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THE IMPORTANCE OF FASTING IN CELL REGENERATION: A SCIENTIFIC AND ISLAMIC PERSPECTIVE

PENTINGNYA PUASA TERHADAP REGENERASI SEL TUBUH: KAJIAN ILMIAH DAN PERSPEKTIF ISLAM

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Abstract

Fasting is a religious practice that not only holds spiritual significance in Islamic teachings but also contributes substantially to the body's physiological repair. This study aims to examine the relationship between Islamic fasting—particularly Ramadan and sunnah fasting—and cellular repair processes through biological mechanisms such as autophagy, cell regeneration, and mitochondrial function enhancement. Using an integrative literature review method, this study synthesized findings from scientific and Islamic sources retrieved from databases including PubMed, Scopus, ScienceDirect, and Google Scholar from 2015 to 2025. The findings reveal that fasting positively affects systemic inflammation reduction, improved insulin sensitivity, metabolic regulation, and the prevention of premature aging and degenerative diseases. Moreover, fasting strengthens psychological and spiritual dimensions, supporting mental health and enhancing emotional resilience. This synergy between biological and spiritual benefits highlights fasting as a holistic health strategy. The study affirms that Islamic values align with modern preventive health principles and offer a solid foundation for spiritually based health promotion. Further research is recommended to evaluate specific biomarkers related to fasting-induced cell regeneration.

Keywords : fasting, cell regeneration, scientific perspective, islamic perspective, autophagy, intermittent fasting

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Abstrak

Puasa merupakan praktik ibadah yang tidak hanya memiliki nilai spiritual dalam ajaran Islam, tetapi juga berkontribusi signifikan terhadap perbaikan fisiologis tubuh. Kajian ini bertujuan untuk menelaah keterkaitan antara praktik puasa dalam Islam, terutama puasa Ramadhan dan puasa sunnah, dengan proses perbaikan sel melalui mekanisme biologis seperti autofagi, regenerasi sel, dan perbaikan fungsi mitokondria. Penelitian ini menggunakan metode literature review dengan pendekatan integratif terhadap literatur ilmiah dan nilai-nilai Islam, yang dikumpulkan dari database PubMed, Scopus, ScienceDirect, dan Google Scholar dalam rentang 2015–2025. Hasil kajian menunjukkan bahwa puasa berdampak positif terhadap pengurangan inflamasi sistemik, peningkatan sensitivitas insulin, perbaikan metabolisme, serta pencegahan penuaan dini dan penyakit degeneratif. Selain itu, puasa juga terbukti memperkuat aspek psikologis dan spiritual, mendukung kesehatan mental, serta meningkatkan ketahanan emosional. Kombinasi antara manfaat biologis dan spiritual ini memperlihatkan bahwa puasa memiliki potensi sebagai pendekatan kesehatan holistik. Kajian ini menegaskan bahwa nilai-nilai Islam sejalan dengan prinsip-prinsip promotif dan preventif dalam kesehatan modern, dan dapat menjadi fondasi kuat bagi promosi gaya hidup sehat berbasis spiritualitas. Penelitian lanjutan direkomendasikan untuk mengevaluasi biomarker spesifik dalam konteks regenerasi sel akibat puasa.

Kata Kunci : puasa, regenerasi sel tubuh, kajian ilmiah, kajian islam, autofagi, puasa intermiten

1. INTRODUCTION

Fasting is one of the fundamental acts of worship in Islam that serves not only as a means of drawing closer to God, but also has a significant impact on human physiological health. In Surah Al-Baqarah verse 183, Allah SWT commands fasting as a path toward achieving taqwa (piety), which encompasses both spiritual and physical self-control (Marzband & Zakavi, 2015). This practice of restraint is believed to foster awareness of the importance of maintaining bodily health and personal hygiene, aligning with public health values that emphasize physical and mental balance (Afandi et al., 2025).

In the past decade, fasting—whether during Ramadan or in the form of sunnah (voluntary) fasts—has increasingly become a subject of scientific inquiry, particularly in the search for non-pharmacological strategies to combat the growing prevalence of degenerative diseases such as diabetes mellitus, cancer, and metabolic syndrome. Studies have shown that intermittent fasting affects various body systems by reducing systemic inflammation, improving lipid profiles, and enhancing insulin sensitivity (Antunes et al., 2018; Urooj et al., 2020). One of the key mechanisms involved is the activation of autophagy, a cellular cleansing process that removes damaged components and plays a crucial role in tissue regeneration and protection against oxidative stress (Mattson et al., 2017).

This biological process, naturally triggered by energy deficiency during fasting, has been linked to improved cognitive function, the prevention of premature aging, and protection against neurodegenerative disorders. Recent studies even suggest that fasting produces synergistic effects between biological and spiritual dimensions, collectively strengthening holistic health (Urooj et al., 2020). Afandi et al. (2025) emphasize that fasting is not only a

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religious obligation but also a medium to connect spiritual depth with the body's biological needs, making it highly relevant in public health discourse.

