



# ORIGINAL ARTICLE

## Application of international classification of functioning, disability and health in salat: a scoping review

Irma Ruslina Defi<sup>1</sup>, Intan Sabrina Mohamad<sup>2</sup>, Nuzula Chafidh Al Barqi<sup>3</sup>,  
Adziqa Ammara Qiantori<sup>4</sup>, and Andri Qiantori<sup>5</sup>

<sup>1</sup>Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Padjadjaran University, Bandung, Indonesia; Physical Medicine and Rehabilitation Department, Hasan Sadikin General Hospital, Bandung, Indonesia

<sup>2</sup>Department of Rehabilitation Medicine, Hospital Sultan Idris Shah, Serdang, Malaysia  
Regen Rehabilitation Hospital, Petaling Jaya, Selangor, Malaysia  
Medical Rehabilitation Unit, Tung Shin Hospital, Kuala Lumpur, Malaysia

<sup>3</sup>Physical Medicine and Rehabilitation Residential Training Program, Faculty of Medicine, Padjadjaran University, Bandung, Indonesia; Sartika Asih Hospital, Bandung, Indonesia

<sup>4</sup>Faculty of Medicine, Padjadjaran University, Bandung, Indonesia

<sup>5</sup>Telkom University, Bandung, Indonesia

### \* Correspondence Author:

 [irma.ruslina@unpad.ac.id](mailto:irma.ruslina@unpad.ac.id)

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## ABSTRACT

### BACKGROUND

Salat has been linked to physical, cognitive, emotional and psychological health benefits. This scoping review classifies the health benefits of salat based on the International Classification of Functioning, Disability, and Health (ICF) conceptual framework. The ICF illustrates how Salat may be used as a multi-modal and multidisciplinary framework to rehabilitate clients with different conditions tailored to their clinical, psychosocial and environmental contexts.

### PURPOSE

To conduct a scoping review on the health benefits of salat (muslim prayer) based on the ICF conceptual framework.

### METHODS

A literature review was conducted from February to April 2023 using PubMed, EBSCO, and the Scopus Library databases. Articles published between 2012 and 2023 were retrieved using the following keywords: "impact" OR "effect" OR "health benefit" OR "functional outcome" AND "shalat" OR "Muslim prayer" OR "Salat". Health benefits of salat were subsequently categorised into five domains of the ICF.

### RESULTS

A total of 596 articles were identified through PubMed (404), EBSCO (124), and Scopus (68). Thirty-one records met the predefined inclusion criteria: 21 original articles, two systematic reviews, five literature reviews, one case study, one case series, and one short report. Salat had positive benefits on the cardiorespiratory, haematological, immunological, mental and neuromuscular functions. Salat may serve as a coping mechanism to reduce stress and depression. The frequency and duration of salat had positive associations with maintaining employment, social support and better quality of life.

## CONCLUSION

Salat is associated with many health benefits, which can be categorised systematically and summarised using the ICF conceptual framework.

## Keywords

Functional outcome, health benefit, muslim prayer, salat, International Classification of Functioning, disability, health

## INTRODUCTION

The International Classification of Functioning, Disability, and Health (ICF) was endorsed by the World Health Organization (WHO) in 2001<sup>(1,2)</sup> to complement data-reporting on mortality, morbidity and health-related outcomes by the International Classification of Disease, 11<sup>th</sup> revision (ICD-11).<sup>(3)</sup> The combination of diagnostic information and functional status provide a better understanding of health at individual and population levels.

The ICF is a conceptual framework and a common language for healthcare providers to categorise states of functioning, based on one's capacity and disability. The latter is defined as '*diminished capacity experienced by individuals with a health condition within a constrained environment*'.<sup>(2)</sup> In the past, disability was regarded as a binary concept, categorising individuals strictly as either belonging to or not belonging to a distinct category. However, the ICF portrays functioning as a continuous spectrum that cuts across different stages of life. Hence, disability is not confined to a minority, but a concept that encompasses individuals from diverse circumstances and cultures.<sup>(4)</sup>

The ICF is divided into two sections. The first section is divided into three components: *body functions* (physiological functions of body systems), *body structures* (anatomical parts of the body), and *activity and participation* (execution of a task or action by an individual in life situations). The second section consists of *environmental* and *personal factors*. Environmental factors include physical, social and psychological environments in which people live and conduct their lives. Personal factors comprise the specific background of an individual's life. Although personal factors do not have specific items or assigned codes, it is included in the ICF framework because it influences other domains and health conditions of the individual.<sup>(5,6)</sup>

