.39)	3.29 (0.43)
Psychological Outlook	2.99 (0.43)	3.04 (0.40)	3.19 (0.35)	3.17 (0.40)	3.27 (0.44)
Social Interaction	3.01 (0.53)	3.01 (0.46)	3.07 (0.45)	3.05 (0.50)	3.24 (0.53)
Preventative Health	3.05 (0.50)	3.04 (0.37)	3.06 (0.38)	2.96 (0.48)	3.02 (0.50)

Table 4.8

Means and Standard Deviations for Barrier Subscales According to the Different Stages of Change

Stages of Change	Precon-templation	Con-templation	Preparation	Action	Maintenance
Barrier Subscales					
Exercise Milieu	2.26 (0.45)	2.28 (0.41)	2.28 (0.44)	2.21 (0.40)	2.14 (0.53)
Time Constraint	2.18 (0.72)	2.18 (0.43)	2.06 (0.49)	2.10 (0.46)	2.14 (0.62)
Physical Exertion	2.66 (0.53)	2.61 (0.49)	2.41 (0.48)	2.40 (0.61)	2.35 (0.55)
Family Dis-	2.02 (0.60)	1.93 (0.61)	1.86 (0.58)	1.94 (0.58)	1.95 (0.65)

4.6 Comparison between Benefits and Stages of Change

Table 4.9

Test of Homogeneity of Variances

Levene Statistic	*df1*	*df2*	*p*
2.157	4	395	.073

Table 4.10

One-way ANOVA between Benefits and Stages of Change

	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	1750.550	4	437.638	4.418	.002
Within Groups	39131.887	395	99.068		
Total	40882.437	399			

The assumption of homogeneity of variances was tested and found tenable using Levene's test, $F(4, 395) = 2.157$, $p = .073$ (Table 4.9). There was a statistically significant difference between groups as determined by one-way ANOVA [$F(4, 395) = 4.418$, $p = .002$]. Table 4.11 shows that there was a statistically significant difference for the mean of barriers between Maintenance and Pre-Contemplation ($p = 0.012$), as well as between Maintenance and Contemplation ($p = 0.004$). However, there were no differences between the other stages of change.

Table 4.11

Multiple Comparisons between Benefits and Stages of Change (SOC)

(I) SOC	(J) SOC	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
					Lower Bound	Upper Bound
Preontemplation	Contemplation	-.912	1.829	.987	-5.92	4.10
	Preparation	-3.675	2.026	.367	-9.23	1.88
	Action	-2.950	1.913	.536	-8.19	2.29
	Maintenance	-5.638*	1.744	.012	-10.42	-.86
Contemplation	Precontemplation	.912	1.829	.987	-4.10	5.92
	Preparation	-2.764	1.686	.474	-7.39	1.86
	Action	-2.038	1.549	.682	-6.28	2.21
	Maintenance	-4.727*	1.335	.004	-8.39	-1.07
Preparation	Precontemplation	3.675	2.026	.367	-1.88	9.23
	Contemplation	2.764	1.686	.474	-1.86	7.39
	Action	.725	1.777	.994	-4.14	5.60
	Maintenance	-1.963	1.594	.733	-6.33	2.40
Action	Precontemplation	2.950	1.913	.536	-2.29	8.19
	Contemplation	2.038	1.549	.682	-2.21	6.28
	Preparation	-.725	1.777	.994	-5.60	4.14
	Maintenance	-2.689	1.448	.343	-6.66	1.28
Maintenance	Precontemplation	5.638*	1.744	.012	.86	10.42
	Contemplation	4.727*	1.335	.004	1.07	8.39
	Preparation	1.963	1.594	.733	-2.40	6.33
	Action	2.689	1.448	.343	-1.28	6.66

*. The mean difference is significant at the 0.05 level.

4.7 Comparison between Barriers and Stages of Change

Table 4.12

Test of Homogeneity of Variances

Levene Statistic	*df1*	*df2*	*p*
3.942	4	395	.004

Table 4.13

Robust Tests for Equality of Means

	Statistic[a]	*df1*	*df2*	*p*
Welch	1.604	4	158.672	.176

The results for Lavene's test was [$F(4, 395) = 3.942$, $p = .004$], which means that the assumption of homogeneity of variance has been violated (Table 4.12). Hence, the Welch test has been conducted, as well as Games-Howell to calculate the post hoc test. The results are shown in Table 4.13.

Table 4.14

One-way ANOVA between Barriers and Stages of Change

	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	219.969	4	54.992	1.616	.169
Within Groups	13438.608	395	34.022		
Total	13658.577	399			

A one-way ANOVA was conducted to calculate the significant difference between barriers and stages of change. Based on the results above, there was no significant difference between barriers and stages of change [$F(4, 395), = 1.616$, $p = .169$].

