

The Effect of Intermittent Fasting on Psychological Wellbeing among Disabled Individuals versus Able-Bodied Peers

Hasan Al Oran¹, Tamara Farash¹, Rahaf Baqleh¹, Haneen Hazza' Obaidallah², Harran Al-Rahamneh¹

¹School of Sport Sciences, the University of Jordan, Amman, Jordan

²School of Nursing, the University of Jordan, Amman, Jordan

Correspondence Author: Prof. Harran Al-Rahamneh,

School of Sport Sciences, the University of Jordan

BASES Accredited Sport and Exercise Scientist

Email: h.rahamneh@ju.edu.jo

P.O.Box 13366; Amman 11942; Jordan

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Abstract

Aim: This study aimed to assess Ramadan fasting's effect on psychological wellbeing among disabled individuals versus able-bodied peers.

Methods: Twenty-two disabled persons and twenty-eight able-bodied individuals participated in the study. All of them were asked to answer the Perceived Stress Scale (PSS) which was constructed by Cohen et al. (1983). This scale comprises 10-items which were translated and employed in the study. The items (1, 2, 3, 6, 9, 10) are negative, while the remaining items (4, 5, 7, 8) are positive. The researcher follows the same response format used by Cohen et al. (1983). Moreover, the items are rated from 0 = never to 4 = very often as per a five-point Likert-type scale.

Results: The total score of PSS was (15.75 ± 4.46) which indicates that the stress level among able-bodied and disabled persons are at the lower border of the moderate level. No obvious difference was noticed between able-bodied individuals (15.75 ± 4.46) and Disabled individuals (15.59 ± 8.23) in the total score of PSS, $P = 0.931$. No significant difference was observed between males (16.00 ± 6.21) and females (15.11 ± 6.65) in PSS $P = 0.638$. Furthermore, no obvious differences were noticed in physically active and non-physically active individuals $P = 0.294$. However, physically active participants have lower total score of PSS by 2.03 points (15.03 ± 6.26) than non-physically active participants (17.06 ± 6.42) .

Conclusion: Ramadan fasting had no negative effect on the psychological wellbeing of disabled and able-bodied persons. The authors recommend including physical activity in individuals' daily life which would reduce stress for both disabled individuals and their able-bodied peers.

Keywords: Intermittent fasting; disabled persons; perceived stress scale; Able-bodied individuals

Introduction

Fasting denotes a restriction of eating food during day. This type of restriction is a response to cultural, traditional, or religious norms, and it has many types worldwide (Wang and Wu, 2022).

Fasting during Ramadan, which is the holy month for Muslims, is performed as a religious duty and it is one of the five pillars of Islamic religion. During Ramadan, Muslims start fasting from the sunrise until the sunset every day. They are permitted to eat and drink during night, starting from the sunset (Iftar time). These changes in people's habits of eating ultimately impact their sleeping patterns (Kirkendall et al., 2008; Roky et al., 2004, Husain, et al., 1987).

Researches on fasting imply that the level of blood glucose in an individual's body is lower during fasting (Gueye et al., 2004; Larijani et al., 2003). Besides, the physical fitness level of a fasting individual is lower during Ramadan (Hallak & Nomani, 1988). It is also proved that Ramadan fasting negatively affects sleeping patterns of individuals

as a result of the sudden change in food intake time (Roky et al., 2004; Ziaee et al., 2006). Other researchers noticed a decrease in alertness and mood during fasting (Roky et al., 2000).

Conversely, other studies such as Mobayed (2017) have shown that fasting has positive effects on self-control and self-regulation leads to self-discipline and a person learns his strengths and weaknesses as well as the ability to understand others. Psychologists report that improved self-control leads to improved psychological well-being (Oaten and Cheng, 2006). Also, McKee and Ntoumanis (2014) study shown that fasting improves the perception of self and level of confidence.

Disorders related to stress have been widely recognized. In this respect, the Department of Health reported that in 1994 around eighty million days of working were ultimately lost as a result of anxiety and depression. The cost of this loss was estimated at £5.3 billion. Moreover, the expenditure of NHS devoted for treating depression and anxiety is over £1 billion (Taylor, 2003).

Disability is "a difficulty in the functioning of the body. It also denotes a difficulty in the functioning of a person or a society" (Raggi et al., 2010). Around 1.3 billion people, who represent 16% of the world population, suffer from significant disability (WHO, 2023). Disability affects disabled persons life negatively. For example, usually disabled individuals are less active, have less physical fitness (Al-Rahamneh et al., 2013), have less quality of life (Al-Rahamneh et al., 2022), are poorer due to their pathology. They are more likely to suffer from depressive and anxiety disorders (Puce et al., 2023) than their able-bodied peers.

