

Impact Of Ramadan Fasting on Physical Fitness: A Literature Review

Maryam Liaquat ¹

¹ Phyiotherapist, Department of Physical Therapy, BUHSCK, Karachi;
maryamliaquat68@gmail.com

Abstract:

Background: Ramadan fasting, which is abstaining from food and beverages from sunrise to sunset. Many physiological systems linked to physical performance might be impacted by Ramadan fasting. The impact of fasting on physical fitness should be understood by medical experts, athletes, and the public who exercise during Ramadan.

Objective: Millions of healthy Muslim adults around the world follow Ramadan Intermittent Fasting (RIF), a special type of religious fasting. This study of the literature aims to gather the existing data and investigate the effects of Ramadan fasting on anaerobic power, muscle strength, body composition, psychological problems, behaviour, and aerobic capacity, among other elements of physical fitness.

Search Strategy: A systematic search of Google Scholar and PubMed (2011–2025) using Ramadan, fasting, physical performance, and muscle strength as keyword was conducted using only English-language, peer-reviewed human studies that passed the screening process for design, performance-related outcomes, and relevance.

Conclusion: Ramadan fasts often do not cause appreciable long-term decreases in physical fitness when the right adaption strategies are employed. The findings highlight how crucial it is to plan exercise, stay hydrated after iftar, and control sleep in order to sustain optimal performance. It is recommended to do additional research using larger samples and a specified methodology in order to resolve conflicting findings between studies.

Keywords: Ramadan intermittent fasting, physical fitness, physical performance, aerobic fitness, anaerobic capacity, muscle strength.

Introduction

The ninth lunar month in the Islamic Hijri calendar, Ramadan is regarded as the holiest month in Islam. During Ramadan, millions of people fast from sunrise until sunset¹. More than 1.6 billion Muslims around the world fast throughout Ramadan, which lasts a full lunar month. Muslims are advised to refrain from any destructive or aggressive behaviour, as well as from taking any liquid or solid nutrition, during this time of purification, meditation, and renewal.² Dietary patterns can be altered by intermittent fasting, which can result in changes to physical features,



Citation: Maryam Liaquat. (2025). Impact Of Ramadan Fasting on Physical Fitness: A Literature Review. *Journal of Religion, Health and Society*, 1(2), 11-16. <https://journal.gssrf.com/index.php/jrhs/article/view/16>

Received: 19, July 2025
Revised: 12, Sept 2025
Accepted: 19, Sept 2025
Published: 30, Nov 2025

Academic Editors:
Dr. Najmul Sahar Ilyas



Copyright: © 2025 by the authors. Licensee Global Social Sciences Research Forum Karachi, Pakistan. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (<https://creativecommons.org/licenses/by/4.0/>)