A person's holistic attainment of wellbeing is linked to his spiritual health. Islam, being a prominent religion with over a billion followers, has played a pivotal role in this realm through salat (Muslim prayer). Serving as the religion's second pillar, salat holds immense spiritual and physical significance in one's daily ritual. Engaging in salat five times daily activates a wide range of muscles, similar to low to moderate intensity level of physical exercise.<sup>(7)</sup>

Salat is associated with beneficial effects on human physiology such as the heart, spine, memory, concentration, psyche and cognitive functions.<sup>(8)</sup> The purpose of this scoping review is to examine the application of the ICF and ICF Core Sets in salat.

## METHODS

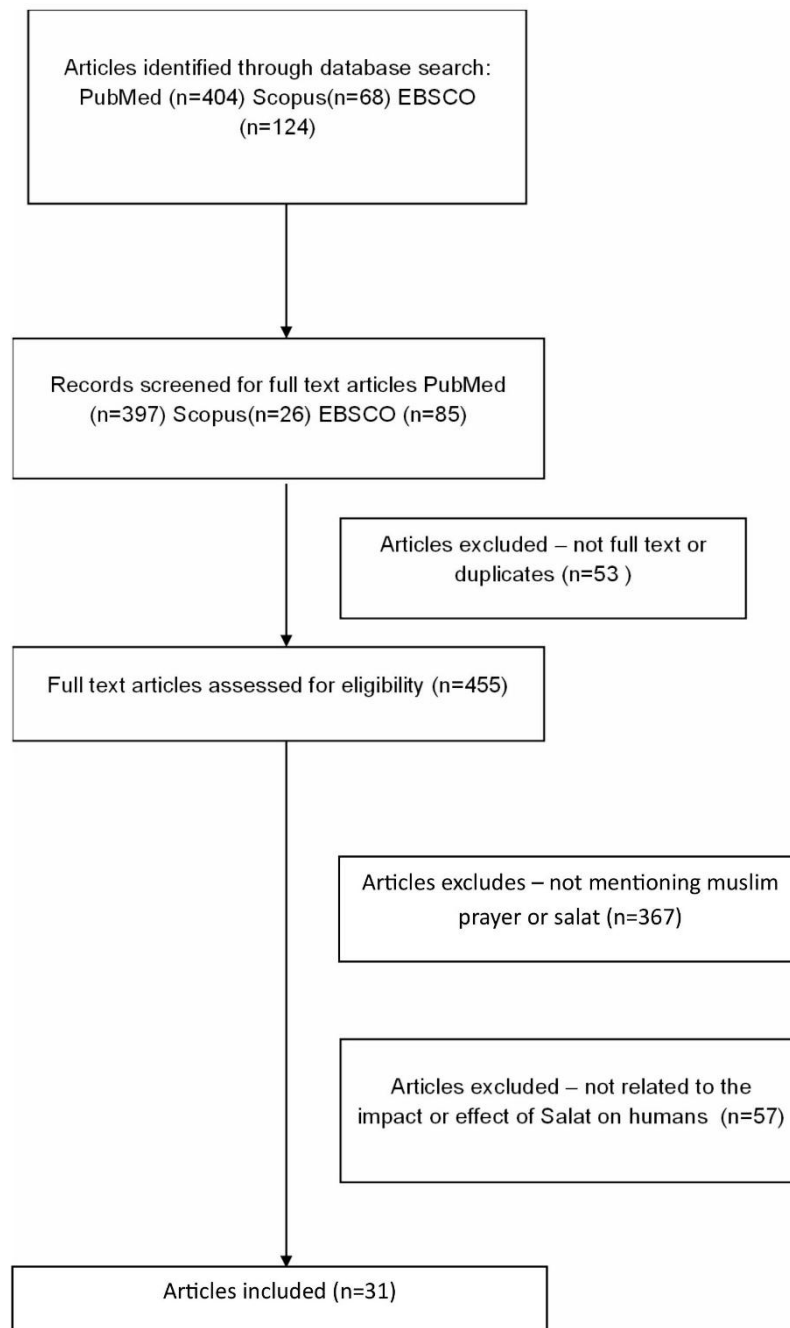
This is a scoping review, elaborated in light of the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement.<sup>(9)</sup>

### Search strategy

Our review was conducted based on articles published between 2012 and 2023, retrieved from PubMed, EBSCO, and the Scopus Library databases. The search utilised these following keywords: "impact" OR "effect" OR "health benefit" OR "functional outcome" AND "shalat" OR "muslim prayer" OR "Salat". This search was performed from February to April 2023.