4.8 Comparison of Stages of Change for Each Benefit Subscales

Table 4.15

One-way ANOVA between Stages of Change for each Benefit Subscales

Subscales		Sum of Squares	*df*	Mean Square	*F*	*P*
Life Enhancement	Between Groups	132.610	4	33.153	3.570	.007
	Within Groups	3667.967	395	9.286		
	Total	3800.578	399			
Physical Performance	Between Groups	151.890	4	37.973	3.189	.013
	Within Groups	4703.300	395	11.907		
	Total	4855.190	399			
Psychological Outlook	Between Groups	159.851	4	39.963	6.557	.000
	Within Groups	2407.326	395	6.094		
	Total	2567.178	399			
Social Interaction	Between Groups	26.702	4	6.676	1.655	.160
	Within Groups	1592.895	395	4.033		
	Total	1619.598	399			
Preventative Health	Between Groups	6.636	4	1.659	.868	.483
	Within Groups	755.204	395	1.912		
	Total	761.840	399			

Table 4.15 showed the results of one-way ANOVA between stages of change for each benefit subscales. There were three subscales that were significantly different which are Life Enhancement (p = .007), Physical Performance (p = .013) and Psychological Outlook (p = .000).

Table 4.16

Multiple Comparisons between Stages of Change for Life Enhancement

(I) SOC	(J) SOC	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
					Lower Bound	Upper Bound
Precontemplation	Contemplation	-.372	.560	1.000	-1.95	1.21
	Preparation	-1.045	.620	.929	-2.80	.71
	Action	-1.030	.586	.796	-2.68	.62
	Maintenance	-1.626*	.534	.025	-3.13	-.12
Contemplation	Precontemplation	.372	.560	1.000	-1.21	1.95
	Preparation	-.673	.516	1.000	-2.13	.78
	Action	-.658	.474	1.000	-2.00	.68
	Maintenance	-1.254*	.409	.023	-2.41	-.10
Preparation	Precontemplation	1.045	.620	.929	-.71	2.80
	Contemplation	.673	.516	1.000	-.78	2.13
	Action	.015	.544	1.000	-1.52	1.55
	Maintenance	-.581	.488	1.000	-1.96	.80
Action	Precontemplation	1.030	.586	.796	-.62	2.68
	Contemplation	.658	.474	1.000	-.68	2.00
	Preparation	-.015	.544	1.000	-1.55	1.52
	Maintenance	-.596	.443	1.000	-1.85	.66
Maintenance	Precontemplation	1.626*	.534	.025	.12	3.13
	Contemplation	1.254*	.409	.023	.10	2.41
	Preparation	.581	.488	1.000	-.80	1.96
	Action	.596	.443	1.000	-.66	1.85

***. The mean difference is significant at the 0.05 level.**

Table 4.17

Multiple Comparisons between Stages of Change for Physical Performance

(I) SOC	(J) SOC	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
					Lower Bound	Upper Bound
Precontemplation	Contemplation	.074	.634	1.000	-1.72	1.86
	Preparation	-.793	.702	1.000	-2.78	1.19
	Action	-.582	.663	1.000	-2.45	1.29
	Maintenance	-1.436	.605	.181	-3.14	.27
Contemplation	Precontemplation	-.074	.634	1.000	-1.86	1.72
	Preparation	-.867	.585	1.000	-2.52	.78
	Action	-.657	.537	1.000	-2.17	.86
	Maintenance	-1.510*	.463	.012	-2.82	-.20
Preparation	Precontemplation	.793	.702	1.000	-1.19	2.78
	Contemplation	.867	.585	1.000	-.78	2.52
	Action	.210	.616	1.000	-1.53	1.95
	Maintenance	-.643	.553	1.000	-2.20	.92
Action	Precontemplation	.582	.663	1.000	-1.29	2.45
	Contemplation	.657	.537	1.000	-.86	2.17
	Preparation	-.210	.616	1.000	-1.95	1.53
	Maintenance	-.854	.502	.898	-2.27	.56
Maintenance	Precontemplation	1.436	.605	.181	-.27	3.14
	Contemplation	1.510*	.463	.012	.20	2.82
	Preparation	.643	.553	1.000	-.92	2.20
	Action	.854	.502	.898	-.56	2.27

*. The mean difference is significant at the 0.05 level.

Table 4.18

Multiple Comparisons between Stages of Change for Psychological Outlook

(I) SOC	(J) SOC	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
					Lower Bound	Upper Bound
Precontemplation	Contemplation	-.291	.454	1.000	-1.57	.99
	Preparation	-1.197	.503	.177	-2.62	.22
	Action	-1.083	.475	.230	-2.42	.26
	Maintenance	-1.704*	.433	.001	-2.93	-.48
Contemplation	Precontemplation	.291	.454	1.000	-.99	1.57
	Preparation	-.906	.418	.309	-2.09	.27
	Action	-.793	.384	.398	-1.88	.29
	Maintenance	-1.413*	.331	.000	-2.35	-.48
Preparation	Precontemplation	1.197	.503	.177	-.22	2.62
	Contemplation	.906	.418	.309	-.27	2.09
	Action	.114	.441	1.000	-1.13	1.36
	Maintenance	-.507	.395	1.000	-1.62	.61
Action	Precontemplation	1.083	.475	.230	-.26	2.42
	Contemplation	.793	.384	.398	-.29	1.88
	Preparation	-.114	.441	1.000	-1.36	1.13
	Maintenance	-.621	.359	.847	-1.63	.39
Maintenance	Precontemplation	1.704*	.433	.001	.48	2.93
	Contemplation	1.413*	.331	.000	.48	2.35
	Preparation	.507	.395	1.000	-.61	1.62
	Action	.621	.359	.847	-.39	1.63

*. The mean difference is significant at the 0.05 level.

Table 4.16, 4.17 and 4.18 showed the results of post hoc test for the significant different subscales which are Life Enhancement, Physical Performance and Psychological Outlook by using Bonferroni test.