Publisher:
Global Social Sciences Research Forum SMC Pvt. Ltd

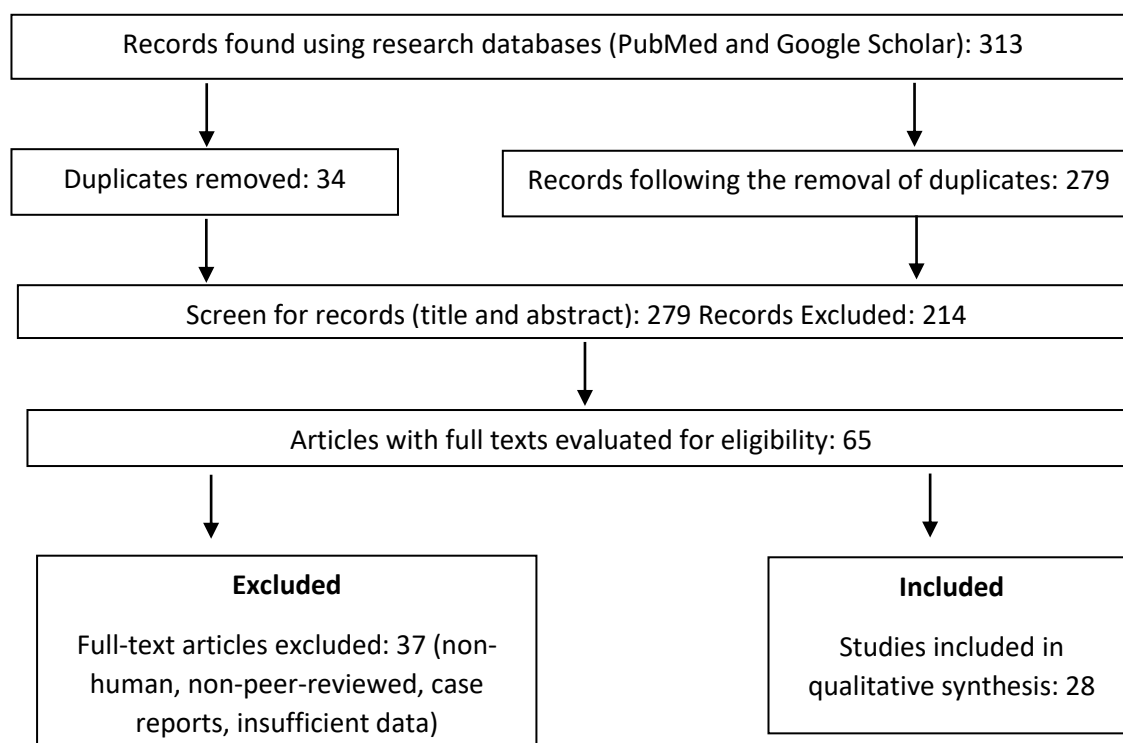
metabolism, and caloric intake³. These modifications also have significant impact on sleep patterns, which may result in altered circadian rhythms and decreased nightly sleep durations⁴. Additionally, studies indicate that fasting during Ramadan may have an impact on cholesterol levels, blood glucose management, and general hydration, among other aspects of human health⁵. Depending on how long and how hard a someone fasts, it may also have an impact on their physical performance, emotional stability, and mental health⁶. Research has looked at how Ramadan affects hormone levels, metabolism, and behaviour. Limited data on physical performance indicate that submaximal elements (e.g., heart rate) are mostly unaffected, but maximum work declines⁷. During Ramadan, food and drink are permitted during daylight hours. However, meals are limited to two, with no option for daytime snacks. This month may have a detrimental impact on energy intake, body weight, and hydration levels⁸. Researchers are also interested in how Muslims' levels of physical activity vary throughout Ramadan. Ramadan is thought to have an impact on people's everyday routines, including their physical activity habits, due to the extended fasting period and sleep difficulties. Most of the research on the impact of Ramadan fasting found that physical activity levels decreased⁹. When taken as a whole, these modifications could lead to disruptions that change how the body reacts to exercise, which could have a negative impact on athletic performance¹⁰.

The aim of this review is to examine the effects of Ramadan fasting on aerobic capacity, anaerobic power, strength, body composition, and performance-influencing behavioural aspects including sleep and hydration.

Methodology

To find research on how Ramadan fasting affects different facets of physical fitness, a thorough review of the literature was done. A search was conducted for pertinent peer-reviewed articles published between January 2011 and October 2025 using two electronic databases: PubMed and Google Scholar. The following keywords were used to do the search: Ramadan, Ramadan fasting AND physical performance, Aerobic capacity, anaerobic performance, muscle strength, body composition OR exercise, athletes. In order to eliminate papers that weren't relevant, the search technique was improved by filtering titles and abstracts. Only English-language research with human subjects were included. Articles about the impact of Ramadan fasting on the body, metabolism, and performance were considered for review. Non-peer-reviewed materials, case reports, and research involving non-fasting persons were eliminated; review papers, experimental studies, and cross-sectional studies were included.

PRISMA Flow Diagram- Literature search (2011-2025)



Physiological Changes During Ramadan Fasting

Ramadan fasting can affect circadian rhythms, hydration levels, sleep duration and quality, energy intake, and meal timing. The body continuously loses water, and dehydration will result if these losses are not replenished. The body's water content varies during the day due to episodic water absorption from food and beverages. However, Muslims will restrict from food and liquids between sunrise and sunset during the month of Ramadan, which will result in a gradual loss of bodily fluids. Dehydration is an abrupt decrease in the body's overall water content that, if severe enough, will affect mental and physical function¹¹. 2018 saw the publication of articles about some medical disorders and possible alterations in healthy people. The impact of intermittent fasting (IF) in general and the treatment of specific conditions during RF in particular may be better understood thanks to these studies¹².

