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Editorial

Psychological Impact of Ramadan Fasting: Insights for General Population and Athletes

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INTRODUCTION

Ramadan is the ninth month of the Islamic lunar calendar. During this 30-day period Muslim adults around the world have a mandatory obligation to fast daily from dawn until dusk every year. The religious aspects of Ramadan fasting (RF) go beyond just abstaining from consuming food and drink, but also include smoking, sex, and other physical pleasures. It also extends to self-discipline and controlling malign behaviors, such as aggression, fighting and swearing. Fasting individuals are also expected to show greater compassion to those who are disadvantaged. During this month there is an emphasis on community, with collective breaking of the fast, communal prayers and a rich social/family life at night. Exemptions from fasting include those who are unwell or undertaking a journey, pre-pubertal children, and women who are pregnant/nursing, or during their menstrual period.

It is of note that increasing numbers of practicing Muslim athletes, both recreational and elite, face the challenge of RF every year. This has generated the need to understand both the physiological and psychological effects of this unique form of intermittent fasting. There is an expanding body of evidence on the favorable physiological effects of RF, which includes short-term changes in body weight, fat mass, metabolites/metabolic, and neuroendocrine profile related to risk of some chronic diseases, such as diabetes and inflammation [1] Figure 1. However, there is still a scarcity of research on the psychological impact of RF in both non-athletes and athletes.

Positive Psychological Effects of RF in Healthy Populations

In healthy individuals, RF has been associated with some psychological improvements. Multiple studies have reported decrease in anxiety and depression levels during Ramadan compared to before or after the holy month [2]. It is proposed that the spiritual, social, and lifestyle factors inherent to Ramadan may contribute to this effect, especially in Muslim majority countries. Religious coping, increased community bonding through group prayers and gatherings, as well as reduced work stress may enhance positive emotions and resilience to stressors. Another reported potential psychological benefit is a perception of improvement in the quality-of-life, often associated with an individual's religiosity [3].