In today's era of growing health literacy, there is an urgent need to revisit Islamic values as a foundation for promoting healthy lifestyles. This integrative review of theological and scientific perspectives not only enriches Islamic scholarship but also provides a solid scientific basis for health promotion grounded in spiritual values (Khattak et al., 2022). Therefore, this study explores the relationship between Islamic fasting practices and the body's cellular repair mechanisms based on current scientific literature, with the aim of contributing to an interdisciplinary understanding between health science and spirituality.

2. RESEARCH METHOD

This study is a literature review employing an integrative approach that combines perspectives from modern medical science and Islamic values related to the benefits of fasting on the body's cellular repair processes. This approach was chosen to examine the relationship between biological concepts such as autophagy and cell regeneration and the spiritual values embedded in Islamic teachings on fasting.

The review was conducted between April and May 2025 without a specific physical location, as it is entirely library-based. The subjects of this review include scholarly articles from accredited national and international journals discussing topics on fasting, autophagy, cellular repair, as well as Islamic perspectives on health and spirituality.

Data collection was carried out through a systematic search of scientific articles published within the last ten years (2015–2025), using databases such as Google Scholar, Scopus, PubMed, and ScienceDirect. Keywords used included: fasting, autophagy, cell regeneration, intermittent fasting, and Islam and health. The articles were selected based on their relevance to the topic, source credibility, and alignment with the theme of integrating medicine and Islamic perspectives.

The collected data were analyzed qualitatively using a thematic approach. The analysis process involved three stages: (1) identification of key themes (e.g., autophagy, glucose control, detoxification, spiritual balance), (2) categorization of findings into medical and spiritual domains, and (3) synthesis of findings to develop a comprehensive understanding of how fasting contributes to cellular repair and physical-spiritual equilibrium. The analytical process was iterative, conducted repeatedly to ensure consistency and depth of interpretation of the reviewed data.

3. RESULTS AND DISCUSSION

Sharia evidence (Quran and Hadith) on the wisdom of fasting

Fasting, as an essential pillar of Islam, embodies deep spiritual, moral, and health benefits, as emphasized through both the Qur'an and Hadith. The Qur'an explicitly commands fasting in Surah Al-Baqarah, specifically verse 183, which states, "O you who believe! Fasting is prescribed for you as it was prescribed for those before you so that you may become pious" (QS. Al-Baqarah: 183) (Ismail, 2024). This directive highlights the innate connection between fasting and the cultivation of piety, an essential aspect of spiritual awareness and self-control in an individual's life.

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Further elaboration on the benefits of fasting can be found in verses 184–185 of the same surah, which frame fasting as an act of compassion rather than hardship, serving as guidance for humanity (Ismail, 2024). The Hadith narrated by Bukhari and Muslim underscores the moral dimensions of fasting, indicating it acts as a "shield" against sin, thereby fostering self-discipline and restraint (Ismail, 2024). The emphasis on not engaging in frivolous or harmful behavior while fasting reaffirms the holistic approach of Islam to worship, which integrates ethical behavior with routine actions.

In scholarly discourse, the wisdom behind fasting extends beyond mere obedience to divine command. Scholars such as Ibn Qayyim al-Jawziyyah, in his work "Zad al-Ma'ad," present fasting as a means of rejuvenating the body and resting the digestive system—concepts that align with contemporary understandings of health and detoxification (Azizah & Yazid, 2024). This bioethical perspective relates fasting's physiological effects to processes now recognized for their role in cellular repair and longevity.

Intermittent fasting practices within Islam, such as recommended sunnah fasting on Mondays and Thursdays, reinforce a balanced lifestyle. This connection between spirituality and health signifies obedience to divine edicts and illustrates an integrative model of fasting that nurtures both the soul and body. An interdisciplinary analysis demonstrates that fasting aligns with both spiritual and physical wellness, as confirmed by scriptural and contemporary scientific literature (Azizah & Yazid, 2024; Rihan et al., 2024).

In conclusion, fasting encapsulates a multifaceted worship practice that fosters piety, ethical behavior, and physical health. The Qur'anic injunctions and prophetic traditions not only establish fasting as a religious obligation but also reveal its inherent wisdom, bridging the realms of spirituality and bodily well-being—making it an exemplary practice with profound implications for both individual and community health.

Explanation of autophagy

Autophagy is a crucial biological process that serves to maintain cellular health, especially during states of stress such as fasting. The term "autophagy," derived from Greek roots meaning "self-eating," describes the cellular mechanism that enables the degradation and recycling of damaged organelles, proteins, and other macromolecules within the cell. This process is fundamental to cellular homeostasis, playing a significant role in prolonging cellular life, regulating metabolic processes, and preventing the buildup of harmful substances that may lead to chronic diseases and age-related degeneration (Levine & Kroemer, 2019; Mei et al., 2015; Deng et al., 2019).

The significance of autophagy was prominently highlighted by Yoshinori Ohsumi's seminal research, which earned him the Nobel Prize in Physiology or Medicine in 2016. Ohsumi's investigations into yeast models elucidated the genetic framework governing autophagy and demonstrated that these mechanisms are conserved across species, including humans. His findings revealed the essential role of autophagy in cellular responses to nutritional deprivation, a condition prominent in fasting, which triggers adaptive responses in cells. Particularly, fasting activates autophagy, allowing cells to degrade unnecessary or dysfunctional components, thereby repurposing them for energy and cellular repair (Levine & Kroemer, 2019; Mei et al., 2015; Deng et al., 2019).