Impact on Body Composition and Weight Loss

During Ramadan, mealtimes and feeding habits may alter energy metabolism and body composition. Some cohorts show slight decreases in body mass and fat mass, but these changes are irregular and usually mild; the findings rely on training modifications and total energy consumption during non-fasting hours. Weight and fasting during the month of Ramadan were found to be statistically significantly correlated. One study showed that pairwise comparison of the groups revealed significant weight changes during the second and fourth weeks of Ramadan ($p = 0.001$). Ironically, the mean weight increased somewhat during the second week of Ramadan but decreased by 0.4 kg on average during the fourth week. The BMI likewise showed a significant shift ($p < 0.0001$) with the same trend, increasing until the second week of Ramadan and then down in the last week. The study also showed that fasting throughout Ramadan is a safe and healthy method of losing weight, particularly for Muslims. After Ramadan, it can also support sticking to a tight diet¹³. Another study showed that 45% people lost around 1kg weight after Ramadan fasting, 16.3% lost 0.5 kg while 20.8% remains the same weight provided before Ramadan fasting¹⁴.

Impact on Aerobic Fitness (Endurance)

Particularly in the early days of Ramadan, numerous research document mild to moderate declines in VO_2 max, time-trial performance, or endurance capacity. These reductions are usually only temporary, and people usually resume their regular activities by the later days of Ramadan.

In 2016, a survey was conducted in which 54 Olympic football players were asked about fasting during the games. In terms of how Ramadan fasting affects physical performance, 85.2% of participants disagreed or strongly disagreed that fasting can improve physical skills, whereas 81.5% of participants agreed or strongly agreed that it can decrease endurance¹⁵. An extensive was performed where after a thorough analysis, the study concluded that maintaining body composition, training load, sleep, and nutrition during Ramadan had no effect on training or physical performance¹⁶. Another study discovered that during the first 1-2 weeks of Ramadan, there were little but noticeable drops in VO_2 max and endurance running performance, which eventually returned to normal by the conclusion of the month¹⁷.

Impact on Anaerobic Performance

A significant amount of research suggests that during Ramadan, particularly during the late fasting hours, short-term, high-intensity anaerobic performance such as peak and mean power on Wingate tests and certain measures of repeated-sprint ability is susceptible to deterioration. Results vary, though; a number of recent controlled studies indicate that athletes who modify their training schedule, diet, and sleep patterns see little to no change¹⁸. Multiple experimental investigations and systematic reviews have consistently shown that many cohorts have decreases in peak and mean power during Ramadan, especially when testing takes place in the afternoon or evening (late in the fast)^{19,20,21}. During repeated high-intensity attempts, some studies indicate no change, while others demonstrate a rise in the tiredness index and a decrease in total work. The Fatigue Index (FI) increased significantly during Ramadan compared to previously ($p < 0.001$), according to the primary influence of the different testing periods, which was significant. Similarly, during the three testing sessions, there was a significant time-of-day impact showing that the FI was higher at 17:00 h than 07:00 h ($p < 0.001$)²².

Muscle Strength

Numerous studies have examined the effects of Ramadan intermittent fasting (RIF) on muscle strength, and the majority of the data points to the preservation of strength performance provided proper training and dietary practices are followed. A number of studies have demonstrated that maximal strength (such as the 1-repetition maximum in the bench press or squat) is well-preserved throughout Ramadan, especially those involving resistance-trained athletes²³.

Ramadan fasting, which involves avoiding food and liquids during the day for about 29 to 30 days, may have an impact on sleep, hydration, and energy intake, all of which may have an impact on muscle function. Numerous studies have shown that throughout Ramadan, maximal voluntary strength (such as handgrip, isometric force, or one-repetition maximum) stays largely constant²⁴. Strength measurements typically do not significantly decline for trained athletes who continue resistance training and consume enough calories and protein during non-fasting hours. Conversely, in recreational or untrained persons, minor temporary decreases (usually 1-5%) have been seen; these are frequently ascribed to decreased training volume, dehydration, or changed sleep patterns rather than the fasting itself²⁵.