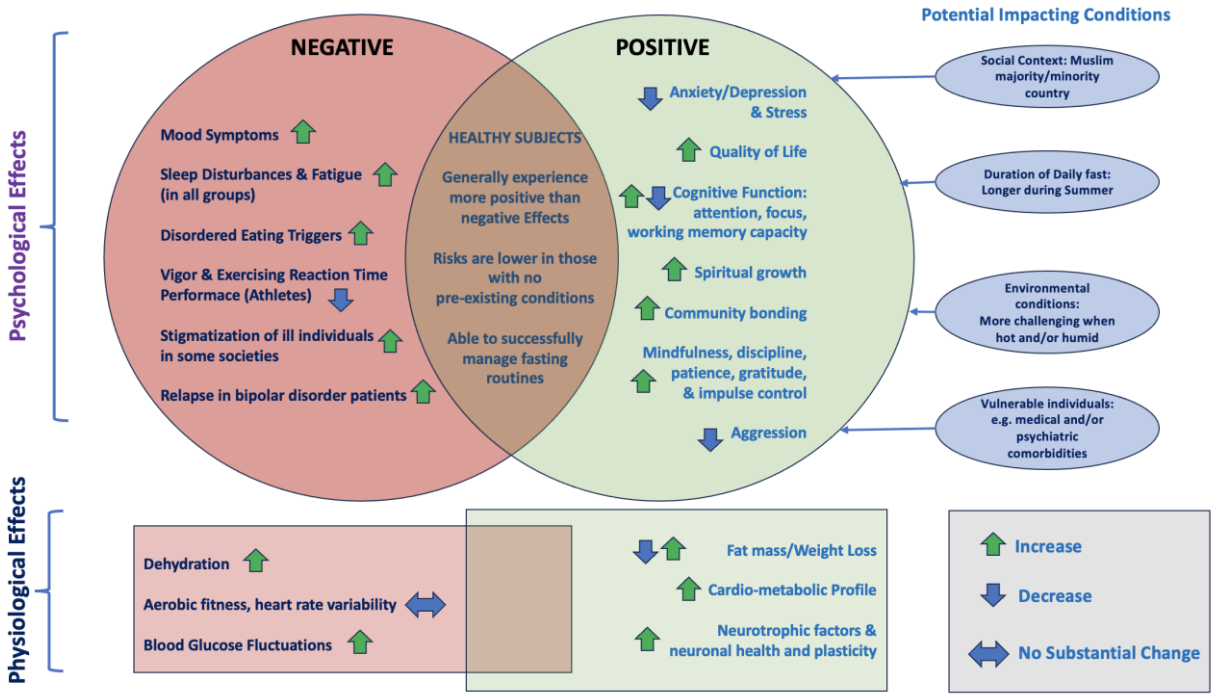

Figure 1. EFFECTS OF RAMADAN FASTING (RF) (Synthesis of the psychological and physiological effects of Ramadan Fasting and the associated potential impacting conditions. Positive effects are displayed on the right and negative effects on the left of the figure.)

Data supporting this comes from a systematic review of studies that looked at the quality-of-life scores during Ramadan, which showed improvement in the psychological and spiritual domains [4]. The daily practice of fasting, and self-restraint required during Ramadan appears to cultivate traits like patience, gratitude, and impulse control that promote mental well-being. Additionally, RF has been linked to positive cognitive effects, such as enhanced attention, focus, and working memory capacity [5]. The molecular basis of this may be due to (i) the altered expression of neurotrophic factors that support neuronal health and plasticity, similar to that shown during intermittent fasting and/or (ii) the altered circadian rhythms and metabolic shifts that may also impact aspects of brain function [6].

Potentially Negative psychological Effects and Risks of RF in Vulnerable Populations

However, RF is not without potential psychological risks, especially for those with pre-existing mental health issues or other comorbidities [7]. The stresses of fasting while managing a chronic medical condition could also negatively impact psychological well-being. For example, individuals with mental health issues could be stigmatized in Muslim communities for not fasting, resulting in some individuals observing the fast under challenging situations. Changes in sleep patterns, irregular timings in the intake of prescribed medication, reduced food intake, dehydration, potential social isolation, and feelings of guilt over missing fasts can all act as potential triggers and lead to exacerbation of psychiatric symptoms. For instance, there is some evidence that patients with bipolar disorder suffered a substantial increase of relapse during RF, with varied effects on schizophrenia [7]. Those with eating disorders may also struggle during the month of Ramadan. However, while there is some evidence that non-religious fasting (e.g. some types of intermittent fasting) may reinforce disordered eating behaviors or attitudes and increase internal distress, other studies have shown that dietary restriction for religious purposes, such as that observed during RF, may not confer increased risk of disordered eating symptoms, warranting more research in the field [8]. RF can also be challenging for other clinical populations. For instance, sleep disturbances from changes in meal schedule and timing can worsen the condition of patients with insomnia or circadian rhythm disorders [9].

Psychological Effects in athletes

The effects of RF on athletic performance ranges from none to a substantive effect, depending on several factors (e.g., the type of exercise, the duration of the fast and/or the environmental conditions [1]. The negative effects of RF in athletes include an increase in sleep disturbances and fatigue or a decreased vigor [10], with positive psychological outcomes being reduced tension and stress, compared to pre- and post-Ramadan and/or compared to the non-fasting athletes [11]. Importantly, the outcome of high motivation and/or a developed religiosity and coping skills in certain athletes [3], can by far outweigh the negative physiological effects. Indeed, the strong Ramadan spiritual context and its associated positive psychological responses are promising fields for future research. For instance, anecdotal evidence comes from (i) a U.S.A. National Basketball Association basketballer like Kyrie Irving, who was named man of an important match, while fasting during Ramadan 2024 or (ii) an elite footballer, i.e., Karim Benzema, who scored back-to-back hattricks for Real Madrid in 2023 during important games held in Ramadan. Quotes from these athletes are worth reflecting on and incorporating the assessment of religiosity when studying RF in sport. Media reports that: Benzema said that '*Ramadan is part of my life, and my religion makes fasting in Ramadan an obligation. For me, it is very important, and i feel good when I'm fasting'.* Irvin puts it in a different but complementary way: *'Focusing on God's way is not just about playing through physical hunger; it's about feeding the soul, about performing acts of selflessness that resonate far beyond the basketball court'.*