### Inclusion and exclusion criteria

Inclusion criteria encompassed full-text articles in English that explored the health effects of salat. Exclusion criteria comprised abstracts, duplicate articles, blogs, news articles, promotional brochures, conference proceedings, articles that did not mention salat or Muslim prayer, and articles unrelated to the impact or effect of salat on humans (see Figure 1).



**Figure 1. Flowchart of article selection**

### Study selection

The titles of the retrieved articles were initially screened by the first author. Subsequently, three independent reviewers carefully assessed the accuracy and eligibility of the full-text articles. Any disagreements in the selection process were resolved through consensus and consultation with a fourth reviewer.

Health benefits were subsequently categorised into five main components of the ICF.

### Data extraction

Once the articles were selected, the data were recorded in a spreadsheet: author and year of publication, country, muslim country/not, participants, gender, age, methodology,

scope/domain/elements based on ICF, and main findings.

### Data synthesis

Five authors performed the data analysis. First, ISM and IRD reviewed and became familiar with the article contents. Next, the reported findings were entered into a spreadsheet organized by study context and grouped into nodes by NCAB, AAQ and AQ.

## RESULTS

### Study selection and characteristics

A total of 596 articles were identified through the following search engines: PubMed (n=404), EBSCO (n=124), and Scopus (n=68) (see Figure 1). After eliminating duplicate entries, 455 titles were screened to assess their eligibility. The scoring and selection process yielded 45 records that met the predefined inclusion and exclusion criteria. Subsequently, the abstracts of these records were scrutinised, resulting in 31 records that were deemed suitable for full-text assessment.

The final analysis included 31 studies, comprising 21 original articles, two systematic reviews, five literature reviews, one case study, one case series, and one short report. The majority of these studies were conducted in countries with substantial Muslim populations, such as Malaysia (n=6), Indonesia (n=5), Pakistan (n=5), Saudi Arabia (n=3), and Turkey (n=2). Additionally, there were studies from Nigeria, Bangladesh,

India, Canada, Russia, China, Australia, the United States of America and the United Kingdom, respectively.

### Application contexts

The ICF assesses each individual within a context, viewing functioning and disability as outcomes of the interaction between a person's health conditions and their environment. The ICF arranges information into two sections: the first addresses functioning and disability, and the second addresses contextual factors. Each section is further divided into two components:<sup>(2)</sup>

(i) functioning and disability: (i.i) body function and structures, (i.ii) activities and participation; (ii) contextual factors: (ii.i) environmental and personal factors. [Figure 2. Interactions between ICF components (WHO 2001)].<sup>(2)</sup>

The utilisation of the ICF for data analysis has proven beneficial, as it facilitates the comparison of functional outcomes across different health conditions, diseases and countries. Furthermore, it provides a comprehensive analysis from the individual's perspective.<sup>(10)</sup> In the present review, we employed the ICF classification as a systematic and universal framework to illustrate the health benefits of salat.

### Body function

This category discusses the physiological effects of salat on mental and physical functions.