Overall, the data shows that, as long as athletes maintain training intensity and make sure they are getting enough food and water, Ramadan fasting does not significantly reduce muscle strength.

Impact on Sleep Patterns

Sleep quality and quantity frequently decrease (due to eating and awakening at night), which can worsen fatigue and impact recovery, a key mediator of performance changes²⁶. Some findings from another the study are analyzed, it becomes clear that Ramadan alters numerous aspects of sleep, exercise, and diet features. The most significant findings within the study's criteria were that there had been a shift in the hours of waking and sleeping. It can be demonstrated that there is no statistically significant difference in the overall quantity of sleep time²⁷.

Psychological Factors and Mental Health

In addition to being a spiritual practice, Ramadan fasting is a special behavioral and physiological intervention that may have an impact on mood, mental health, and cognitive function. In contrast to therapeutic fasting or extended calorie restriction, Ramadan intermittent fasting (RIF) has significant social and spiritual components that can influence psychological effects. Over the past ten years, research on the potential benefits of fasting on mental and emotional health has increased, with studies examining aspects like mood, anxiety, sleep, and cognitive function. Numerous controlled experiments have shown no discernible decline in cognitive abilities, such as short-term memory, alertness, or decision-making, throughout Ramadan. According to studies, the intellectual performance of healthy people remained constant during the month-long fast of Ramadan, suggesting that adaptive mechanisms such as enhanced metabolic activity and ketone utilization may support brain function.²⁸

Exercise Timing and Useful Considerations

The timing of exercise during Ramadan month has a significant impact on training outcomes, safety, and physiological flexibility. Athletes and anyone who are physically active must carefully plan their exercise sessions to balance performance optimization, hydration, and recovery because food and fluid consumption are restricted from sunrise (Suhour) to sunset (Iftar). Because of dehydration and limited glycogen availability, research suggests that exercise done during fasting hours – especially in the late afternoon – may result in increased perceived exertion, lower anaerobic power, and earlier tiredness^{18,25}. On the other hand, it has been demonstrated that exercising after iftar, when rehydration and food replenishment are feasible, better supports high-intensity efforts and recovery processes. Similarly, if proper hydration and energy intake are guaranteed beforehand, early morning exercises held following suhour (pre-dawn meal) might also be beneficial ²⁴.

Conclusion

Intermittent fasting during Ramadan (RIF) causes a number of behavioral, psychological, and physiological changes that affect physical performance and fitness. The most reliable and persistent effect of Ramadan fasting, is a temporary reduction in short-term, high-intensity performance, especially in the later hours of the fasting day. Strength, power, aerobic capacity, and body composition are all affected in different ways, but they can often be maintained with proper training, nutrition, and sleep preparation. To lessen performance deterioration, a customized, sport-specific approach is recommended. Alleviating the negative effects of fasting on performance, dietary and behavioral changes are crucial. Eating balanced, nutritious meals during iftar and suhoor can help maintain energy availability and promote restoration. Additionally, it is crucial to maintain proper hydration from sunset to dawn in order to make up for the water and fluid losses that take place throughout the day during fasting.