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Recent studies underscore the benefits of fasting-induced autophagy, revealing its role in enhancing mitochondrial function, reducing inflammatory responses, and potentially lowering the risk of insulin resistance and cancer progression. For example, autophagy has been shown to improve insulin sensitivity by modulating the activity of pathways such as AMPK and mTOR, both of which are critical regulators of metabolic processes (Lu et al., 2017; Jang et al., 2017; Yamamoto et al., 2018). Additionally, studies indicate that autophagy contributes to the maintenance of various organ systems, including the nervous, hepatic, and cardiovascular systems, asserting its therapeutic potential across a range of medical applications (Levine & Kroemer, 2019; Park et al., 2022).

Moreover, the intersection of autophagy with religious practices such as fasting in Islam reflects the interplay of ancient wisdom and modern scientific understanding. The principles of fasting, which emphasize moderation, self-discipline, and health preservation, resonate with the observable biological benefits mediated by autophagy. This alignment between autophagy and the teachings of fasting illustrates a profound connection between physiological processes and cultural practices aimed at enhancing well-being (Levine & Kroemer, 2019; Mei et al., 2015).

In conclusion, autophagy emerges as a fundamental physiological process with extensive implications across health and disease, particularly as it relates to fasting. It provides a basis for understanding cellular metabolism, resilience, and the maintenance of homeostasis while bridging traditional wisdom and contemporary scientific exploration.

The impact of fasting on mitochondria, inflammation, and cell regeneration

Fasting has been extensively researched for its significant effects on cellular metabolism, particularly in mitochondrial function, inflammation, and cell regeneration. The metabolic state induced by fasting leads to notable physiological changes that can optimize mitochondrial activity. Specifically, fasting has been linked to enhanced mitochondrial biogenesis, increased energy production efficiency, and decreased oxidative stress. Evidence indicates that caloric restriction can preserve mitochondrial function by lowering the production of reactive oxygen species (ROS), which helps mitigate oxidative damage—a major contributor to cellular aging (Stone et al., 2019; Mattson et al., 2017). These findings suggest that fasting may be vital for promoting healthy mitochondrial dynamics necessary for maintaining cellular integrity across various tissues (Bhargava & Schnellmann, 2017; Jun et al., 2024).

Furthermore, fasting exhibits considerable anti-inflammatory effects, which are crucial in preventing and managing numerous chronic diseases. Studies suggest that fasting decreases the secretion of pro-inflammatory cytokines, such as interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-α), while promoting anti-inflammatory mediators like IL-10 (Zhou et al., 2021; Schneider et al., 2022). This modulation of cytokine balance reduces systemic low-grade chronic inflammation—a recognized precursor to conditions like obesity, diabetes, and neurodegenerative disorders—while also creating an environment conducive to tissue repair and regeneration (López-Domènech et al., 2019; Ebrahimi et al., 2024). In both animal models and human studies, fasting has shown significant reductions in inflammatory markers, suggesting its therapeutic potential for inflammatory diseases (Ebrahimi et al., 2024; Vachharajani et al., 2016).

In relation to cell regeneration, fasting stimulates several biological pathways that

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enhance cellular repair and rejuvenation, particularly through mechanisms such as autophagy and improved growth hormone sensitivity. Autophagy, a process that clears damaged cellular components, is significantly upregulated during fasting (Suchacki et al., 2023; Ejaz et al., 2016). This increase is critical for stem cell regeneration, as evidenced by studies on gut and hematopoietic stem cells, where fasting has been shown to boost regenerative capabilities (Jones et al., 2022; Shirai et al., 2021). Moreover, the reduction of insulin and insulin-like growth factor-1 (IGF-1) levels during fasting is hypothesized to trigger cellular stress responses that promote effective damage repair mechanisms, thus potentially enhancing longevity and resilience against age-related diseases (Wang et al., 2017; Kobayashi et al., 2017).

Collectively, the effects of fasting on mitochondrial health, inflammation reduction, and cell regeneration highlight its potential as a biological intervention aligned with healthful lifestyle choices. This perspective resonates with various philosophical and religious teachings, including Islamic doctrine, emphasizing moderation as a pathway to optimal physical and mental wellbeing (Yousefian et al., 2022; Bhargava & Schnellmann, 2017).

In summary, the profound impacts of fasting on mitochondria, inflammation, and cell regeneration position it as a valuable strategy for enhancing health and longevity. By improving mitochondrial efficiency, reducing inflammation, and promoting tissue regeneration, fasting can be regarded as a multifaceted intervention with wide-ranging implications for disease prevention and health optimization.

In vivo and in vitro studies on fasting and tissue healing

In vivo studies have consistently demonstrated that fasting accelerates tissue regeneration. For instance, a research study by (Bao et al., 2016) elucidates the impact of prolonged fasting on endothelial progenitor cell (EPC) activity, suggesting a notable enhancement in ischemic angiogenesis in mice. This enhancement is attributed to an increase in vascular endothelial growth factor (VEGF), which is crucial for blood vessel formation and tissue repair (Bao et al., 2016). Similarly, the study of (Liu et al., 2023) indicates that modifications in the inflammatory microenvironment can influence tissue regenerative capacities, and fasting may serve as a modulator of such inflammatory responses that otherwise hinder healing (Liu et al., 2023).