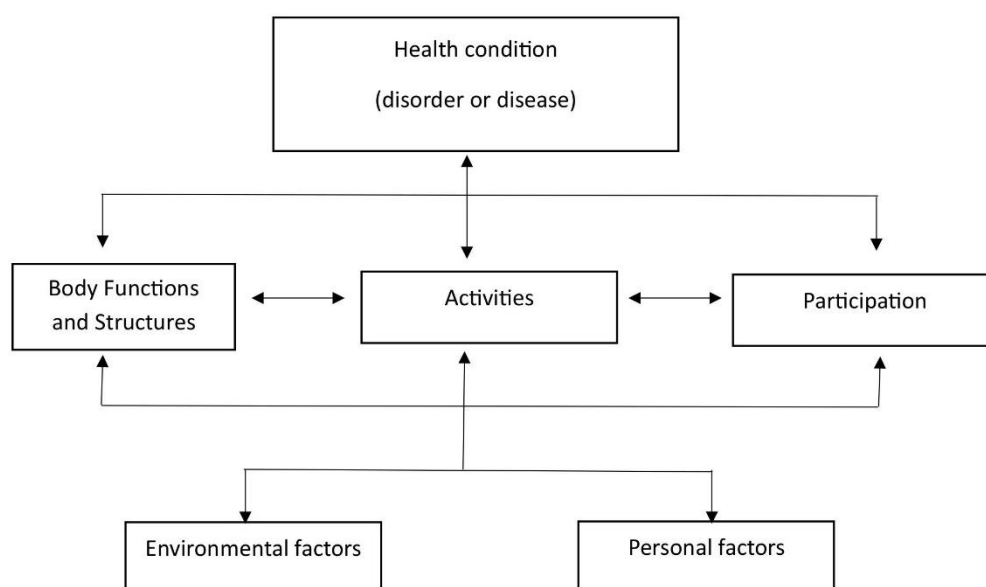


Figure 2. Interactions between components of ICF <sup>(2)</sup>

### ***Mental function***

Out of 31 articles, 17 articles reported health impacts of salat on mental and emotional functions of salat practitioners. Fourteen articles explained the effects of salat on emotions. In these articles, perceived increased hope,<sup>(11)</sup> life satisfaction,<sup>(11–13)</sup> mindfulness,<sup>(13,14)</sup> relaxation,<sup>(15–19)</sup> comfort,<sup>(20)</sup> positive affect,<sup>(21)</sup> increased happiness<sup>(22)</sup> and self confidence<sup>(11)</sup> were reported as positive effects of salat.

Six studies reported that salat reduces negative emotions, producing lower levels of depression,<sup>(11,23)</sup> anxiety<sup>(11,16,19,24)</sup> and other psychopathological symptoms.<sup>(25)</sup> Studies also reported improved cognitive function,<sup>(8,11,15,26)</sup> mental activity<sup>(27,28)</sup> and attentional processing<sup>(27)</sup> in salat practitioners.

### ***Cardiovascular, haematological, immunological and respiratory functions***

Seven studies have demonstrated the positive impact of salat on cardiovascular function, such as reducing blood pressure,<sup>(16,20,24,29,30)</sup> lowering mean arterial pressure (MAP),<sup>(20)</sup> improving blood supply,<sup>(31)</sup> enhancing oxygen circulation<sup>(20,23)</sup> and preventing venous thrombi.<sup>(20)</sup>

The influence of salat on heart rate (HR) was also observed during specific positions of salat.<sup>(16,20,32,33)</sup> Elevated HR was observed during prostration (Sujood/head-down crooked kneeling, HDCK).<sup>(20,32)</sup> Long-term salat practitioners appeared to have decreased baseline HR compared with the control group.<sup>(16,33)</sup> One study indicated that salat had the potential to expand the chest cavity,<sup>(15)</sup> while another study suggested a boost in non-specific immune response.<sup>(30)</sup>

### ***Neuromusculoskeletal and movement related functions***

Eight studies showed positive effects of salat on neuromusculoskeletal and movement-related functions. Salat has the potential to enhance the flexibility of various joints in the trunk, hip, and lower extremities.<sup>(15,20,27,29)</sup> Salat also contributes to muscle toning in both the trunk and all limbs,<sup>(15,16,20,23,34)</sup> as well as improving muscle power.<sup>(20)</sup> The practice of salat has been shown to contribute to the prevention or reduction of osteoarthritis (OA) in the knee.<sup>(20,23,29)</sup> The movements during salat could also enhance balance, mobility and coordination among its practitioners.<sup>(15,16,20,23,35)</sup>

### ***Posture***

Body weight is distributed evenly across both feet during the *Qiyam* (standing) position. This stance position enhances body posture and promotes spinal stability by engaging the core muscles and aligning the lower back to a neutral position.<sup>(20)</sup>

### ***Physical fitness***

Twelve articles explained the benefits of salat as a physical activity or low-moderate-intensity exercise to promote fitness.<sup>(15,16,20,24,26,27,29,30,34,36–38)</sup> Salat may be considered as a mild intensity physical activity as it involves almost all joints of the human body if practised five times a day.<sup>(16,29)</sup> Positive effects were demonstrated when salat was used as a short duration physical activity or rehabilitation in the elderly and disabled.<sup>(16,26)</sup> The energy cost of daily prayers is about 80 calories per day, and may be considered as a form of physical activity to enhance fitness.<sup>(15)</sup>

### ***Other functions***

Salat has the capacity to alleviate pain sensations.<sup>(15,18)</sup> Additionally, salat could also contribute to reduction in body weight and body fat percentage.<sup>(30)</sup>

### ***Body structure***

This category addresses the effects of salat on anatomical components of the human body, such as organs and limbs, and its constituents.