4.9 Comparison of Stages of Change for Each Barrier Subscales

Table 4.19

One-way ANOVA between Stages of Change for each Barrier Subscales

Subscales		Sum of Squares	*df*	Mean Square	*F*	*P*
Exercise Milieu	Between Groups	50.102	4	12.526	1.640	.163
	Within Groups	3016.688	395	7.637		
	Total	3066.790	399			
Time Constraints	Between Groups	5.641	4	1.410	.527	.716
	Within Groups	1056.359	395	2.674		
	Total	1062.000	399			
Physical Exertion	Between Groups	50.858	4	12.714	4.884	.001
	Within Groups	1028.302	395	2.603		
	Total	1079.160	399			
Family Discouragement	Between Groups	2.574	4	.643	.384	.820
	Within Groups	661.666	395	1.675		
	Total	664.240	399			

A one-way ANOVA was conducted to calculate the significant difference between stages of change for each barrier subscales. Based on the results above, there was only one significant different for subscale Physical Exertion (p = .001).

Table 4.20

Multiple Comparisons between Stages of Change for Physical Exertion

(I) SOC	(J) SOC	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
					Lower Bound	Upper Bound
Precontemplation	Contemplation	.156	.297	1.000	-.68	.99
	Preparation	.740	.328	.247	-.19	1.67
	Action	.771	.310	.133	-.10	1.65
	Maintenance	.917*	.283	.013	.12	1.72
Contemplation	Precontemplation	-.156	.297	1.000	-.99	.68
	Preparation	.585	.273	.331	-.19	1.36
	Action	.616	.251	.147	-.09	1.32
	Maintenance	.761*	.216	.005	.15	1.37
Preparation	Precontemplation	-.740	.328	.247	-1.67	.19
	Contemplation	-.585	.273	.331	-1.36	.19
	Action	.031	.288	1.000	-.78	.84
	Maintenance	.177	.258	1.000	-.55	.91
Action	Precontemplation	-.771	.310	.133	-1.65	.10
	Contemplation	-.616	.251	.147	-1.32	.09
	Preparation	-.031	.288	1.000	-.84	.78
	Maintenance	.146	.235	1.000	-.52	.81
Maintenance	Precontemplation	-.917*	.283	.013	-1.72	-.12
	Contemplation	-.761*	.216	.005	-1.37	-.15
	Preparation	-.177	.258	1.000	-.91	.55
	Action	-.146	.235	1.000	-.81	.52

*. The mean difference is significant at the 0.05 level.

Bonferroni test was conducted to calculate the post hoc test for the subscale Physical Exertion with significant different between stages of change (Table 4.20).

CHAPTER 5: DISCUSSION

5.1 Introduction

The objective of this study was; (1) to determine the exercise stages of change, (2) to investigate the perceived facilitators and barriers towards exercise of Malaysian Muslim females, (3) to compare the stages of change for each benefit subscales and (4) to compare the stages of change for each barrier subscales. In this chapter, firstly, demographic information of the participants, and then the findings of each research objectives are discussed.

5.2 Demographic Information of the Participants

Total number of participants of this study was 400 with a mean age of 19.81±2.06. Since most of the students are young adults, 98% of them are still single. They were all students from public universities in the central region of Peninsular Malaysia and 69.2% of them are in undergraduate level.

Cengiz (2007) did a research among the METU undergraduate students to find out their physical activity preferences in terms of gender. For female students, the physical activity preferences were walking, swimming, dancing, cycling, and tennis. According to the World Health Organization (2011), adults aged between 18 to 64 years should do at least 150 minutes of moderate-intensity aerobic physical activity or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate and vigorous-intensity activity. In this research, most participants committed between 120 to 150 minutes in each session, 2 times per week. Comparing to a research by Pippin (2013), across both groups (intervention and control) at baseline, over 90% spent 15 minutes or more to exercise for each sessions, and 60-70% of the participants already exercise three or more times per week.

5.3 Physical Activity Stages of Change

The first objective of this study is to determine the exercise stages of change of Malaysian Muslim females. The Physical Activity Stages of Change Questionnaires (PASCQ) was used to achieve this objective. Based on the collected data, the highest number of participants with a total of 134 was reported in Maintenance, followed by Contemplation (94), Action (73), Preparation (55), and Pre-Contemplation (43). This finding is in agreement with the previous study which used the same population (women only) in a university by Mehrtash & Ince (2018). The possible reason that these two studies have the same results is because women may have realized the importance and benefits of exercise. Even though DeLong (2006) used both male and female college students as participants in her study, the results consistently showed that Maintenance stage has the highest frequency compared to other stages of change.

However, the results of PASCQ changes according to populations. A research among children showed that most of the boys were in Action stage, while most of the girls were in Preparation stage (Cengiz, Hunuk, & Ince, 2014). As for research among older adults, more men than women in both Action and Maintenance stages, while there were less men than women in Pre-contemplation and Contemplation stages (Valerie, 2017). Dumith, Gigante, and Domingues (2007) stated that adults in later life, people who were married, smokers, and those with lower socioeconomic status were most likely to be in the earlier stages of change.

In this study, Maintenance stage has the highest number of participants compared to other stages of change. Individual in this stage are physically active at the recommended levels and have been for six or more (Marcus & Lewis, 2003). In the case of this study, participants must have been working hard to become active or at least engaged in physical activity and push themselves out of their comfort zone to be healthy and keep

fit. This result shows that most of the participants of this study have become successful self-changers.

