

Comparing Physical Activity of Malaysian Malay Men and Women Before, During, and After Ramadan

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ABSTRACT

The aims of this research were to investigate whether there is any difference in the physical activity levels between Malay Muslim men (Muslim) and Malay Muslim women (Muslimah) at Universiti Putra Malaysia (UPM) before, during, and after the month of Ramadan, and also to determine the factors restricting their involvement in physical activities. Fifty-three UPM Malay Muslim male staff and fifty-four UPM Malay Muslim female staff participated in the research. The Yamex-Digi walker CW700 pedometer was used to measure the physical activity level of the staff for four consecutive days. Results showed that there was no significant difference in the physical activity levels of the Malay Muslim and Muslimah in UPM before, during, and after the month of Ramadan. The reported *t*-test results comparing the two genders before, during, and after the month of Ramadan were $f=0.003$, $p<0.96$, $f=1.047$, $p<0.31$, and $f=3.106$, $p<0.08$, respectively. It was reported that the lack of self motivation/laziness played the most important role in restricting the involvements of both genders in the physical activities.

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INTRODUCTION

Maintaining an active level of physical activity every day is needed to remain

healthy throughout life. Every individual has to adopt an active lifestyle throughout the year to ensure that the risk of chronic diseases can be reduced. The way to achieve this goal depends very much on the daily activities of the individual. Many studies have been conducted to determine the activity levels among adults (see Bravata *et al.*, 2007; Pratt *et al.*, 1999; Ramadan & Barac-Nieto, 2003). However, compared to other studies that focuses on the effects of fasting on the physical activity among the Malay Muslim (Malay Muslim men) and Muslimah (Malay Muslim women), this study focused more on the normal daily living conditions during fasting and the variation in the physical activity levels between the two genders. Many findings support the claim of this study that during Ramadan, the level of physical activity among the Muslim and Muslimah will be reduced (see Al-Hourani & Atoum, 2007; Ramadan, 2002; Roky *et al.*, 2004). However, the level of reduction in the physical activity remains unknown. Knowledge of the levels as well as the differences in the levels between genders is helpful in identifying what needs to be done to raise the activity levels among individuals of different genders. Hence, this study sought to provide valuable information regarding the physical activity levels among genders in the period before, during and after the month of Ramadan. The findings will help to increase the awareness concerning the level of physical activities, especially among the Muslim and Muslimah during Ramadan. In addition, the study also offers better insights into the factors

restricting the Muslim and Muslimah's involvement in physical activities during this period.

Some studies have reported that males are more physically active as compared to females (Carl *et al.*, 2000; Pratt *et al.*, 1999). The findings of these studies showed that the more physically active status reported among males is true, especially among other races in Malaysia, who maintain a consistent active routine of living throughout the year. However, for Muslims and Muslimahs, their daily routines are very much affected, especially during the month of Ramadan, due to the requirement to fulfil religious requirements (Al-Hourani & Atoum, 2007; Ramadan, 2002). Their physical activities during this month are very often postponed to other months or maintained at minimal levels because Muslims and Muslimahs (past puberty) are required to fast from dawn to sunset. This usually results in Muslims and Muslimahs reducing their physical activity levels during that particular month.

According to Tudor-Locke and Bassett (2004), a minimum of 10,000 steps per day is required to achieve an active lifestyle status. The active lifestyle status is recommended because it links positively with individual's health benefits (see The Star, 2009; Tully *et al.*, 2005), and it is accepted that during the month of Ramadan, the physical activities among the Malay Muslim and Muslimah in Malaysia are reduced but how much of the reduction in these physical activities between the genders remains unclear. In other words, the level of reduction in the physical activities between the genders

is still not known. Therefore, the aim of this study was to investigate whether there is any difference in the physical activity level between Malay Muslim and Muslimah before, during, and after the month of Ramadan. The secondary aim of the study was to analyse the different factors restricting their involvement in physical activities during this period.

METHODS AND PROCEDURES

Subjects

The subjects in this research consisted of 53 Malay Muslim men (Muslim) and 54 Malay Muslim women (Muslimah), respectively. They are UPM staff who had volunteered for the study, representing 15 faculties and 8 institutes or centres. The subjects aged between 22 to 55 years. An inclusion criterion was that the subject must be working with UPM for at least one year and was selected using convenience sampling. All the subjects had given their written consent to participate in the study prior to testing. They were also taught how to wear the pedometer and to correctly record their daily activities in the Daily Activity Form. This Daily Activity Form contained hourly check box as a reminder for the subjects to wear the pedometer. Information pertaining

to their involvement in physical activities, and the factors influencing their involvement in these activities were obtained through structured interview and questionnaire. Details regarding their physical attributes such as weight, height, and body mass index are shown in Table 1.