### ***Structures of the nervous system***

Four articles reported positive impact of salat on the nervous system. Increased  $\alpha$  relative power (RP $\alpha$ ) on electroencephalography (EEG) was observed in the occipital and parietal regions during salat. These observations suggest increased brain activities via the augmentation of the parasympathetic component and reduction in the sympathetic outflow of the autonomic nervous system (ANS).<sup>(16,19,20)</sup> This phenomenon could elucidate why salat is frequently regarded as a form of meditation, given its ability to diminish anxiety and facilitate relaxation.<sup>(15–20,24)</sup>

One study reported elevated gamma waves in the frontal and parietal regions during salat,<sup>(28)</sup> which may be linked to an enhancement in cognitive and attentional processing.<sup>(11,15,28)</sup> The researchers observed reduction in cerebral blood flow (CBF) at the prefrontal cortex, interconnected frontal lobe structures and in the

parietal lobes.<sup>(31)</sup> This phenomenon potentially correlates with sensations of "surrender" and a profound "connectedness with God".<sup>(39)</sup> Moreover, the physical activity level (PAL) in salat might contribute to increasing brain-derived neurotrophic factor (BDNF), providing neuroprotective and neurotrophic advantages that enhance brain plasticity and neurogenesis. Brain-derived neurotrophic factor also contributes to the effectiveness of antidepressant treatments.<sup>(23)</sup>

### **Structures related to movement**

The act of performing salat has various impacts on muscles throughout the entire body, encompassing areas such as the head and neck, shoulders, trunk, pelvis, upper extremities, and lower extremities. Weight-bearing activities during salat, such as the *Rukuk* position (bending forward), effectively stretch the paraspinal muscles of the lumbar spine, hamstrings, and calf muscles (gastrocnemius and soleus). These movements serve to strengthen the back, extend the spine, and enhance the flexibility of the hips and hamstrings. Additionally, this practice alleviates stiffness in the spine, neck and back, leading to improved posture, balance, and coordination.<sup>(15)</sup> It is noteworthy that participating in salat also yields a positive impact on the range of motion in the knee joints of individuals who had undergone total knee arthroplasty.<sup>(15,39)</sup> Soccer players who regularly engage in salat demonstrate a reduced prevalence of non-contact muscle injuries, particularly hamstring muscle injuries. This effect is attributed to the eccentric lengthening of lower limb muscles during specific movements performed multiple times a day as part of the prayer routine.<sup>(40)</sup>

### **Structures related to the digestive, metabolic and endocrine systems:**

Only one article explains about the effect of salat on metabolic systems. The group that performed the 8-rakaat salat *Dhuha* (prayer after sunrise) demonstrated an increase in antioxidant activity (glutathione peroxidase, GPx) by approximately 8.9%.<sup>(40)</sup> Additionally, the levels of the oxidant malondialdehyde (MDA) decreased by around 48.35% after a duration of six weeks in elderly women. The practice of salat *Dhuha* appears to facilitate redox homeostasis and holds the potential to mitigate oxidative stress among elderly women.<sup>(37)</sup>

### **Structures related to the genitourinary and reproductive systems**

Physical exercise therapy, particularly involving pelvic floor muscles, has been shown to provide beneficial effects on erectile dysfunction (ED) by boosting blood circulation to the pelvic region and reducing ED symptoms. Salat movements may be a beneficial form of pelvic floor exercise.<sup>(20,38)</sup> A preliminary study by Ibrahim et al.<sup>(38)</sup> showed a significant increase in penile volume in the salat group compared with controls, suggesting an improvement of blood flow to the erectile tissue of the penis.

### **Activities and participation**

This theme addresses the impact of salat on the individual's participation in social and community activities.