The second highest stage is Contemplation with 95 participants (23.8%). Contemplation is also a second stage in stages of change. In this stage, individuals are not currently physically active but are thinking about becoming active. The goal that need to be achieved is to increase the individuals' likelihood that they will take steps to become physically active. Individuals should consider pros and cons of exercise and be provided with specific information on how to make physical activity a part of their daily lives (Marcus & Lewis, 2003).

The third highest number of participants is 73 (18.2%) was reported in Action, which is the fourth stage in stages of change. Participants in this stage are physically active at the recommended levels but have been regularly active for less than six months. Their goal is the same as Maintenance stage which is to maintain their physical activity participation. The physical activities should be varied to decrease the likelihood boredom. For example, inviting friends to join or went to different places to exercise (Marcus & Lewis, 2003).

The next stage that has the highest number of participants is Preparation with 55 out of 400 participants (13.8%). Preparation is the third stage in stages of change. Marcus and Lewis (2003) stated that individuals in this stage are engaging in physical activity but not as the recommended levels. Their goal is increase their physical activity participation to the recommended levels. Similar to the Contemplation stage, participants should determine when and what type of activity best suited for their health and lifestyle.

The lowest number of participants is 43 (10.8%) was reported in Pre-Contemplation, which is the first stage in stages of change. Participants in this stage are currently not active and are not thinking about becoming active. This set of participants would be those individuals that made u the prevalence values for physical inactivity. The goal for this stage is to help them begin thinking about becoming physically active and the role physical activity could have in their lives. They should be educated about the benefits of physical activity such as improved cholesterol level, blood pressure, mood, stress, and energy levels (Marcus & Lewis, 2003).

5.4 Perceived Benefits and Barriers to Exercise

The second objective of this study is to investigate the perceived facilitators and barriers towards physical activity of Malaysian Muslim females. A few studies have been done among Muslim community (Naural Laila, Parnabas, & Salahuddin, 2015; Alsahli, 2016; Gad, Arrab, & Alsayed, 2018) to find out the benefits and barriers towards physical activity by using Exercise Benefits and Barriers Questionnaires (EBBS).

There was one exception whereby a study by Alsahli (2016) concluded that Muslim students who studied in a foreign country (USA) had greater perceived barriers to physical activity compared to Muslim students who studied in a Muslim country (Kingdom of Saudi Arabia). The opposing results are perhaps because that study based on Muslim students located in two different countries.

There was also one research which compared perceived benefits and barriers between Muslim and non-Muslims. Salihu (2014) conducted a research to investigate the perceived benefits and barriers of exercise from religious perspective among staffs and students in Adamawa state, Nigeria. Although both Muslims and Christian's staffs and students perceived benefits higher than barriers, Muslim staff and Christian student

had higher benefits score than Christian staff and Muslim students. As for perceived barrier, both Muslims and Christian's staffs and students reported moderate barrier to exercise participation. Yet, Christian staff and student showed higher barriers compared to Muslim staff and student.

5.5 Perceived Benefit Subscales

Among the benefit subscales, Physical Performance has the highest mean followed by Psychological Outlook, Life Enhancement, Social Interaction, and Preventative Health. Based on items in Physical Performance subscale, it shows that participants strongly believed that exercising will improve their physical body. Participants also agreed most with the item "Exercise increases my stamina" which is one of the items in Physical Performance.

Preventative Health subscale has the lowest mean compared to other subscales. This shows that participants do not believe they can prevent sickness or any health issues by doing exercise. Hence, some means of motivation must be instilled to them especially, as Abu Hurairah had reported, "…The strong believer is more beloved to Allah." (Shahih Muslim 2664).

However, the item that these participants disagreed most was not in the Preventative Health. It was in Life Enhancement subscale which is "Exercising helps me decrease fatigue". Participants who disagree with this item may not engaged in exercise as much as others but once they are active, they will realise that exercising does help them feel less fatigue than before.

5.6 Perceived Barrier Subscales

Among the barrier subscales, Physical Exertion has the highest mean compared to Exercise Milieu, Time Constraints, and Family Discouragement. From this result, it

shows that participants believed that exercising makes them feels more tired than they already is, especially when they had back to back classes. That is why there are two items that participants agreed most as barriers to exercise which is “Exercise tires me” from Physical Exertion subscale and “There are too few places for me to exercise” from Exercise Milieu subscale. Some universities may not provide many places to exercise for their students. Even if there is, participants might feel uncomfortable exercising at the open area or in front of other gender at the same place.

Barrier subscale that has the lowest mean is Family Discouragement. This proves that family members do support and encourage participants to exercise. Some family members might be strict but in this study, mostly are supportive. Participants disagreed most with the item “It costs too much money to exercise” from Exercise Milieu subscale. Exercise can be done anytime, anywhere. Participants, who are also a student, do not have to spend money to exercise. They could have just walk or jog around their campus without costing a dime. All they need to spend is just a little time.

5.7 Exercise Benefits and Barriers for Each Stage of Change

Physical Performance has the highest mean in every stages compared to the other benefit subscales. Therefore, participants may be persuaded to exercise by Physical Performance factor such as body shaping, muscle strength, and flexibility. People from the surroundings can encourage them to try different kind of exercise or physical activity that focus on how to be physically good.

