

Effects Of Intermittent Movement And Islamic Prayer (Solat) Breaks On Autonomic Function And Blood Pressure Variability Among Sedentary Office Workers: A Conceptual Paper

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Abstracts- Sedentary behavior has become a defining feature of modern office work, contributing to rising rates of cardiovascular disease, autonomic nervous system (ANS) dysregulation, and blood pressure variability (BPV) [27,37]. Although intermittent movement breaks have been shown to counteract some negative physiological effects of prolonged sitting [14], limited research has examined interventions that integrate culturally meaningful practices within workplace health promotion. Islamic prayer (Solat) is a spiritually significant ritual involving structured physical postures, controlled breathing, and mindfulness that may beneficially influence autonomic regulation [7,2]. This conceptual paper proposes a comprehensive framework integrating intermittent movement and Solat breaks to improve autonomic function and BPV among sedentary office workers.

Drawing on evidence from occupational health, cardiovascular physiology, physical activity, and spiritual-health literature, the paper synthesizes current knowledge and outlines mechanisms—reduced sedentary time, improved parasympathetic activity, vascular responsiveness, cortisol modulation, and emotional regulation—through which the integrated intervention may reduce sympathetic dominance and stabilize BPV [43,21]. Moderating factors such as workplace culture, adherence to prayer, job demands, and individual characteristics are discussed. This framework provides theoretical grounding for future empirical studies and supports culturally sensitive, low-cost workplace health strategies.

Index Terms- sedentary behavior; autonomic nervous system; blood pressure variability; Islamic prayer; Solat; intermittent movement; workplace health.

1. INTRODUCTION

Sedentary behavior is increasingly prevalent as modern workplaces become more digitalized, automated, and screen-dependent. Globally, many office workers spend more than two-thirds of their working hours sitting [27,31]. This prolonged sedentariness is recognized as an independent risk factor for cardiovascular disease, metabolic dysfunction, musculoskeletal disorders, and mental health decline [5,37]. Prolonged sitting affects numerous physiological pathways including autonomic nervous system (ANS) imbalance, endothelial dysfunction, vascular instability, impaired baroreflex sensitivity, and increased BPV [19,25].

BPV—blood pressure fluctuations across minutes, hours, or days—has emerged as a clinically significant biomarker independent of mean blood pressure [43]. Elevated BPV is associated with cardiovascular events, stroke, cognitive decline, and all-cause mortality [24,42]. Sedentary behavior exacerbates BPV by reducing vagal tone, enhancing sympathetic activity, and impairing vascular responsiveness [20,38]. Hence, interventions that restore autonomic balance may protect cardiovascular function in office workers.

Workplace interventions aimed at reducing sedentariness include sit–stand desks, structured walking breaks, or exercise programs; however, these often lack long-term adherence due to productivity concerns or lack of cultural embedding [34,6]. In Muslim-majority contexts, Islamic prayer (Solat) is practiced five times daily and involves physical postures—standing, bowing, prostration, and sitting—combined with slow breathing, recitation, and mindfulness. Evidence shows Solat reduces heart rate, blood pressure, anxiety, and cortisol while enhancing parasympathetic activation [7,22,44].

However, Solat has rarely been conceptualized as a structured health intervention in occupational settings. Integrating Solat with intermittent movement breaks offers synergy: movement counteracts physical inactivity, while prayer enhances parasympathetic

tone and emotional regulation [16,39]. Despite the strong potential, mechanisms linking these practices to ANS and BPV outcomes remain under-theorized.

This paper synthesizes multidisciplinary evidence to propose an integrated conceptual framework and identifies mediating and moderating variables influencing intervention effectiveness. It highlights implications for health, policy, and workplace practice and outlines directions for future research.

2. LITERATURE REVIEW

A. Sedentary Behavior and Cardiovascular–Autonomic Health

Sedentary behavior is defined as any waking activity performed in a seated, reclining, or lying posture with an energy expenditure of ≤ 1.5 METs [29]. Office workers are among the most sedentary occupational groups, with research consistently showing that they spend 65–80% of their working hours sitting [8,17]. This prolonged physical inactivity contributes directly to pathophysiological changes affecting cardiovascular and autonomic function [27].