### **Personal care and hygiene**

Several requirements are incumbent to perform the salat, with personal hygiene and cleanliness being of paramount importance. The salat practitioner is obligated to be free from urine, faeces, blood or pus prior to performing the ritualistic ablution (*Wuduk*). Bathing,<sup>(41)</sup> brushing the teeth with *siwak* (tooth stick), trimming of the moustache, clipping of fingernails and removing hair from armpits and pubic area are encouraged prior to *Wuduk*. The latter is the act of cleansing various parts of the body,<sup>(27,41)</sup> starting with the intention to perform the *Wuduk* (*Niyaat*), followed by washing of the face, both hands up to the forearms, part of the head and both feet up to the ankles. Each body part is washed three times, commencing on the right side, followed by the left side and performed in that order.<sup>(41)</sup> Optional rituals include uttering Basmallah (*in the name of Allah*) at the start of *Wuduk*, gargling, cleaning the nose, and washing the ears and the nape of the neck.

### **Upper and lower body dressing**

Salat practitioners must adhere to a dress-code or attire.<sup>(27)</sup> The latter includes donning clothes that cover the body from the navel to the knee for men; and the entire body except the face and hands for women. Other accessories may include prayer rugs or prayer gowns.<sup>(24)</sup>

Table 1. Summary of articles on the benefits of salat according to the international classification of functioning, disability and health codes

Authors	Country	Muslim country	Participants	Gender	Age (years)	Methods	Scope/Domain/ Elements based on ICF
Achour et al. <sup>(12)</sup>	Malaysia	Yes	Community (nurse)	Female : 93.7% Male: 6.7%	21 – 50	Quantitative cross-sectional	Body function Activities and Participation Personal Factors
Rufa'i et al. <sup>(20)</sup>	Nigeria	No	Community (Students and staff of University)	Female: 35 Male: 35	27.73 ± 6.64	Quasi-experimental	Body function
Albatnuni and Koszycki <sup>(13)</sup>	Canada	No	Community (Canadian Muslims)	Female : 122 Male : 33	18 – 24 (n=59) 25 – 34 (n=38) 35 – 44 (n=36) >45 (n=23)	Cross sectional	Body function Environmental Factors
Alam et al. <sup>(30)</sup>	Pakistan	Yes	Clinical patients (Overweight adults)	Male : 30	53.5 ± 8.7	Quasi-experimental	Body function Activity and Participation
Alnahdi et al. <sup>(14)</sup>	Saudi Arabia	Yes	Clinical patients (Multiple Sclerosis Patients)	Female : 125 Male: 51	34 ± 10.9 s	Observation - Cross sectional	Body function
Bai et al. <sup>(26)</sup>	China	No	Community (Hui Muslims)	Female : 98 Male: 107	Group 1: 67.78 ± 6.49 Group 2: 68.60 ± 5.99 Group 3: 68.98 ± 6.83 Group 4: 68.33 ± 6.28	Quasi-experimental	Body function Activity and Participation
Bezuglov et al. <sup>(40)</sup>	Russia	No	Community (Professional Russian soccer players)	Male : 68	Group 1: 27 ± 3.1 Group 2: 28 ± 4.2	Retrospective cohort	Body structures Activities & participation
Boy et al. <sup>(37)</sup>	Indonesia	Yes	Community (Elderly women in nursing home)	Female : 24	Group 1: 68.08 ± 3.80 Group 2: 68.58 ± 4.62	Randomized controlled study	Body structures Activity & participation
Chamsi-Pasha and Chamsi-Pasha <sup>(11)</sup>	Saudi Arabia	Yes	Articles	-	-	Literature review	Body function Body structure Activity and participation Personal factors
Doufesh et al. <sup>(32)</sup>	Malaysia	Yes	Community (Male muslims)	Male : 30	20 – 30	Quasi-experimental	Body function
Doufesh et al. <sup>(19)</sup>	Malaysia	Yes	Community	Male : 30	20 – 30	Quasi-experimental	Body function Body structure