References

- ¹ Kettani, H. World Muslim Population: 1950–2020. *Int. J. Environ. Sci. Technol.* **2010**, 1, 154–164.
- ² Zerguini, Yacine, Donald Kirkendall, Astrid Junge, and Jiri Dvorak. "Impact of Ramadan on physical performance in professional soccer players." *British journal of sports medicine* 41, no. 6 (2007): 398-400.
- ³ Meckel, Yoav, Aobeida Ismaeel, and Alon Eliakim. "The effect of the Ramadan fast on physical performance and dietary habits in adolescent soccer players." *European journal of applied physiology* 102, no. 6 (2008): 651-657.
- ⁴ Boukhris, Omar, Khaled Trabelsi, Roy Jesse Shephard, Hsen Hsouana, Raouf Abdessalem, Lassaad Chtourou, Achraf Ammar, Nicola Luigi Bragazzi, and Hamdi Chtourou. "Sleep patterns, alertness, dietary intake, muscle soreness, fatigue, and mental stress recorded before, during and after Ramadan observance." *Sports* 7, no. 5 (2019): 118.
- ⁵ Shah, Junaid Ali, Mujeeb Ur Rahman, Sidikov Akmal Abdikaxarovich, Prince Sikandar, and Abduvaliyev Dikhanbay Yerian. "Impact of fasting on human health during Ramadan." *Int. J. Public. Health Sci* 12 (2023): 1611-1625.
- ⁶ Abedelmalek, Salma, Khoulood Aloui, Meriam Denguezli Bouzgarou, Halima Adam, Nizar Souissi, and Hamdi Chtourou. "Exergaming during Ramadan intermittent fasting improve body composition as well as physiological and psychological responses to physical exercise in adolescents with obesity." *Frontiers in nutrition* 9 (2022): 851054.
- ⁷ Sweileh, N., A. Schnitzler, G. R. Hunter, and B. Davis. "Body composition and energy metabolism in resting and exercising muslims during Ramadan fast." *The Journal of sports medicine and physical fitness* 32, no. 2 (1992): 156-163.
- ⁸ Sadeghirad, Behnam, Shahrzad Motaghipisheh, Fariba Kolahdooz, Mohammad J. Zahedi, and Ali A. Haghdoost. "Islamic fasting and weight loss: a systematic review and meta-analysis." *Public health nutrition* 17, no. 2 (2014): 396-406.
- ⁹ Kocaaga, Tugba, Kemal Tamer, Umid Karli, and Hakan Yarar. "Effects of Ramadan fasting on physical activity level and body composition in young males." *Int. J. Appl. Exerc. Phy* 8 (2019): 2322-3537.
- ¹⁰ Anis, Chaouachi, John B. Leiper, Souissi Nizar, Aaron J. Coutts, and Chamari Karim. "Effects of Ramadan intermittent fasting on sports performance and training: a review." *International Journal of Sports Physiology and Performance* 4, no. 4 (2009): 419-434.
- ¹¹ Maughan, R. J., and S. M. Shirreffs. "Hydration and performance during Ramadan." *Journal of sports sciences* 30, no. sup1 (2012): S33-S41.
- ¹² Beshyah, Salem, Amal Badi, Ashraf El-Ghul, Ahmed Gabroun, Khaled Dougman, and Mohsen Eledrisi. "The year in "Ramadan Fasting and Health"(2018): a narrative review." *Ibnosina Journal of Medicine and Biomedical Sciences* 11, no. 04 (2019): 151-170.
- ¹³ Majid, Abdul, Muhammad Osama, Muhammad Noman, Ulfat Nisa, and Iqbal Haider. "Effect of Ramadan fasting on body weight and body mass index (BMI) in public sector undergraduate medical students of Peshawar." *Pakistan Journal of Medical Sciences* 39, no. 3 (2023): 662.
- ¹⁴ Hajek, Peter, Katie Myers, Al-Rehan Dhanji, Oliver West, and Hayden McRobbie. "Weight change during and after Ramadan fasting." *Journal of Public Health* 34, no. 3 (2012): 377-381.
- ¹⁵ Farooq, Abdulaziz, Christopher P. Herrera, Yacine Zerguini, Fuad Almudahka, and Karim Chamari. "Knowledge, beliefs and attitudes of Muslim footballers towards Ramadan fasting during the London 2012 Olympics: a cross-sectional study." *BMJ open* 6, no. 9 (2016): e012848.
- ¹⁶ Chaouachi A, Leiper JB, Chtourou H, Aziz AR, Chamari K. The effects of Ramadan intermittent fasting on athletic performance: recommendations for the maintenance of physical fitness. *J Sports Sci.* 2012;30 Suppl 1:S53-73. doi: 10.1080/02640414.2012.698297. Epub 2012 Jun 27. PMID: 22738880.
- ¹⁷ Chtourou, Hamdi, Khaled Trabelsi, Omar Boukhris, Achraf Ammar, Roy Jesse Shephard, and Nicola Luigi Bragazzi. "Effects of Ramadan fasting on physical performances in soccer players: A systematic review effets du jeûne de Ramadan sur les performances physiques des footballeurs: Revue systématique." *Tun Med* 97 (2019): 1114-1131.
- ¹⁸ Abaidia, Abd-Elbasset, Wael Daab, and Mohamed Amine Bouzid. "Effects of Ramadan fasting on physical performance: a systematic review with meta-analysis." *Sports Medicine* 50, no. 5 (2020): 1009-1026.