Physical Exertion has the highest mean in every stages compared to the other barrier subscales. This shows that participants’ biggest barrier was they knew that they will become tired by exercising. Therefore, family and friends should encourage them to do fun activity or join any healthy and interesting program instead of a doing something

boring. This will make them feel less tired because at the end of the day, they had fun with their loved ones.

5.8 Comparison of Stages of Change for Each Benefit Subscales

Only three (Life Enhancement, Physical Performance and Psychological Outlook) out of five of the benefits subscales were found to be significantly different. The follow-up procedure revealed that the Pre-Contemplation and Contemplation groups were significantly different compared to the Maintenance group for the benefit subscale of Life Enhancement and Psychological Outlook. As for Physical Performance, only the Contemplation group was significantly different from Maintenance.

Based on these findings, it appeared that Life Enhancement, Physical Performance and Psychological Outlook should be given the most attention when it comes to developing interventions to encourage exercise participation amongst female Muslims. These were the benefit subscales that were high in Maintenance group and the possible reasons for their participation in exercise activities. These benefits are directly related to exercise participation, and because the Pre-Contemplation and Contemplation groups do not engage in any kind of exercise, they have never experienced the benefits, to be even aware of them. As such intervention programs should focus on giving knowledge of these two groups. Some examples of giving knowledge include creating and distributing simple but attractive brochures or posters, organizing talks and workshops, getting celebrities to give testimonials about the benefits of exercise and so on.

In addition, intervention programs must have the pull factor. We need to do all that we can to motivate the Pre-Contemplation and Contemplation groups to simply start moving. It is only this way that they will be able to see the benefits of exercise. One quick but highly effective ways to engage people is to offer prizes or free gifts to get people to sign up and register for exercise programs. Initially they may do it for other

reasons but there is a possibility they may enjoy the experience and also get to see the benefits of exercise.

5.9 Comparison of Stages of Change for Each Barrier Subscales

Only one (Physical Exertion) out of four of the barriers subscales was found to be significantly different. The follow-up procedure revealed that the Pre-Contemplation and Contemplation groups were significantly different compared to the Maintenance group for the barrier subscale of Physical Exertion

This results shows that Physical Exertion should be removed when it comes to creating interventions to encourage exercise participation amongst female Muslims. This barrier was high in Maintenance group and the possible reasons for their non-participation in physical activities. This barrier is very related to exercise non-participation, and maybe due to their experienced from engaging in exercise before, participants in Pre-Contemplation and Contemplation groups do not engage in any kind of exercise anymore. Therefore, intervention programs should focus on removing this barrier to these two groups. For example, designing programs that will make them feel less tired but healthy and fun such as color run, play any sports game once a week and much more.

Furthermore, we need to motivate participants in Pre-Contemplation and Contemplation groups to start engaging in any physical activity. A good intervention program will help them to overcome their barriers to exercise. Another example to encourage them to exercise is to invent double or team events in any sports. When they see their friends or family show their supports and encourage each other to play or win a game, they will automatically feel excited and passionate to do their best for the team. No matter what the results might be, they will still get the benefits of engaging to the sport and most importantly, they enjoy their time with friends and family.

CHAPTER 6: CONCLUSION

6.1 Conclusion

As a conclusion, it is very clear from the study that female Muslims were not less required to do physical activities as others do. The result also shows that most of these participants were already in Maintenance, which is the final stage in stages of change, and perceived benefits to exercise greater than perceived barriers. Furthermore, the most beneficial and barrier factor influencing individuals' exercise participation were the same at different stages, so exercise intervention should be suitable and changeable to fit the individual needs.

Regarding the barriers to exercise, the universities managements can overcome this by arranging a better time table for classes so that students would not have too much classes in a day and more time on the field. The universities sports officials should also provide enough information about existing facilities and program schedules especially during orientation to new students. Several ways could be used to encourage Muslim female students to exercise such as scheduling specific days for women only to use the facilities or provide an indoor facility for women only to exercise.

As discussed in Chapter 5, for comparison of stages of change for each of benefit subscales, the most important benefit subscales that trainers, coaches and physical instructors need to focus to encourage female Muslims in Pre-Contemplation and Contemplation groups are Life Enhancement, Physical performance and Psychological Outlook.

For benefit subscales, the most important subscale that trainers, coaches and physical instructors need to remove in future interventions for female Muslims in Pre-Contemplation and Contemplation groups is Physical Exertion.

The baseline data are used to study the stages of change, exercise benefits and barriers, and comparison between benefit and barrier subscales for each stage of change. Therefore, further studies are needed on the research among Muslim women in Malaysia on varies population for intervention methods to exercise.

REFERENCES

Abdul Halim Muhammad Abu Syuqqah (2002). *Tahriru al-Mar'ah fi 'Usri alRisalah*. Kuwait: Dar al-Kala.

Abdul Qadir Ahmad 'Ata (2011). *Haza Halal wa haza Haram*. Kaherah : Dar al-Fadilah.

Abula, K., Beckmann, J., Chen, K., & Gropel, P. (2016). Validation of the Chinese version of the physical activity stages of change questionnaire. *Cogent Psychology, 3*,1-7.

Ahmad Shalaby (2001). *Kehidupan Sosial Dalam Pemikiran Islam*. Singapura: Pustaka Nasional.