Moreover, specific findings from (Hsu et al., 2021) support the premise that fasting can significantly improve wound healing processes. This study utilized a diabetic rat model, revealing that fasting not only improved glucose control but also facilitated enhanced angiogenesis and wound healing through the activation of certain growth factors, including VEGF (Hsu et al., 2021). The role of fasting in vascular stability and recovery from ischemic conditions was also supported by (Liu et al., 2023), which reported improvements in neurological function and cerebral angiogenesis following prolonged fasting in stroke models (Liu et al., 2023).

In vitro studies complement these in vivo findings, offering insights into the cellular mechanisms behind fasting's effects. For instance, (Kim et al., 2017) demonstrated that intermittent fasting can promote adipose thermogenesis and improve metabolic homeostasis, which indirectly supports tissue recovery processes (Kim et al., 2017). Further research by (Qian et al., 2017) discusses the role of various growth factors in regenerative processes, aligning with the idea that fasting might enhance these mechanisms through various metabolic

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pathways (Qian et al., 2017).

Both in vivo and in vitro findings collectively emphasize that fasting not only serves as a preventive health strategy but also as a potentially valuable therapeutic adjunct in regenerative medicine. These insights affirm the notion that fasting, a practice deeply rooted in various cultural contexts—including Islamic teachings about health and balance—offers substantial benefits for tissue healing and overall body care.

Integration of the benefits of fasting from a medical and spiritual perspective

The integration of the benefits of fasting from both medical and spiritual perspectives reveals a comprehensive understanding of this practice. Medically, fasting has been shown to improve various aspects of metabolic health. Research indicates that fasting facilitates the activation of critical biological processes such as autophagy, cell regeneration, and mitochondrial repair, which can enhance metabolic flexibility and reduce systemic inflammation, thus potentially lowering the risk of chronic diseases (Armutçu, 2019), Regalado et al., 2024). Specifically, studies demonstrate that fasting can lead to favorable changes in hormonal profiles, including lower fasting insulin and glucose levels, which are indicative of enhanced insulin sensitivity and metabolic function (Alharbi et al., 2025; Warner et al., 2023). Furthermore, the physiological effects of fasting have been linked to improvements in body weight, lipid profiles, and markers of cardiovascular health, reinforcing the notion that the benefits of fasting are underpinned by empirical evidence (Washburn et al., 2019; Mattson et al., 2017).

From a spiritual standpoint, fasting transcends mere abstention from food and drink; it embodies a profound practice of self-discipline and purification of the soul. In many religious traditions, including Islam, fasting is viewed as an avenue for spiritual growth that promotes patience, mindfulness, and emotional stability (Gyimah, 2024). The Prophet Muhammad's saying that "Fasting is a shield" metaphorically encapsulates the protective role fasting plays against not only sinful behavior but also against various physical ailments (Armutçu, 2019). This discipline instilled by fasting can result in reduced stress and enhanced mental resilience, echoing findings that indicate its significant impact on emotional and psychological well-being (Su et al., 2021).

The intersection of these two perspectives emphasizes fasting as a holistic practice that aligns with the bio-psycho-social-spiritual model of health. By allowing the body to rest from regular intake, metabolic processes are rejuvenated while simultaneously providing time for spiritual reflection and self-control. This harmonious interaction between the physical and the spiritual highlights the broader implications of fasting as not merely a religious obligation but also a practice deeply rooted in health-promoting behaviors (Mattson et al., 2017; Fink et al., 2024). This convergence of fasting with scientific insights suggests that the spiritual teachings surrounding fasting reinforce its physiological benefits, thus presenting a compelling case for fasting as a nurturer of both body and soul.

In summary, the multifaceted benefits of fasting illustrate a synthesis of medical and spiritual insights, reinforcing the notion that engaging in fasting can lead to significant improvements in overall quality of life, making it a potent practice for contemporary society. It is a timeless ritual that remains relevant in modern health discourse and serves as a bridge linking ancient wisdom with current scientific understanding.

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The relevance of sunnah fasting (Monday-Thursday, Ayyamul Bidh) for preventive health

Fasting in the context of Islamic teachings extends beyond the obligatory fasts of Ramadan—sunnah fasting, such as that which occurs on Mondays and Thursdays and during Ayyamul Bidh (the 13th, 14th, and 15th of each Hijri month), carries substantial spiritual and health-related significance. These practices in preventive health can be understood through a synthesis of various studies that elucidate their physiological impacts, highlighting potential benefits akin to modern intermittent fasting regimens.

Research indicates that fasting on Mondays and Thursdays can yield significant cardiovascular benefits. (Mahanani et al., 2022) reported that engaging in this practice led to notable reductions in blood pressure levels among female students accustomed to these fasts (Mahanani et al., 2022). Furthermore, studies on intermittent fasting suggest that such fasting regimens can improve insulin sensitivity and lower blood glucose levels, thereby reducing risks associated with metabolic syndrome and cardiovascular diseases (Armutçu, 2019; Samudera et al., 2020) highlighted that fasting, such as during Ramadan, significantly contributes to lower blood sugar levels and cholesterol reduction (Samudera et al., 2020).