Increasing evidence indicates that sedentariness disrupts ANS regulation by promoting sympathetic dominance and reducing parasympathetic activity [19,25]. Reduced heart rate variability (HRV), a key marker of autonomic imbalance, has been observed in individuals who engage in long uninterrupted sitting [28]. Autonomic imbalance impairs baroreflex sensitivity, reduces vascular compliance, and increases vascular resistance—mechanisms that collectively influence BPV [43,10].

BPV has emerged as a clinically significant indicator of cardiovascular risk. Unlike static blood pressure readings, BPV reflects dynamic physiological fluctuations influenced by autonomic regulation, arterial stiffness, stress reactivity, and circadian rhythms [30]. Elevated BPV has been associated with left ventricular hypertrophy, stroke, cognitive decline, and early mortality [24,42]. Sedentary behavior amplifies BPV by reducing skeletal muscle contractions, slowing venous return, altering endothelial function, and enhancing sympathetic vasoconstrictor activity [38,20]. These mechanisms underscore the need for interventions that can restore autonomic balance and stabilize blood pressure patterns among sedentary employees.

Various measurement tools, such as ambulatory blood pressure monitoring and HRV analysis, have enabled researchers to detect subtle cardiovascular changes associated with sedentary behavior [26]. Overall, the evidence consistently supports the view that reducing prolonged sitting is critical for maintaining autonomic stability and cardiovascular health [31].

B. Intermittent Movement Breaks in Workplace Settings

Intermittent movement breaks are typically brief (1–5 minute) bouts of standing, stretching, or light physical activity performed periodically throughout the workday. These breaks aim to interrupt prolonged sitting and stimulate musculoskeletal and circulatory activity. Systematic reviews have shown that even low-intensity movement, when performed frequently, can significantly improve metabolic and cardiovascular markers [13,20].

Physiologically, intermittent movement stimulates the contraction of large muscle groups, enhancing glucose uptake, improving endothelial function, and increasing shear stress on arterial walls [38]. These changes encourage vasodilation, promote vascular flexibility, and reduce both short-term and long-term BPV [4]. Breaks performed every 20–30 minutes have been shown to lower systolic and diastolic blood pressure, reduce arterial stiffness, and improve HRV compared with uninterrupted sitting [14].

Moreover, movement breaks support cognitive performance by improving cerebral blood flow and reducing mental fatigue [18]. They also reduce musculoskeletal discomfort, particularly in the lower back, neck, and shoulders—common complaints among office workers [6].

However, implementation challenges remain. Barriers include workplace norms discouraging frequent breaks, concerns about productivity, and lack of organizational support [34]. Despite these challenges, movement breaks are inexpensive, easy to implement, and supported by growing scientific evidence. Yet, the literature has not fully examined how such breaks may interact with parasympathetic-activating practices such as Solat to enhance autonomic regulation [16].

C. Islamic Prayer (Solat) as Physical and Mindfulness Practice

Islamic prayer (Solat) is performed five times daily and integrates physical movement, breath control, recitation, and mindfulness. Each session includes a series of movements—standing, bowing, prostration, and sitting—that engage major muscle groups and promote cyclic movement patterns [1]. Although typically viewed as a religious ritual, Solat has increasingly been studied for its physiological and psychological benefits.

Several studies report reductions in heart rate, systolic and diastolic blood pressure, and cortisol levels following Solat [7,2]. The physical postures enhance musculoskeletal flexibility, stimulate peripheral blood flow, and encourage rhythmic breathing [15]. Prostration (sujud), in particular, is associated with increased venous return and improved cerebral circulation [33].

From an autonomic perspective, Solat induces parasympathetic activation, reflected by increases in HRV and reductions in the low-frequency/high-frequency (LF/HF) ratio—a commonly used marker of sympathetic dominance [16,22]. This parasympathetic activation is attributed to the combination of slow breathing, focused attention, and the calming effect of spiritual engagement [23].

Solat also embodies elements of mindfulness and meditative practice. The repetitive nature of the recitation, synchronised breathing, and inward focus produce effects similar to those observed in mindfulness-based stress reduction programs [12,9]. These include reduced sympathetic arousal, enhanced emotional regulation, and lower HPA-axis activation [39].