Alsahli, S. M. (2016). *Benefits and barriers to physical activity among Saudi female university in the Kingdom of Saudi Arabia and the United States* (Master's Thesis). Retrieved from http://jewlscholar.mtsu.edu/handle/mtsu/5147

Al-Abani, M. N. (1992). *Kriteria Busana al-Muslimah*. (Penterjemah oleh Zulfan, S. T.). Jakarta: Pustaka Imam al-Syafie.

Al-Abani, M. N. (1994*). Jilbab al-mar'ah al-Muslimah fi Kitab wa al-Sunnah*. Amman: al-Maktabah al-Islamiyyah.

Al-Barazi, M. F. (1995). *Hijab al-Muslimah*. Riyadh: Maktabah Usul alSalaf.

Al-Hashimi, M. A. (2005). *The Ideal Muslimah, Syakhsiyyah al-Mar'ah alMuslimah.* Saudi Arabia: International Islamic Publishing House (IIPH).

Al-Manasiyah, A. M. S. (1995). *Al-Thaqafah al-Islamiyyah alAsilah*. Muktah : Muassasah Rama li al-Teknologia wa al-Kamputer.

Al-Medani, M. T. A. (2009). *Feqah untuk Wanita*. Johor Bahru: Pustaka Azhar.

Al-Qardawi, Y. (1998). *Fatawa Mu'asarah*. Kuwait: Dar al-Qalam li Al-Nasri wa al-Tauzi'i.

Anjali & Sabharwal, M. (2018). Perceived barriers of young adults for participation in physical activity. *Current Research in Nutrition and Food Science Journal, 6*(2), 437-449.

Barfield, J. P. & Malone, L. A. (2013). Perceived exercise benefits and barriers among power wheelchair soccer players. *Journal of Rehabilitation Research and Development, 50*(2), 231-238.

Benn, T., Dagkas, S., & Jawad, H. (2011). Embodied faith: Islam, religious freedom and educational practices in physical education. *Sport, Education and Society, 16*, 17-34.

Boulanouar, A. W. (2006). *The notion of modesty in Muslim women's clothing: an Islamic point of view. New Zealand Journal of Asian Studies, 8*(2), 134-156.

Caspersen, C. J., Pereira, M. A., & Curran, K. M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine and Science in Sport & Science, 32*, 1601-1609.

Cengiz, C. (2007) *Physical activity and exercise stages of change levels of Middle East Technical University students* (Master's thesis). Retrieved from https://etd.lib.metu.edu.tr/upload/12608524/index.pdf

Cengiz, C., Hunuk, D., & Ince, M. L. (2014). Psychometric properties and initial findings of the physical activity stages of change questionnaire among Turkish middle school students. *Nidge University Journal of Physical Education and sport Sciences, 8*(1), 131-139.

Dagkas, S., Benn, T., & Jawad, H. (2011). Multiple voices: improving participation of Muslim girl in physical education and school sport. *Sport, Education and Society, 16*, 223-239.

Dalibalta, S. & Davison, G. (2016). Perceived Exercise Benefits and Barriers of a Mixed Student Population in the United Arab Emirates. *International Journal of Scientific Research and Innovative Technology, 3*(2), 115-139.

Darawad, M. W., Khalil, A. A., Hamdan-Mansour, A. M., & Nofal, B. M. (2014). Perceived exercise self-efficacy, benefits and barriers, and commitment to a plan for exercise among Jordanians with chronic illnesses. Rehabilitation Nursing: The Official Journal of The Association of Rehabilitation Nurses. doi:10.1002/rnj.199

Darawad, M. W., Mosleh, S., Khalil, A. A., Maharmeh, M., Hamdan-Mansour, A. M., & Samarkandi, O. A. (2016). Investigating physical exercise among Jordanians with diabetes mellitus. Health, 8(2), 181-189. doi:10.4236/health.2016.82021

DeLong, L. L. (2006). College students' motivation for physical activity (Doctoral dissertation, Louisiana State University). Retrieved from web.ftvs.cuni.cz/hendl/metodologie/dis2006motivacesport.pdf

Department of Statistics Malaysia (2012). *Population and housing census, Malaysia 2010 (2010 Census)*. Retrieved from http://www.statistics.gov.my/portal/portal/index.php?

Donelly, T. T., Al-Thani, A. A. M., Benjamin, K., AL-Khater, A. H., Fung, T. S., Ahmedna, M., & Welch, A. (2018). Arab female and male perceptions of factors facilitating and inhibiting their physical activity: Findings from a qualitative study in the Middle East. *PLOS ONE, 13*(7), 1-28.

Douglass, S.L. & Shaikh, M.A. (2004). Defining Islamic Education: Differentiation and Applications. *Current Issues in Comparative Education, Vol. 7*(1), 5-18.

Dumith, S. C., Domingues, M. R., & Gigante, D. P. (2008). Estagios de mudanca de comportamento para a pratica de atividade fisica: uma revisao da literature. *Rev Bras Cineantropom Desempenho Hum, 10*(3), 301-307.

Farooq, S. & Parker, A. (2009). Sport, physical Education and Islam: Muslim independent schooling and the comstruction of masculinities. *Sociology of Sport Journal, 26*, 277-295.