Ayyamul Bidh fasting, which involves three consecutive days of fasting each month, creates a rhythmic fasting pattern that may support bodily detoxification and metabolic homeostasis. This periodic fasting promotes autophagy, a process essential for cellular repair and regeneration. Research indicates that fasting can stimulate pathways that encourage metabolic health, including potentially beneficial changes to the gut microbiome (Maifeld et al., 2021; Mohr et al., 2021).

From a preventive health perspective, the periodic metabolic rest provided by sunnah fasts alleviates the digestive system's constant load and can mitigate oxidative stress associated with chronic overeating. The habitual nature of sunnah fasting serves not only as a spiritual discipline but also cultivates moderation in dietary habits, counteracting the adverse effects of a modern lifestyle characterized by high-calorie and low-nutrient food choices (Trabelsi et al., 2022). Engaging consistently in sunnah fasting encourages individuals to adopt healthier eating patterns, which could lead to better long-term health outcomes (Hamdan et al., 2018).

The spiritual implications of fasting also contribute to its health benefits. The act of fasting promotes self-discipline and greater awareness of personal consumption behaviors, which can enhance psychological well-being (Lee & Lien, 2015).

In summary, the practice of sunnah fasting on Mondays and Thursdays and during Ayyamul Bidh holds significant relevance for preventive health. These fasts not only reflect the values of worship within Islamic teachings but also align with contemporary understanding of metabolic health and the importance of dietary moderation.

Potential implementation of Fasting in modern lifestyle

In the context of modern lifestyles characterized by fast-paced living, sedentary behavior, and poor dietary choices, the implementation of fasting presents a compelling opportunity for promoting health and wellness. The prevalence of diseases like diabetes, obesity, and hypertension is partly attributed to contemporary lifestyles that encourage overeating and stress, leading to a pressing need for effective health interventions (Septiana et al., 2024; Jamil

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et al., 2024). Fasting, particularly in formats such as the Sunnah fasting observed in Islam, can offer an accessible, culturally relevant solution that aligns with both biological and psychological needs.

Research has demonstrated the potential physiological benefits of intermittent fasting, which can enhance metabolic health by reducing insulin resistance and improving cardiovascular outcomes (Gyimah, 2024). For instance, fasting methods like the Monday-Thursday schedule or Ayyamul Bidh are manageable and scientifically supported as effective in promoting health without the rigorous demands of unsustainable diet trends (Jamil et al., 2024). This approach allows individuals to integrate fasting into their daily routines seamlessly, thereby fostering better health outcomes in an era that often prioritizes convenience over health (Septiana et al., 2024).

From a psychological and sociocultural perspective, fasting can bolster self-discipline and mindfulness, which are essential in countering the fast-food consumption patterns prevalent in today's urban environments (Ufrida & Harianto, 2022). Social pressures surrounding food consumption can lead to unhealthy eating habits, and fasting could serve as a counterbalance by promoting an intentional approach to food (Azzara et al., 2023). Furthermore, adopting fasting as a lifestyle change encourages individuals to slow down and engage in reflective practices that enhance mental well-being and spiritual grounding (Lee et al., 2018).

The increasing awareness surrounding nutrition and health, coupled with a cultural shift towards natural and sustainable living, supports the feasibility of fasting as a regular practice rather than an occasional ritual (Septiana et al., 2024). This trend is evidenced by the growing number of health professionals and fitness enthusiasts advocating for fasting-based diets, underlining both the psychological and physical benefits that stem from such practices (Septiana et al., 2024; (Gyimah, 2024). As awareness of these benefits spreads, fasting is poised to become a strategic component of preventive health care in modern societies, thus reaffirming the relevance of traditional practices in addressing contemporary health challenges.

Integrating fasting into modern lifestyles, as part of holistic health practices, not only aids in disease prevention but also enhances self-awareness and mental health stability. Therefore, there is a strong belief that the principles within Islamic teachings regarding fasting are not just ritualistic but also offer substantial functional values relevant for modern society's myriad challenges (Gyimah, 2024).

4. CONCLUSION

This review concludes that fasting is a scientifically and spiritually significant practice that supports cellular repair through multiple physiological mechanisms, including autophagy, improved mitochondrial function, reduced inflammation, and enhanced tissue regeneration. These biological processes contribute not only to metabolic health and disease prevention but also to longevity and mental resilience. The integration of Islamic teachings on fasting with modern medical findings illustrates a synergistic model in which spiritual discipline promotes biological balance. The review’s strength lies in its interdisciplinary synthesis of contemporary scientific data and Islamic values, offering a comprehensive understanding of fasting as both a health intervention and a religious observance.

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However, one limitation of this study is the lack of longitudinal clinical trials directly measuring fasting's effects on cellular regeneration in humans, which could validate these findings further. Therefore, future studies should explore specific biomarkers and apply controlled experimental designs to better assess the therapeutic scope of fasting in clinical practice.

Overall, the practice of fasting—particularly within Islamic tradition—not only reflects obedience to divine law but also aligns with evidence-based health promotion. It holds promising implications for public health strategies in modern contexts and reinforces the relevance of spiritual practices in supporting physical well-being. Fasting thus emerges as a valuable, holistic approach to achieving physiological and psychological health.