Fatima et al. <sup>(27)</sup>	Pakistan	Yes	(Male muslims) Article	-	-	-	Body function Body structure Activity and participation Environmental factors
Doufesh et al. <sup>(31)</sup>	Malaysia	Yes	Community (Male muslims)	Male : 10	-	Quasi-experimental	Body function Body structure Activities and Participation
Ghous et al. <sup>(35)</sup>	Pakistan	Yes	Clinical Patients (Stroke patients)	Female:16 Male:11	54.44 ± 10.59	Randomized controlled trial	Body function
Guldas and Fatumetul. <sup>(21)</sup>	United Kingdom	No	Community (Muslim Community)	Female : 145 Male: 69	27.01 ± 8.80	Cross sectional	Body function
Ibrahim et al. <sup>(34)</sup>	Malaysia	Yes	Community (Muslim University students)	Female: 4 Male: 4	23.00 ± 1.50	Quasi-experimental	Body function Activity and Participation
Ibrahim et al. <sup>(38)</sup>	Malaysia	Yes	Clinical patients (Erectile dysfunction patients)	Male : 10	56.01 ± 5.92	Quasi-experimental	Body structure Activity and Participation
Irawati et al. <sup>(22)</sup>	Indonesia	Yes	Clinical patients (Schizophrenia inpatients)	Female : 5 Male : 1	-	Descriptive qualitative study	Body function Environmental Factors
Karadag and Yüksel. <sup>(18)</sup>	Turkey	Yes	Clinical patients (Cancer patients)	Female : 81 Male : 53	58.23 ± 14.25	Cross sectional study	Body function
Khanam et al. <sup>(17)</sup>	Bangladesh	Yes	Community (Male muslims)	Male: 5	23.01 ± 6.03	Quasi-experimental	Body function Body structures
Lodhi et al. <sup>(43)</sup>	Pakistan	Yes	Community (Disaster victims)	Female : 15 Male : 15	-	Descriptive qualitative study	Personal Factors
Meiranny et al. <sup>(24)</sup>	Indonesia	Yes	Community (Pregnant women)	Female : 40	-	Quasi-experimental	Body function Activity and Participation
Osama and Malik <sup>(16)</sup>	Pakistan	Yes	Articles	-	-	Systematic review	Body function Body structures Activity and Participation
Saniotis <sup>(23)</sup>	Australia	No	-	-	-	-	Body function Body structures Personal Factors
Torlak et al. <sup>(36)</sup>	Turkey	Yes	Clinical patients (Post total knee	Female : 13 Male : 17	Group 1 : 63.8 ± 1.03 Group 2: 59.6 ± 1.45	Prospective randomized controlled trial	Body structures Activity and Participation



			arthroplasty patients)				
Uyun et al. <sup>(25)</sup>	Indonesia	Yes	Community (Disaster victims) Article	Female 49 Male 19	-	Quasi-experimental	Body function
Nazish et al. <sup>(29)</sup>	India	Yes	Article	-	-	Literature review	Body Function Activity & participation
Kamran <sup>(15)</sup>	United Arab Emirates	Yes	Article	-	-	Literature review	Body function Body structures Activities and participation
Newberg et al. <sup>(39)</sup>	United States of America	No	Community (Muslims)	Female : 1 Male : 2	-	Observational study	Body structures Personal factors
Sarkingobir et al. <sup>(8)</sup>	Nigeria	No	Articles	-	-	Literature review	Body function Body structures Activity and participation

### ***Maintaining participation in vocation***

The impact of salat in maintaining participation in vocation may be related to physical fitness and discipline. Salat contributes indirectly to a notable reduction in missed training and playing days among Russian soccer players, particularly in instances of hamstring and other muscle injuries.<sup>(40)</sup> The researchers hypothesized that the eccentric lengthening of the muscles of the lower limbs during certain movements undertaken several times per day may be the underlying protective factor. Salat also fosters a profound commitment to a cause by enhancing concentration and channelling energy towards an appropriate course of action. This ultimately culminates in an optimization of overall life productivity and performance.<sup>(42)</sup>

### **Personal factors**

#### ***Handling stress***

Salat was reported as a coping mechanism to reduce stress among Muslim nursing staff,<sup>(12)</sup> decrease depression and improve quality of life.<sup>(26,43)</sup> Salat practitioners place emphasis on their relationship with their Creator and submission in all aspects of life.<sup>(12,20,43)</sup> Engaging in salat allows individuals to transform their worries into a positive force through supplication (prayer).

### **Environmental factors**

Three articles have demonstrated a relationship between salat and environmental factors.<sup>(20,42,43)</sup> Positive correlations were found

between religious involvement and social support.<sup>(43)</sup> The frequency and duration of prayer showed a positive association with social support, particularly through mass prayers and religious activities.<sup>(13)</sup>

Other environmental factors that influence salat are the availability of water for ablution (*Wuduk*), presence of wound dressing on either the face or limb(s); clean environment for the individual to pray; and continence. Soil or dust (tayammum) may be a substitute<sup>(41,42)</sup> when water is unavailable or if medically indicated. Salat practitioners must also orientate themselves toward the direction of the Kaabah<sup>(41)</sup> while praying.