Instrumentation

The Yamex-Digi Walker CW700 pedometer was used to measure the level of physical activity among the subjects. Following the same procedure carried out by various researchers in the usage of pedometers (Tudor-Locke *et al.*, 2005; Bassett *et al.*, 2000; Bassett *et al.*, 1996), the pedometer was worn daily by the subjects (except during sleeping and showering time) over five consecutive days. Their daily activities were monitored using the Daily Activity Form which the subjects filled in on an hourly basis. If a low count of ≤ 2500 steps/day was recorded, the Daily Activity Form was referred to confirm the count. They were later asked to explain and verify the accuracy of the pedometer reading. If it turned out that subjects had forgotten to wear the pedometer, the recording would then be extended to another day. A questionnaire was also utilized to ascertain the factors

TABLE 1
Physical characteristics of UPM Malay Muslim and Muslimah

Variables	Male (n=53)		Female (n= 54)	
	Mean	Mean	SD	SD
Height (cm)	167.11	7.48	156.35	5.86
Body Mass (kg)	70.82	14.09	57.49	11.96
Body Mass Index (kg m ²)	25.30	4.57	23.73	5.22

restricting their physical activities. The factors identified included own-self, lack of family support, lack of friends/companions, lack of support from neighbours, lack of support from society, lack of facilities, etc.

Procedures

The data collection process was divided into three phases: before Ramadan, during Ramadan, and after Ramadan. The data before Ramadan were collected a month prior to that particular month. Meanwhile, the data during the Ramadan phase were collected during the second and third week of Ramadan, and for after Ramadan, the data was gathered in the third and fourth week after Ramadan. All the phases required a period or duration of two weeks to complete the data collection process.

Statistical Analysis

Descriptive statistics was used to compare the step counts before, during, and after Ramadan. Meanwhile, T-Test was used to investigate whether there was any significant difference in the levels of physical activities between the Malay Muslim and Muslimah UPM staff before, during, and after Ramadan. The statistical significance was set at alpha .05.

RESULTS

The results of the descriptive step counts for both the Malay Muslim and Muslimah before, during and after Ramadan are shown in Table 2. On average, the Malay Muslims recorded higher daily step counts as compared to Muslimahs. This showed that Malay Muslims are physically more active compared to the Muslimahs. On average, the men walked around 8008.20 ± 2322.89 steps per day compared to the women who recorded an average daily step count of 6288.22 ± 1826.73 per day. Based on the step counts reported before, during and after Ramadan, the Malay Muslims were found to be more active physically (before, during, and after Ramadan) as compared to the Muslimahs. However, the physical activity patterns observed between the Malay Muslim and Muslimah were found to be similar, with the highest average step counts reported before Ramadan, followed by after Ramadan, and the lowest step counts reported during the month of Ramadan (Table 2).

When comparing the results based on gender, no significant differences were reported in the level of physical activities undertaken by the Malay Muslim as compared to the Muslimah before, during,

TABLE 2
Step counts among UPM Malay Muslim and Muslimah

Step Counts	Male (n= 53)		Female (n= 54)		Overall (n=107)	
	Mean	SD	Mean	SD	Mean	SD
Before Ramadan	8375.38	2478.36	6716.45	2548.16	7307.21	2726.93
During Ramadan	7529.89	2483.11	5828.86	1910.84	6423.82	2376.82
After Ramadan	8119.12	4033.16	6319.08	2417.56	7612.12	2904.08
TOTAL	8008.20	2322.89	6288.22	1826.73		

and after Ramadan. The reported t-test results for before, during, and after Ramadan were $f=0.003$, $p<0.96$, $f=1.047$, $p<0.31$, and $f=3.106$, $p<0.08$, respectively. These results showed that there was no significant reduction in the level of physical activity between Malay Muslims before, during, and after Ramadan as compared to Muslimahs for the same periods. The highest differences in terms of the mean step counts between the Malay Muslims and Muslimahs were reported after Ramadan (1800.04 steps), followed by during Ramadan (1701.03 steps), and before Ramadan (1658.93 steps). On average, the physical activities among the Malay Muslimahs were found to more likely to be affected by the fasting month as compared to the Muslims. This could be seen by the larger reduction in the number of the average step counts for the periods before Ramadan and during Ramadan between the Muslimahs (887.59 steps) as compared to the Muslim men (845.49 steps). After Ramadan, however, the Muslim men were found to pick-up faster in terms of their physical activities with the average step counts increased of 589.23 steps as compared to the Muslimahs who reported

a lower step count increase of 440.22 steps (Table 3).