5. REFERENCES

Afandi, B., Kaabi, J., & Sharma, C. (2025). Impact of twice-weekly islamic fasting on cardiovascular risk factors in women with type 2 diabetes mellitus. Journal of Diabetes and Endocrine Practice. https://doi.org/10.1055/s-0045-1806834

Alharbi, A., Womack, E., & Yarar-Fisher, C. (2025). Impact of combined neuromuscular electrical stimulation (comb-nmes) on glucose signaling and muscle myofiber distribution in a patient with acute spinal cord injury and lower motor neuron lesion. Journal of Clinical Medicine, 14(3), 876. https://doi.org/10.3390/jcm14030876

Antunes, F., Erustes, A., Costa, A., Nascimento, A., Bincoletto, C., Ureshino, R., … & Smaili, S. (2018). Autophagy and intermittent fasting: the connection for cancer therapy?. Clinics, 73, e814s. https://doi.org/10.6061/clinics/2018/e814s

Armutçu, F. (2019). Fasting may be an alternative treatment method recommended by physicians. Electronic Journal of General Medicine, 16(3), em138. https://doi.org/10.29333/ejgm/104620

Azzara, M., Putra, E., & Patra, H. (2023). Fast food as a lifestyle of urban teenagers: a study of visitors to the janji jiwa coffee shop in the city of padang. Digital Press Social Sciences and Humanities, 10, 00006. https://doi.org/10.29037/digitalpress.410429

Azizah, L. and Yazid, S. (2024). Puasa dan kesehatan fisik (kajian medis) mata kuliah interdisipliner pendidikan islam berbasis al- quran dan hadits. Reflection, 2(1), 276-289. https://doi.org/10.61132/reflection.v2i1.478

Bhargava, P. and Schnellmann, R. (2017). Mitochondrial energetics in the kidney. Nature Reviews Nephrology, 13(10), 629-646. https://doi.org/10.1038/nrneph.2017.107

Bao, X., Liu, C., Yang, H., Peng, C., Dong, X., Zhang, C., … & Xie, H. (2016). Prolonged fasting improves endothelial progenitor cell-mediated ischemic angiogenesis in mice. Cellular Physiology and Biochemistry, 40(3-4), 693-706. https://doi.org/10.1159/000452581

Deng, J., Jiang, P., Yang, T., Huang, M., Xie, J., Luo, C., … & Yang, X. (2019). B2-adrenergic receptor signaling promotes neuroblastoma cell proliferation by activating autophagy. Oncology Reports. https://doi.org/10.3892/or.2019.7266

Ebrahimi, P., Horner, D., Burgner, D., Brustad, N., Wang, T., Ali, M., … & Rasmussen, M. (2024). Systemic inflammation during fasting and postprandial states: a comprehensive study of key determinants in a deeply characterized cohort of young adults.. https://doi.org/10.1101/2024.08.30.24312659

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
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Ejaz, A., Mitterberger, M., Lü, Z., Mattesich, M., Zwierzina, M., Hörl, S., … & Zwerschke, W. (2016). Weight loss upregulates the small gtpase diras3 in human white adipose progenitor cells, which negatively regulates adipogenesis and activates autophagy via akt–mtor inhibition. Ebiomedicine, 6, 149-161. https://doi.org/10.1016/j.ebiom.2016.03.030

Fink, J., Tanaka, M., & Horie, S. (2024). Effects of fasting on metabolic hormones and functions: a narrative review. Juntendo Medical Journal, 70(5), 348-359. https://doi.org/10.14789/jmj.jmj24-0012-r

Gyimah, L. (2024). Fasting physiological effects. https://doi.org/10.5772/intechopen.1006645

Hamdan, R., Muhammad, F., Razak, A., & Mahjom, N. (2018). The tendency to use sunnah functional food among students in malaysia. International Journal of Academic Research in Business and Social Sciences, 8(1). https://doi.org/10.6007/ijarbss/v8-i1/3845

Hsu, A., Roman, S., Bagatini, M., Marafon, F., Nascimento, P., & Módolo, N. (2021). Intermittent fasting before laparotomy: effects on glucose control and histopathologic findings in diabetic rats. Nutrients, 13(12), 4519. https://doi.org/10.3390/nu13124519

Ismail, A. (2024). Linguistic and contextual analysis of fasting in surah al-baqarah: a jewish-christian heritage in 7th century arabia. Jurnal Al Bayan Jurnal Jurusan Pendidikan Bahasa Arab, 16(1), 258. https://doi.org/10.24042/albayan.v16i1.22526

Jamil, A., Rezkitha, Y., Utama, M., Lutfiana, N., & Urrachman, S. (2024). The relationship between lifestyle and the incidence of disrupted fasting blood sugar. Magna Medica Berkala Ilmiah Kedokteran Dan Kesehatan, 11(1), 29. https://doi.org/10.26714/magnamed.11.1.2024.29-37

Jang, J., Eom, J., Jeung, H., Cheong, J., Lee, J., Kim, J., … & Min, Y. (2017). Ampk–ulk1-mediated autophagy confers resistance to bet inhibitor jq1 in acute myeloid leukemia stem cells. Clinical Cancer Research, 23(11), 2781-2794. https://doi.org/10.1158/1078-0432.ccr-16-1903