### **DISCUSSION**

Although ICF use is not mandatory, it provides a systematic biopsychosocial framework to categorise diseases, health conditions, functional outcomes and targeted intervention plans. The ICF serves as a universal language in data reporting, regardless of disease conditions, population or psychosocial circumstances. Through ICF, healthcare professionals across the world can utilise a standardised framework to identify issues, set realistic goals and manage each client according to personal and environmental factors. Such a framework is essential especially in rehabilitation, whereby each client needs a multidisciplinary-team approach to improve functional outcome.

There have been many publications on innovative and interdisciplinary approaches to

healthy ageing. Our review contributes to the existing evidence to incorporate prayer and/or meditation into a patient's care plan. Like exercise, salat is a voluntary and low-cost intervention, which can be practised routinely according to the client's health condition(s) and capabilities. Our review found consistent positive reports on physical fitness, general wellbeing and better quality of life in people who pray regularly compared with control groups. Such 'low cost intervention' is useful to improve functional ability in older people across disease and health conditions worldwide.

Salat may be likened to *Islamic yoga* due to its similar body postures, Holy Scripture recitation and meditative component practised in yoga from cultures.<sup>(29)</sup> Several literatures have made direct comparisons between salat and yoga.<sup>(27,36,44)</sup> Four poses from yoga, namely Namaste (standing up), Ardha Uttanasana (bowing), Virasana (sitting with knees in full flexion) and Balasana (child pose) are akin to Qiyam, Rukuk, Tashahud and Sujood (prostration) during salat. These bodily postures focus on eccentric exercises aimed at the hamstrings, which may serve as protective factors to muscle injuries seen in Russian soccer players who prayed regularly.<sup>(40)</sup> Increased EMG activities were observed in the paravertebral, hamstrings, quadriceps and gastrocnemius muscles during prostration and when the subjects rose from the ground. Such movements are essential in physiotherapy, particularly for clients with high risks of falling. Reports on improvement in balance and coordination among salat practitioners may be linked to the activation of the visual, vestibular, and somatosensory systems.<sup>(45)</sup> The improvement in cognitive function, mental activity and attentional processing experienced by salat practitioners may be linked to the increased cerebral blood flow during prostration.<sup>(46-48)</sup> Ghorbani and Moosavi<sup>(28)</sup> reported that there was a 23% increase in basilar artery mean velocity during prostration compared with the sitting position among healthy medical students. The authors concluded that such increase in cerebral blood flow may be beneficial in stroke and elderly patients.

Salat has also been recommended as a mild to moderate form of cardiovascular or warm-up exercise.<sup>(16)</sup> The reduction in heart rate and blood pressure along with EEG waves similar to a sleep-state observed during prostration suggest increased parasympathetic outflow. The calming effect during and after recitation of Holy

Scriptures or Mantras reported by salat or yoga practitioners are similar to the effect found in those practising rhythmic breathing in meditation and mindfulness activities.<sup>(13-19,29,34)</sup>

Salat was also reported as a form of positive religious coping strategy in handling stress, anxiety and depression.<sup>(49-53)</sup> The intermittent nature of salat throughout the day provides a unique form of "spiritual energy" and respite to the cardiovascular, neurological, immunological, musculoskeletal, urological and gastrointestinal systems. This review illustrates how the ICF could summarise the systemic benefits of salat. The influence of salat on body function and structure potentiates participation in managing various activities and engagements such as self-care, hygiene care, sports and maintaining employment.<sup>(40,42,54)</sup>

## CONCLUSION

Salat is associated with many health benefits, which can be categorised systematically and summarised using the ICF conceptual framework. Salat aligns with the ICF framework as a low-cost intervention to promote health through participation in physical activity, and psychological and spiritual wellbeing. Future studies should compare the health benefits of prayer across different religions and cultures. More studies are needed to explain the relationship between parasympathetic outflow and prayers.

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## Conflict of Interest

The authors declare no conflict of interests.

## Author Contributions

ISM and IRD conducted review of the literature and drafted the manuscript. NCAB and AAQ were involved in the design and critical review of this manuscript. All authors made substantial contributions to conception and

design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agreed to be accountable for all aspects of the work.

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### Data Availability Statement

The data supporting the findings of this study are available upon request from the corresponding author.

### Declaration the Use of AI in Scientific Writing

The authors hereby declare that no generative AI was used in drafting this manuscript as well as in designing the figures and tables.

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