As for the factors restricting the Malay Muslim and Muslimah's involvement in physical activities, most of the subjects admitted that the main factor restricting them was own self (lack of self motivation and laziness). Muslim men attributed 94.3% of their non-participation in physical activities to this particular factor, while Muslimahs attributed a lesser value of 79.6% (Table 4). As for Muslim men, certain factors such as family, neighbours, society, and facility had the least influences on their involvement in physical activities. Meanwhile for the Muslimahs, the lack of support from the society and also the lack of facilities were reported to have the least impacts on their involvement in physical activities.

DISCUSSION

The physical activity patterns for both the Muslim men and Muslimahs at UPM were found to be similar. The level of the physical activities was reported to be highest before the month of Ramadan, followed by after Ramadan, and during Ramadan. However,

TABLE 3
Step count differences between Malay Muslim and Muslimah

Step Counts	Mean		Mean Different (Male & Female)
	Male	Female	
Before Ramadan (A)	8375.38	6716.45	1658.93
• Mean Different (A & B)	845.49	589.23	
During Ramadan (B)	7529.89	5828.86	1701.03
• Mean Different (B & C)	887.59	440.22	
After Ramadan (C)	8119.12	6319.08	1800.04
TOTAL	8008.20	6288.22	1719.98

based on gender, there were no significant differences in terms of physical activity levels reported before, during, and after Ramadan. The findings of this study also indicated that the month of Ramadan had a significant effect on reducing the levels of physical activity especially among the Malay Muslim men. This finding is in line with those of Soh *et al.* (2010a) and Soh *et al.* (2010b) in terms of the effects of Ramadan in reducing the physical activity levels significantly among Malay Muslims, especially before and during the month of Ramadan. However, the value reported was not significant for other results, such as before Ramadan versus after Ramadan, and during Ramadan versus after Ramadan. The males were usually reported to be more physically active as compared to the females, and these have also been reported in the studies by Carlos *et al.* (2011), Carl *et al.* (2000), and Pratt *et al.* (1999). These studies also indicated that there were general physical activity patterns shown during the life cycle of a person. This pattern could be different among the Muslim and Muslimah because their daily routines are very much

affected, especially during the month of Ramadan, as a result of spiritual fulfilment (Al-Hourani & Atoum, 2007; Ramadan, 2002).

In the case of the Muslim men and Muslimah, they need to continue to find ways of maintaining or modifying their levels of physical activities around the demands of fasting and other spiritual activities during Ramadan. Hence, maintaining regular physical activity throughout life is necessary and challenging because we face different physical and mental demands every day. These demands required us to act accordingly to maintain the level of physical activity which is related closely in enhancing quality of life.

Based on the findings of this study, the behavioural changes associated with reduction of working hours (shorter working hours during Ramadan) plus more time spent on fulfilling the spiritual requirements had contributed to reduction in overall levels of physical activities among the Muslim men and Muslimahs. This is in line with Roky *et al.* (2004) who reported that behavioural changes associated with reduction of

TABLE 4
Factors influencing UPM Malay Muslim and Muslimahs' involvements in physical activities

Factors	Male (n=53)		Female (n=54)	
	Frequency	%	Frequency	%
Own-self (lack of self motivation and laziness)	50	94.3	43	79.6
Family (lack of family support)	0	0	6	11.1
Friends (lack of friends support)	3	5.7	4	7.4
Neighbours (lack of neighbours' support)	0	0	1	1.9
Society (lack of society support)	0	0	0	0.0
Facilities (lack of facilities)	0	0	0	0.0
OVERALL	53	100	54	100

working hours (more sedentary) were reported during the month of Ramadan. According to Abby *et al.* (1995) and Ramadan and Barac-Nieto (2003), the frequency of participation in physical activity may be particularly important for achieving beneficial changes. In the study by Abby *et al.* (1995), a minimum time frame of two years was needed to achieve HDL cholesterol change after initiating a regular moderate-intensity exercise regimen. In conclusion, regular physical activities must be maintained throughout the year for the whole life to achieve maximum health benefits (Iwane *et al.*, 2000). Hence, in the case of the month of Ramadan, Muslim men and Muslimahs should strive to maintain regular physical activity or achieve at least the minimum required levels of physical activity throughout Ramadan. However, in this study, it was found that their level of physical activities was not significantly disruptive.