Jones, A., Framnes-DeBoer, S., Shipp, A., & Arble, D. (2022). Caloric restriction prevents obesity- and intermittent hypoxia-induced cardiac remodeling in leptin-deficient ob/ob mice. Frontiers in Physiology, 13. https://doi.org/10.3389/fphys.2022.963762

Jun, L., Tao, Y., Geetha, T., & Babu, J. (2024). Mitochondrial adaptation in skeletal muscle: impact of obesity, caloric restriction, and dietary compounds. Current Nutrition Reports, 13(3), 500-515. https://doi.org/10.1007/s13668-024-00555-7

Khattak, M., Shukri, N., & Baharuddin, N. (2022). Hydration status of university students in the fasting month of ramadan. Malaysian Journal of Medicine and Health Sciences, 18(s19), 1-5. https://doi.org/10.47836/mjmhs.18.s19.1

Kim, K., Kim, Y., Son, J., Lee, J., Kim, S., Choe, M., … & Sung, H. (2017). Intermittent fasting promotes adipose thermogenesis and metabolic homeostasis via vegf-mediated alternative activation of macrophage. Cell Research, 27(11), 1309-1326. https://doi.org/10.1038/cr.2017.126

Kobayashi, M., Takeda, K., Narita, T., Nagai, K., Okita, N., Sudo, Y., … & Higami, Y. (2017). Mitochondrial intermediate peptidase is a novel regulator of sirtuin-3 activation by caloric restriction. Febs Letters, 591(24), 4067-4073. https://doi.org/10.1002/1873-3468.12914

Multidisciplinary Indonesian Center Journal (MICJO)
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Lee, S. and Lien, N. (2015). The influence of adult family members on children's fast food consumption: a health belief perspective. Journal of Communications in Healthcare, 8(3), 185-196. https://doi.org/10.1179/1753807615y.0000000017

Lee, Y., Shelley, M., Liu, Y., & Chang, Y. (2018). Assessing the association of food preferences and self-reported psychological well-being among middle-aged and older adults in contemporary china-results from the china health and nutrition survey. International Journal of Environmental Research and Public Health, 15(3), 463. https://doi.org/10.3390/ijerph15030463

Levine, B. and Kroemer, G. (2019). Biological functions of autophagy genes: a disease perspective. Cell, 176(1-2), 11-42. https://doi.org/10.1016/j.cell.2018.09.048

Liu, Z., Liu, M., Jia, G., Li, J., Niu, L., Zhang, H., … & Ma, J. (2023). Long-term intermittent fasting improves neurological function by promoting angiogenesis after cerebral ischemia via growth differentiation factor 11 signaling activation. Plos One, 18(3), e0282338. https://doi.org/10.1371/journal.pone.0282338

López-Domènech, S., Abad-Jiménez, Z., Iannantuoni, F., Marañón, A., Rovira-Llopis, S., Morillas, C., … & Rocha, M. (2019). Moderate weight loss attenuates chronic endoplasmic reticulum stress and mitochondrial dysfunction in human obesity. Molecular Metabolism, 19, 24-33. https://doi.org/10.1016/j.molmet.2018.10.005

Lu, Z., Xu, N., He, B., Pan, C., Lan, Y., Zhou, H., … & Liu, X. (2017). Inhibition of autophagy enhances the selective anti-cancer activity of tigecycline to overcome drug resistance in the treatment of chronic myeloid leukemia. Journal of Experimental & Clinical Cancer Research, 36(1). https://doi.org/10.1186/s13046-017-0512-6

Mahanani, E., Hapsari, H., & Ahyati, D. (2022). The effect of sunnah fasting on blood pressure and oral hygiene level. Mutiara Medika Jurnal Kedokteran Dan Kesehatan, 22(2), 1-6. https://doi.org/10.18196/mmjkk.v22i2.13721

Maifeld, A., Bartolomaeus, H., Löber, U., Avery, E., Steckhan, N., Markó, L., … & Forslund, S. (2021). Fasting alters the gut microbiome reducing blood pressure and body weight in metabolic syndrome patients. Nature Communications, 12(1). https://doi.org/10.1038/s41467-021-22097-0

Marzband, R. and Zakavi, A. (2015). A concept analysis of self-care based on islamic sources. International Journal of Nursing Knowledge, 28(3), 153-158. https://doi.org/10.1111/2047-3095.12126

Mattson, M., Longo, V., & Harvie, M. (2017). Impact of intermittent fasting on health and disease processes. Ageing Research Reviews, 39, 46-58. https://doi.org/10.1016/j.arr.2016.10.005

Mei, Y., Thompson, M., Cohen, R., & Tong, X. (2015). Autophagy and oxidative stress in cardiovascular diseases. Biochimica Et Biophysica Acta (Bba) - Molecular Basis of Disease, 1852(2), 243-251. https://doi.org/10.1016/j.bbadis.2014.05.005

Mohr, A., Gumpricht, E., Sears, D., & Sweazea, K. (2021). Recent advances and health implications of dietary fasting regimens on the gut microbiome. Ajp Gastrointestinal and Liver Physiology, 320(5), G847-G863. https://doi.org/10.1152/ajpgi.00475.2020