- ¹⁹ Aloui, Asma, Anis Chaouachi, Hamdi Chtourou, Del P. Wong, Monoem Haddad, Karim Chamari, and Nizar Souissi. "Effects of Ramadan on the diurnal variations of repeated-sprint performance." *International journal of sports physiology and performance* 8, no. 3 (2013): 254-263.
- ²⁰ Bouhrel, Hatem, Roy J. Shephard, Nebil Gmada, Chirine Aouichaoui, Gilbert Peres, Zouhair Tabka, and Ezdine Bouhrel. "Effect of Ramadan observance on maximal muscular performance of trained men." *Clinical Journal of Sport Medicine* 23, no. 3 (2013): 222-227.
- ²¹ Chtourou, Hamdi, Omar Hammouda, Hichem Souissi, Karim Chamari, Anis Chaouachi, and Nizar Souissi. "The effect of Ramadan fasting on physical performances, mood state and perceived exertion in young footballers." *Asian Journal of Sports Medicine* 2, no. 3 (2011): 177.
- ²² Chtourou, H., O. Hammouda, A. Chaouachi, K. Chamari, and N. Souissi. "The effect of time-of-day and Ramadan fasting on anaerobic performances." *International journal of sports medicine* 33, no. 02 (2012): 142-147.
- ²³ Trabelsi, Khaled, Kais El Abed, John F. Trepanowski, Stephen R. Stannard, Zohra Ghlissi, Hanene Ghozzi, Liwa Masmoudi, Kamel Jammoussi, and Ahmed Hakim. "Effects of Ramadan fasting on biochemical and anthropometric parameters in physically active men." *Asian journal of sports medicine* 2, no. 3 (2011): 134.
- ²⁴ Özbay, Serhat, Süleyman Ulupınar, Cebirail Gençoğlu, İbrahim Ouergui, Furkan Öget, Hasan Hüseyin Yılmaz, Necip Fazıl Kışalı et al. "Effects of ramadan intermittent fasting on performance, physiological responses, and bioenergetic pathway contributions during repeated sprint exercise." *Frontiers in Nutrition* 11 (2024): 1322128.
- ²⁵ Bougrine, Houda, Atef Salem, Nidhal Nasser, Achraf Ammar, Hamdi Chtourou, and Nizar Souissi. "Ramadan fasting and short-term maximal physical performance: searching for optimal timing of the last meal "suhoor" in female pre-university handball players." *European Journal of Investigation in Health, Psychology and Education* 13, no. 10 (2023): 2160-2178.
- ²⁶ Guembri, Mohamed Alaeddine, Ghazi Racil, Mohamed Tounsi, Chirine Aouichaoui, Luca Russo, Gian Mario Migliaccio, Yassine Trabelsi, Nizar Souissi, and Johnny Padulo. "Effects of Ramadan fasting on sleep and physical fitness among young female handball players." *Children* 11, no. 8 (2024): 954.
- ²⁷ Yarar, Hakan, Ali Özkan, Ece Ervüz, and İzzet Kırkaya. "Investigation of the effect of Ramadan fasting on sleep patterns, nutritional characteristics, and physical activity levels in young individuals doing active sports." *International Journal of Sport Culture and Science* 12, no. 1 (2024): 45-54.
- ²⁸ Adeel Farooq, Carlos P. Herrera, and Fatma Almudahka, "Effect of Ramadan Fasting on Cognitive Function and Mood State in Healthy Adults," *Journal of Nutrition and Metabolism* (2020): 1–8.