Fitri, M., Sultoni, K., Salamuddin, N., & Mohd Taib Harun (2017). Sports Activities High Performance Athletes Muslim Women in Indonesia and Malaysia. *IOP Conference Series: Materials Science and Engineering, 180*. doi:10.1088/1757-899X/180/1/012213

Gad, N.A., Arrab, M.M., & Alsayed, S.M. (2018). Perceived Benefits and Barriers of Exercise among Female University Students. *International Journal of Advanced Research, 6*(1), 570-582.

Gunathevan, E. & Saryono (2015). Sports culture one student one sport policy in Malaysia. *Jurnal Pendidikan Jasmani Indonesia, 11*(1).

Guo, X. (2015). *Research on perceived profiles and stages of exercise behavior change in urban residents*. Paper presented at International Conference on Education Technology, Management and Humanities Science. doi: 10.2991/etmhs-15.2015.86

Hoare, E., Stavreski, B., Jennings, G.L., & Kingwell, B.A. (2017). Exploring Motivation and Barriers to Physical Activity among Active and Inactive Australian Adults. *Sports, 5*(3), 47. doi:10.3390/sports5030047

Horwath, C. C. (1999). Applying the transtheoretical model to eating behaviour change: challenges and oppurtunities. *Nutrition Research Reviews, 12*, 281-317.

Institute of Public Health (2015). National Health and Morbidity Survey (NHMS II) 2015: Non-communicable diseases, risk factors and other health problems. Ministry of Health Malaysia, Kuala Lumpur.

Institute of Public Health (2017). National Health and Morbidity Survey (NHMS) 2017: Adolescent Survey 2017. Ministry of Health Malaysia, Kuala Lumpur.

Kahan, D. (2015). Adult physical inactivity in the Muslim world: analysis of 38 countries. *Preventative Medicine Reports, 2*, 71-75.

Lovell, G. P., Ansari, W. E., & Parker, J. K. (2010). Perceived exercise benefits and barriers of non-exercise female university students in the United Kingdom. *International Journal of Environmental Research and Public Health, 7*, 784-798.

Maesam, A.R., Mohd, S. O. F., & Rozita, A. L. (2010). The perspective of Arabic Muslim women toward sport participation. *Journal of Aisa Pacific Studies, 1*(2), 364-377.

Marcus, B. H. & Forsyth, L. (2003). *Motivating people to be physically active*. Champaign, IL: Human Kinetics (US).

Marcus, B. H. & Lewis, B. A. (2003). Physical activity and the stages of motivational readiness for change model. *President's Council on Physical Fitness and Sports Research Digest, 4*, 1-8.

Marcus, B. H., Rossi, J. S., Selby, V. C., Niaura, R. S., & Abrams, D. B. (1992). The stages and processes of exercise adoption and maintenance in a worksite sample. *Health Psychology, 11*, 386-395.

Marcus, B. H. & Simkin, L. R. (1993). The stages of exercise behaviour. *Journal of Sport Medicine & Physical Fitness, 33*, 83-88.

Mehrtash, S. & Ince, M. L. (2018). Perceived anatomy support and basic psychological needs of participants in a women's health-related exercise programme according to exercise stage of change and exercise type. *Montenegrin Journal of Sports Science and Medicine, 7*(1), 45-51.

Ministry of Education. (2013). *Malaysia Education Blueprint 2013-2025: Preschool to Post-Secondary Education – Chapter 4 Student Learning*. Putrajaya: Ministry of Education Malaysia

Mohd, F. A., Mohamad, N. N., Rosli, S., Wan, A. M., & Mohd, R. A. R. (2018). Benefits and Barriers of Physical Activites among Technical University Students. *Journal of Advanced Research in Social and Behavioural Sciences, 13*(1), 1-8.

Mortada, H. (2003). *Traditional Islamic Principles of Built Environment*. Routledge Curzon: New York.

Naural, L. A. J., Parnabas, V., & Salahudin Suyurno (2015). Relationship of barriers and Islamic practice in physical activity participation among Muslim women. *Research Journal of Social Sciences, 8*(5), 21-23.

Omer, S. (2011, October 17). Housing Lessons from the Life of Prophet Muhammad (pbuh): The Subject of Privacy [Blog post]. Retrieved from http://www.medinanet.org/home/10-housing/178-housing-lessons-from-the-life-of-the-prophet-muhammad-pbuh-the-subject-of-privacy-

Patten, S., Vollman, A., & Thurston, W. (2000). The utility of the transtheoretical model of behaviour change for HIV risk education in injection drug users. *Journal of the Association of Nurses in AIDS Care, 11*(1), 57-66.

Pippin, A. J. (2013). *Perceived benefits and barriers of exercise in college age students before and after participating in regular exercise comparted to a cohort group* (Master's thesis). Retrieved from https://digitalcommons.cederville.edu/cgi/viewcontent.cgi?article=1004&context=nursing_theses

Pratt, M., Macera, C. A., & Blanton, C. (1999). Levels of physical activity and inactivity in children and adults in the United States: Current evidence and research issues. *Medicine and Science in Sport and Exercise, 31*, 526-533.

Prochaska, J. O. & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology, 51*(3), 390-395.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: application to addictive behaviors. *American Psychologist, 47*(9), 1002-1114.

Prochaska, J. O. & Velicer, W. F. (1997). The transtheoretical model of health behaviour change. *American Journal of Health Promotion, 12*(1), 38-48.