The term global well-being denotes a complex, multi-faceted and multi-dimensional construct that can ultimately be examined from two different, overlapping, and complementary perspectives. The two perspectives are known as the subjective and the objective perspectives (Ryan & Deci, 2001; Ryff et al., 2021).

The previous research, as per the researcher's knowledge, has never assessed Ramadan fasting's effect on psychological wellbeing among either able-bodied or disabled individuals in Jordan. Hence, this study ventures to assess Ramadan fasting's effect on psychological wellbeing among disabled individuals versus able-bodied peers.

Methods

Participants

Twenty-two disabled persons and twenty-eight able-bodied individuals participated in the study. All of them were asked to answer the Perceived Stress Scale (PSS), designed by Cohen et al. (1983). This survey was shared via the Google online survey platform. Furthermore, a link to the survey was distributed via social networks within the period 24th April 2022–30th April 2022 using a snowball sampling strategy.

Instrument

Many scales have been developed to assess stress. In this study, the (PSS) (Cohen et al., 1983) comprises 10-items which were translated and validated from English by Ismail and Al-Rahamneh (2021). The respondents in the current study rated the frequency related to their feelings as well as thoughts associated with situations and events that happened during the last month which is Ramadan, Cohen et al. (1983). The items (1, 2, 3, 6, 9, 10) are negative, while the remaining items (4, 5, 7, 8) are positive. Besides, the response format included in the original PSS (Cohen et al., 1983) was used and each item was rated from (0= never to 4= very often) according to a five point Likert-type scale.

Data analysis

The statistical analysis was done using SPSS software version 16.0. The statistical processes included calculating means and standard deviations. A series of independent sample t-test were applied to know if there was a significant difference in the mean scores of perceived stress scale between able-bodied individuals and disabled individuals, males and females and physically active and non-physically active individuals.

Results

Table 1: Means and standard deviation of each question and the total score of perceived stress scale for disabled and able-bodied individuals. Values are means \pm standard deviation.

		Able-bodied	Disabled
Q1	In the last month, how often have you been upset because of something that happened unexpectedly?	1.68 \pm 0.90	1.73 \pm 1.24
Q2	In the last month, how often have you felt that you were unable to control the important things in your life?	1.32 \pm 0.90	1.32 \pm 1.04
Q3	In the last month, how often have you felt nervous and stressed?	1.75 \pm 1.07	2.09 \pm 1.31
Q4	In the last month, how often have you felt confident about your ability to handle your personal problems?	1.36 \pm 1.06	1.64 \pm 1.62
Q5	In the last month, how often have you felt that things were going your way?	1.64 \pm 0.73	1.68 \pm 1.17
Q6	In the last month, how often have you found that you could not cope with all the things that you had to do?	1.71 \pm 0.90	1.27 \pm 1.16
Q7	In the last month, how often have you been able to control irritations in your life?	1.53 \pm 0.64	1.41 \pm 1.14
Q8	In the last month, how often have you felt that you were on top of things?	1.25 \pm 0.64	1.14 \pm 1.08
Q9	. In the last month, how often have you been angered because of things that happened that were outside of your control?	1.96 \pm 0.88	1.91 \pm 1.27
Q10	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	1.53 \pm 1.07	1.41 \pm 1.30
	Total score of perceived stress scale	15.75 \pm 4.46	15.59 \pm 8.23

Based on Cohen et al. (1983) 0-13, 14-26 and 27-40 are classified as low, moderate and high stress level, respectively. Our total score of PSS (15.75 \pm 4.46) results indicated that the stress level among able-bodied and disabled persons are at the lower border of the moderate level. This proves that fasting during Ramadan did not affect the psychological wellbeing of abled-bodied and disabled individuals in Jordan. These results agree with Ismail and Al-Rahamneh, (2021) which showed that total score of PSS among hypertensive individuals in Jordan was moderate. Amin et al. (2016) study shows that stress scores significantly decreased on 28th day of Ramadan. Stress level is less during the fasting days compared to the other days. According to the same study, individuals experienced a decrease in blood glucose and blood pressure, while their memories significantly improved while fasting. Furthermore, it was shown that stress and depression levels were obviously decreased by fasting in Ramadan (Mousavi et al., 2014 and Koushaliet al., 2013).