According to the physical activity standards using steps count suggested by Tudor-Locke and Bassett (2004), the Malay Muslim men at UPM had average step counts of 8375.38 ± 2478.36 (before Ramadan), 7529.89 ± 2483.11 (during Ramadan), and 8119.12 ± 4033.16 (after Ramadan) per day, which could be considered as 'somewhat active' persons or individuals. Meanwhile, the Malay Muslimah at UPM had average step counts of 6716.45 ± 2548.16 (before Ramadan), 5828.86 ± 1910.84 (during Ramadan), and 6319.08 ± 2417.56 (after Ramadan) per day,

which could be considered as 'low active' persons or individuals. Although both the Malay Muslim men and Muslimahs had reported different levels of physical activities, the differences in the activities reported between the genders before, during, and after the month of Ramadan were not significant based on Tudor-Locke and Bassett (2004).

The main factor restricting the involvements of Malay Muslims and Muslimahs at UPM in the physical activities was their own-selves. This factor, in particular influenced Malay Muslim men more (94.3%) as compared to Muslimahs (79.6%). In addition, Malay Muslimahs also indicated other factors as having influenced their involvement in the physical activities as compared to the Muslim men. The factors were family, friends, and the availability of facilities. The Malay Muslim men stated only friends as having an influence on their involvement in physical activities.

It is important to address the limitations of this study. This study was carried out among the staff at one university in Malaysia and the findings could not be generalised to the staff of other universities in Malaysia. Nevertheless, this research used the pedometer to measure the level of physical activities among the Muslim men and Muslimahs. Therefore, the findings for this study are more reliable and objective in reflecting physical activity status among Malay Muslims and Muslimahs for future improvement.

CONCLUSION

Based on the average number of steps taken, most of the Muslim men and Muslimahs at UPM were found to be not physically active enough to achieve the minimal 10,000 step counts a day, as recommended by Tudor-Locke and Bassett (2004). In fact, both genders, especially the Muslimah, did not walk much on a 'normal' day when they did not fast, and much lesser during the month of Ramadan. As a result, they are unlikely to gain benefits in term of health from their exercises or daily physical activities. Based on Tudor-Locke and Bassett's (2004) physical activity classification, Malay Muslim men had higher mean step counts per day. Meanwhile, the Muslimahs with lower mean step counts per day were reported to be in the 'low active' category. Nevertheless, both the mean step values were found to be very low as compared to the recommended value to be achieved to pose health benefit. Ramadan may not be a time to be active, but blame cannot be placed on it as even during the other months, they were also not active. Moreover, wearing a pedometer is known to be an incentive to the wearer to increase their physical activities by 2,183 steps a day in an unconscious response to exercise more (Bravata *et al.*, 2007), especially when the step count is known (Clemes *et al.*, 2008). In addition, both the Malay Muslim men and Muslimahs might record lesser step counts per day in their real life as compared to the results of this study. Hence, more encouragement is needed to motivate them to walk more.

As obesity in Malaysian is reported to be escalating, where two out of five adults were reported to be overweight or obese (CRI English Online, 2009), changing lifestyle by becoming physically more active is very crucial (Soh *et al.*, 2008). One study has shown that by just walking an additional 0.5-0.75 miles per day is associated with better glucose control (Swartz *et al.*, 2007). Hence, the interest to walk 10,000 steps/day programme initiated by the Malaysian Ministry of Health to encourage Malaysians to be physically more active should be supported (The Star, 2009), continued, and even enhanced to achieve the maximum health benefits. In addition, for those who are already physically active, Nemoto *et al.* (2007) recommend increasing the walking intensity because it offers much better health benefits, which include protection against age-associated increases blood pressure and decreases in the thigh muscle strength and peak aerobic capacity. These assertions and recommendation should be taken seriously by Malay Muslim men and Muslimahs.

The main factor restricting both Muslim men and Muslimah's involvement in physical activities was their own-selves. However, this restricting factor (own-self) was shown to have higher impact on the Malay Muslim men (94.3%) as compared to the Muslimah (79.6%). On the other hand, the Malay Muslimahs cited other factors as having more influence on their involvement in physical activities as compared to the Muslims. The factors are family, friends, and availability of facilities. On the contrary,

the Malay Muslims attributed only friends as having had any influence on their involvement in physical activities.

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