Considerations and Recommendations

The psychological effects of RF are complex and highly individualized, based on one's unique physical and mental health status. For most healthy individuals, the spiritual, social, and lifestyle aspects of RF appear to outweigh most of the potential fasting-related challenges, conferring an overall positive psychological impact. However, those with underlying medical or psychiatric comorbidities may be more vulnerable to negative effects and require extra monitoring, support, and perhaps even temporary exemption from fasting as advised by their healthcare providers. The specific cases of elite athletes need to be considered in this context. Not only do they face additional physical and psychological demands to fulfill their training and competition engagements, but it is also increasingly apparent that many of them suffer from undiagnosed or willfully hidden mental health disorders that have been ignored for too long in this population. More research on the psychological effects of RF is needed to strengthen and enrich the actual knowledge in the field. Indeed, the scarcity of specific studies so far, limits the depth of analysis and generalizability of findings. Studies examining psychological symptom trajectories before, during, and after Ramadan are needed, especially in clinical populations or individuals with high demands, such as elite athletes. Developing evidence-based strategies to mitigate risks and safely accommodate religious fasting practices for these groups are essential. Researchers should also consider studying Ramadan and its beneficial effects, and eventual risks, not only in Muslim-majority countries, where the population and life pattern are adapted to facilitate the observance of the faith, but also, in Muslim-minority countries, where often very little support is provided to help endure and adapt to the changes during RF. The latter deserves the attention of cultural psychologists who, to the best of our knowledge did not start to study this topic yet. Ramadan represents a pinnacle of cultural adherence and environmental mastery, pursuing social/family positive relations and collective intensive rituals (collective prayers and Quran reading sessions). It is a tight-knit communal atmosphere promoting psychological well-being and self-acceptance supported by cultural context and regulated by law in Muslim-majority countries. In Muslim-minority countries it is an individual struggle to manage. This can lead to a limited access to the spiritual goal, creating sense of loneliness, a lack of belonging, and fatigue all can have impact and may further contribute to developing depressive mood symptoms

Several important questions that remain unanswered include: (i) what are the effects of scheduling major sporting events during Ramadan when the fasting hours in high latitude locations can exceed 17h every day (e.g. countries in the northern hemisphere at summer time), (ii) are there differences in the psychological effect in both non-athletes and athletes, dependent on the environment in which the RF is undertaken, (iii) what are the interactions between physiological responses/adaptations and psychological wellbeing during RF, and (iv) does religiosity impact and is

impacted by the neuroendocrine axis? The latter questions and the points discussed in our editorial are obviously the view of the authors. As we are mainly belonging to two institutions, including a wellness and recovery center, there might be inherent biases towards certain perspectives. These should be taken into account when interpreting the presented material and suggestions.

In conclusion, RF can have both favorable and unfavorable psychological consequences depending on one's overall health status, fasting context and perhaps religiosity. More empirical research on this unique cultural/religious practice is needed. A holistic approach through a bio-psychosocial lens, taking into account the different cultural nuances in both Muslin-majority and Muslim-minority settings will allow to work towards maximizing the benefits while minimizing potential harm of RF. This would benefit all those who observe this spiritual mandatory tradition, from the individuals in the general community to elite athletes.

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CONSENT FOR PUBLICATION

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COMPETING INTERESTS

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AUTHORS' CONTRIBUTIONS

K.C., R.K., V.M.A., and M.A.M: conception and design.

K.C., R.K., V.M.A., and M.A.M: analysis and interpretation of the data.

K.C., R.K., V.M.A., and M.A.M: drafted the article.

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DECLARATION

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