Another research stressed that fasting organizes the eating schedule, and this will ultimately maintain the hormone cortisol which is responsible for the body's response to stress. That is, fasting can ultimately stabilize the level of hormone cortisol, then reduce stress levels (Ika, 2020).

Table 2: Independent sample t-test between able-bodied and disabled individuals, males and females, and physically active and non-physically active individuals.

		n	Mean	SD	T	df	Sig
Disable and able-bodied	Able-bodied	28	15.75	4.46	0.087	48	0.931
	Disabled	22	15.59	8.23			
Gender	Male	32	16.00	6.21	0.473	48	0.638

	Female	18	15.11	6.65			
Physical activity	Physically active	34	15.03	6.26	-1.061	48	0.294
	Non-Physically active	16	17.06	6.42			

No obvious difference was observed between able-bodied individuals (15.75 ± 4.46) and Disabled individuals (15.59 ± 8.23). Our findings have an affinity with Al-Rahamneh et al. (2022) study which indicates that no obvious difference was noticed in the psychology domain between able-bodied and disabled individuals during the COVID-19 pandemic. These results disagree with Ardell et al. (2016), Heiman (2006) and Hall et al. (2002) which found that students who suffer from disabilities show greater degrees of perceived stress than those with no disabilities. Al-Rahamneh et al. (2013) indicated that disabled persons have lower physical fitness level than able-bodied. Ardell et al. (2016) study implied that students who suffer from disabilities had higher stress levels compared to others with no disabilities among 101 full-time undergraduate and graduate students at the University of Saskatchewan. In addition, Heiman (2006) study indicated that students suffering from learning disabilities experienced slightly higher degrees of stress than those with no learning disabilities. Furthermore, Hall et al. (2002) study found that college students suffering from learning disabilities had significantly fewer college stressors than students with no learning disabilities.

There was no significant difference between males (16.00 ± 6.21) and females (15.11 ± 6.65) in perceived stress scale ($P > 0.05$). These results are in disagreement with Anbumalar et al. (2017), Graves et al. (2014), Deatherage et al. (2014), Ryan (2013), Hogan et al. (2002) and Tamaer et al. (2002) studies which implied that females have higher stress degrees than males. Graves et al. (2014) studied stress, gender differences and coping mechanisms in undergraduate students at the end of the term among University students ($n = 448$). The results showed that females have higher degrees of stress than males. Anbumalar et al. (2017) study indicated that females had higher degree of perceived stress than their male peers. This difference in perceived stress was not significant though. Furthermore, Hogan et al. (2002) revealed no obvious difference between males and females in the measures of job stress among faculty and staff at the University of Hawaii at Manoa, , but females showed significantly higher nonwork stress than males.

Physically-active participants have lower total score of PSS (15.03 ± 6.26) than non-physically-active participants (17.06 ± 6.42), this difference was not significant though $P = 0.294$. Our results are in agreement with Kim and Gurvitch (2020) and Richardson (2014). For example, Richardson, (2014) indicated that individuals who regularly exercise had lower stress levels (15.91 ± 7.35) than those who do not exercise (20.23 ± 7.58) among 180 participants. Nguyen-Michel et al. (2006) reported that higher level physical activity correlates negatively with lower levels of hassles and similar findings were observed between the participants' physical activity and perceived stress scale. Physical activity, the study assumes, can ultimately help in controlling weight, improving mental health, and reducing the risk for early death, heart disease, type 2 diabetes, and some cancers. It can improve mental health as well. This is achieved by reducing anxiety and depression (CDC, 2022). There is no doubt that these factors are closely related to perceived stress. So, these findings support that physical activity has an effect on improving psychological factors, including stress, whether for the disabled individuals or able-bodied peers.

Conclusion

The total score of PSS was (15.75 ± 4.46) which indicates that the stress level among able-bodied and disabled persons are at the lower border of the moderate level. No obvious difference was noticed between able-bodied individuals and disabled individuals with regard to the total score of PSS. Besides, no obvious difference was observed between males and females in PSS. Also, there were no significant differences in physically active and non-physically active individuals. However, physically active participants have lower total score of PSS by 2.03 points than non-physically active participants. Therefore, Ramadan fasting had no negative effect on the

psychological wellbeing of disabled and able-bodied persons negatively. The authors recommend including physical activity in individuals' daily life which would reduce stress for both disabled individuals and their able-bodied peers.

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