Prochaska, J. O., Redding, C. A., & Evers, K. E. (1997). The transtheoretical model and stages of change. In K. Glanz, F. Marcus-Lewis, & B. K. Rimer (Eds.), *Health behaviour and health education-Theory, research, and practice* (2nd ed., pp. 60-84). San Fransisco: Jossey-Bass.

Qureshi, Y. I. & Ghouri, S. A. (2011). Muslim female athletes in sports and dress code: major obstacle in international competitions. *Journal of Experimental Sciences, 2*(11), 9-13.

Rodenbaugh, T.A. (2016). The Barriers and Facilitators to Physical Activity on Campus: An Analysis of UA PhotoVoice Research. *Honors Research Projects*, 320.

Salihu, M. U. (2014). *Perceived benefits and barriers among staff and students of Tertiary Institutions in Adamawa State* (Master's thesis). Retrieved from www.unn.edu.ng/publications/files/EXTERNAL%20COPY.pdf

Samara, A., Nistrup, A., Aro, A., & Al-Rammah, T. (2015). Lack of facilities rather than sociocultural factors as the primary barriers to physical activity among female Saudi university students. *International Journal of Women's Health, 7*, 279-286. doi:10.2147/IJWH.S80680

Sanchooli, Z. (2016). Physical education and sport in the from perspective Islam. *International Academic Journal of Social Sciences, 3*(1), 22-32.

Sayyid Sabiq (1995). *Fiqh al-Sunnah*. Kaherah: Syarikat Manar al-Daulah al-Fathu li 'Ilami al-'Arabi.

Scholl, R. (2002, September 15). The transtheoretical model of behaviour change. Retrieved from http://www.cba.uri.edu/Scholl/Notes/TTM.html

Sechrist, K. R., Walker, S. N., & Pender, N. J. (1987). Development and psychometric evaluation of the exercise benefits/barriers scale. *Research in Nursing and Health, 10*(6), 357-365.

Shields, N. & Synnot, A. (2016). Perceived barriers and facilitators to participation in physical activity for children with disability: a qualitative study. *BioMed Central Pediatrics, 16*(9), 1-10. doi:10.1186/s12887-016-0544-7

Shin, Y. H., Khur, H. K., Pender, N. J., Jang, H. J., & Kim, M. S. (2006). Exercise self-efficacy, exercise benefits and barriers, and commitment to a plan for exercise among Korean women with osteoporosis and osteoarthritis. *International Journal of Nursing Studies, 43*(1), 3-10. doi:10.1016/j-ijnurstu.2004.10.008

Soh, K. G., Aminuddin, Y., Nur Surayyah, M. A., Soh, K. L., & Ong, S. L. (2013). Comparing physical activity of Malaysian Malay men and women before, during, and after Ramadan. *Pertanika Journal of Social Sciences & Humanities, 21*(2), 569-578.

Sonstroem, R. J. (1988). Psychological models. In R. Dishman (Ed.), *Exercise adherence* (pp. 125-154). Champaign, IL: Human Kinetics.

Suminski, R. R. & Petosa, R. (2002). Stages of change among ethnically diverse college students. *Journal of American College Health, 51*, 26-31.

Summers, J., Hassan, R., Ong, D., & Hossain, M. (2018). Australian Muslim women and fitness choices – myths debunked. *Journal of Services Marketing.* doi:10.1108/JSM-07-2017-0261

Tam, C. L., Bonn, G., Yeoh, S. H., Yap, C. C., & Wong, C. P. (2016). Physical activity and its correlates among adults in Malaysia: a cross sectional descriptive study. *PLoS ONE, 11*(6), 1-14.

Valerie, A. E. A. (2017). *Fear of falling, physical activity volume and stage of motivational readiness to change to physical activity behaviour in late midlife adults* (Master's thesis). Retrieved from www.islandscholar.ca/islandora/object/ir%3A20997/datastream/PDF/view

Velicer, W. F., Prochaska, J. O., Fava, J. L., Norman, G. J., & Redding, C. A. (1998). Smoking cessation and stress management: applications of the transtheoretical model of behaviour change. *Homeostasis, 38*, 216-233.

Wabuyabo, I. K., Wamukoya, E. K., & Bulinda, H. M. (2015). Influence of Islam on gender participation in sport among Muslim students in Kenyan universities. *Journal of Physical Education and Sport Management, 6*(9), 82-89.

Wilson, N. C. & Khoo, S. (2013). Benefits and barriers to sport participation for athletes with disabilities: The case of Malaysia. *Disability & Society*. doi:10.1080/09687599.2012.758034

World Health Organization (2011). *Global recommendations on physical activity for health.* Retrieved from https://www.who.int/dietphysicalactivity/physical-activity-recommendations-18-64years.pdf?ua=1

World Health Organization (2018). *Global strategy on diet, physical sctivity and health*. Retrieved from https://www.who.int/dietphysicalactivity/pa/en/

Yusoff, N. A. M., Ganeson, S., Ismail, K. F., Juahir, H., Shahril, M. R., Lin, L. P., Ahmad, A., Wafa, S. W., Harith, S., & Rajikan, R. (2018). Physical activity level among undergraduate students in Terengganu, Malaysia using pedometer. *Journal of Applied and Fundamnetal Sciences, 10*(1S), 512-522.

Zaman, H. (1997). Islam, well-being and physical activity: Perceptions of Muslim young women. In G. Clark & B. Humberstone (Eds.), Researching women and sport. London: Macmillan.