Park, J., Kim, Y., Lee, S., Oh, C., Lee, E., Ko, J., … & Park, J. (2022). Autophagy inhibits cancer stemness in triple-negative breast cancer via mir-181a-mediated regulation of

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
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atg5 and/or atg2b. Molecular Oncology, 16(9), 1857-1875. https://doi.org/10.1002/1878-0261.13180

Qian, Y., Han, Q., Chen, W., Song, J., Zhao, X., Ouyang, Y., … & Fan, C. (2017). Platelet-rich plasma derived growth factors contribute to stem cell differentiation in musculoskeletal regeneration. Frontiers in Chemistry, 5. https://doi.org/10.3389/fchem.2017.00089

Regalado, J., González-García, J., Ramirez, I., Hermosilla, P., Rascón, J., & Girón, S. (2024). Exploring the impact of fasting and fasting-mimicking diets on type 2 diabetes management in adults: a systematic review. Cureus. https://doi.org/10.7759/cureus.70332

Rihan, H., Cahyati, P., Anggelia, J., Efendi, S., & Wismanto, W. (2024). Nilai-nilai pendidikan islam yang terkandung pada pelaksanaan praktek puasa ramadhan. ALFIHRIS, 2(3), 41-51. https://doi.org/10.59246/alfihris.v2i3.838

Samudera, W., Fernandez, G., Fitriyah, R., Arifin, H., Wulandari, S., & Permana, R. (2020). The benefits of fasting to improve health conditions and to prevent cardiovascular disease. Jurnal Ners, 14(3), 383-387. https://doi.org/10.20473/jn.v14i3.17168

Schneider, A., Buchan, A., & Couch, Y. (2022). The effects of fasting on ischemic infarcts in the rat. https://doi.org/10.1101/2022.11.15.516543

Septiana, H., Julianti, R., Putri, L., Dinina, R., Azzahra, S., & Gunawan, S. (2024). Overview of food consumption behavior and healthy lifestyle patterns in modern communities of bogor city. Hearty, 12(2), 408-413. https://doi.org/10.32832/hearty.v12i2.16708

Shirai, T., Uemichi, K., Hidaka, Y., Kitaoka, Y., & Takemasa, T. (2021). Effect of lactate administration on mouse skeletal muscle under calorie restriction. Current Research in Physiology, 4, 202-208. https://doi.org/10.1016/j.crphys.2021.09.001

Stone, V., August, P., Crestani, M., Saccomori, A., Magro, B., Maurmann, R., … & Matté, C. (2019). Adaptive effects of gestational caloric restriction in the mitochondria of wistar rats' brain: a dohad approach. International Journal of Developmental Neuroscience, 79(1), 1-10. https://doi.org/10.1016/j.ijdevneu.2019.09.004

Su, J., Wang, Y., Zhang, X., Ma, M., Xie, Z., Pan, Q., … & Peppelenbosch, M. (2021). Remodeling of the gut microbiome during ramadan-associated intermittent fasting. American Journal of Clinical Nutrition, 113(5), 1332-1342. https://doi.org/10.1093/ajcn/nqaa388

Trabelsi, K., Ammar, A., Boujelbane, M., Puce, L., Garbarino, S., Scoditti, E., … & Bragazzi, N. (2022). Religious fasting and its impacts on individual, public, and planetary health: fasting as a “religious health asset” for a healthier, more equitable, and sustainable society. Frontiers in Nutrition, 9. https://doi.org/10.3389/fnut.2022.1036496

Ufrida, K. and Harianto, S. (2022). Konsumerisme makanan siap saji sebagai gaya hidup remaja di kota surabaya: studi kasus siswi sma muhammadiyah 4 kota surabaya. Jurnal Analisa Sosiologi, 11(1). https://doi.org/10.20961/jas.v11i1.57134

Urooj, A., Kotebagilu, N., Shivanna, L., Anandan, S., Thantry, A., & S, S. (2020). Effect of ramadan fasting on body composition, biochemical profile, and antioxidant status in a sample of healthy individuals. International Journal of Endocrinology and Metabolism, 18(4). https://doi.org/10.5812/ijem.107641

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Warner, S., Dai, Y., Sheanon, N., Yao, M., Cason, R., Arbabi, S., … & Winnick, J. (2023). Short-term fasting lowers glucagon levels under euglycemic and hypoglycemic conditions in healthy humans. Jci Insight, 8(12). https://doi.org/10.1172/jci.insight.169789

Washburn, R., Cox, J., Muhlestein, J., May, H., Carlquist, J., Le, V., … & Horne, B. (2019). Pilot study of novel intermittent fasting effects on metabolomic and trimethylamine n-oxide changes during 24-hour water-only fasting in the feelgood trial. Nutrients, 11(2), 246. https://doi.org/10.3390/nu11020246

Yamamoto, S., Kuramoto, K., Wang, N., Situ, X., Priyadarshini, M., Zhang, W., … & He, C. (2018). Autophagy differentially regulates insulin production and insulin sensitivity. Cell Reports, 23(11), 3286-3299. https://doi.org/10.1016/j.celrep.2018.05.032