Although Solat offers clear physiological benefits, it has not been widely considered as a structured workplace intervention. Its potential to serve as a culturally aligned, low-cost, and accessible contributor to autonomic health remains a largely untapped area of research [40].

D. Autonomic Nervous System Regulation and Theoretical Frameworks

The autonomic nervous system plays a central role in cardiovascular regulation through sympathetic and parasympathetic pathways. Prolonged sitting, stress, and lack of movement disrupt this balance [25]. To understand how interventions restore autonomic function, several theoretical frameworks are relevant.

Social Learning Theory explains how behaviors—such as taking movement or prayer breaks—are influenced by workplace norms, modelling, and reinforcement [3]. When employees observe others practicing healthy routines, adoption becomes more likely.

Stress and Coping Theory suggests that Solat and movement breaks act as active coping strategies that reduce physiological and psychological stress. By lowering cortisol and improving emotional regulation, these activities reduce sympathetic arousal and promote autonomic recovery [11].

Polyvagal Theory offers insights into parasympathetic activation and the role of vagal tone in emotional and physiological regulation [32]. Slow, rhythmic breathing and mindful attention during Solat are consistent with vagal stimulation, which improves HRV and stabilizes BPV [36].

Lastly, occupational health frameworks emphasize the interaction between individual, organizational, and environmental factors in shaping health outcomes [34]. These frameworks support integrating Solat and movement breaks as part of a holistic workplace health promotion strategy.

Collectively, these theoretical perspectives provide a foundation for developing a conceptual model linking intermittent movement, Solat, autonomic regulation, and BPV.

E. Workplace Health Interventions and Implementation Science

Workplace health interventions have expanded significantly over the past decade, reflecting increased awareness of the role workplaces play in chronic disease prevention [31]. Successful interventions typically share characteristics such as strong organizational support, cultural alignment, low cost, and ease of integration into daily routines [34].

Integrated interventions—combining physical activity, stress reduction, and environmental support—have been shown to produce greater health improvements than single-component strategies [35]. Implementation science research highlights factors influencing adoption, including leadership endorsement, employee engagement, environmental cues, and policy support [18].

Culturally aligned interventions are particularly effective because employees view them as acceptable, meaningful, and sustainable [40]. In Muslim-majority contexts, Solat is already institutionalised through prayer times and designated spaces [7]. Combining Solat with structured movement breaks aligns directly with existing cultural practices while addressing a major occupational health risk.

Implementation challenges include managing diverse religious backgrounds, ensuring break flexibility, and balancing productivity expectations. However, evidence shows that prayer breaks can coexist with operational efficiency when managed appropriately [16].

F. Synthesis of Knowledge Gaps

Although substantial evidence supports the benefits of movement breaks and Solat individually, the integrated effects on autonomic function and BPV remain underexplored. Very few studies have examined:

- How Solat interacts with physical movement to modulate autonomic regulation [16]

- Whether combined interventions yield greater improvements in HRV and BPV compared with single-modality interventions [43]
- The mediating role of stress reduction, breathing patterns, or circadian timing [11,32]
- Workplace-level moderators such as organizational culture and job demands [34]
- Implementation strategies that ensure long-term adherence and feasibility [35]

These gaps highlight the need for a comprehensive conceptual framework synthesizing what is known and proposing new pathways for empirical testing.

3. CONCEPTUAL FRAMEWORK

A. Framework Overview

This conceptual framework proposes that integrating intermittent movement breaks with Islamic prayer (Solat) can improve autonomic function and BPV among sedentary office workers. Prior evidence shows that reducing sedentary time improves vascular and autonomic regulation [38,20], while Solat enhances parasympathetic activation and emotional regulation [7,2,22]. Together, these practices target physiological, psychological, and behavioral pathways disrupted by prolonged sitting [29,27].

The model identifies:

- Independent variables: intermittent movement breaks; Solat practices
- Dependent variables: autonomic function; BPV
- Mediators: reduced sedentary exposure; parasympathetic activation; stress/cortisol reduction; vascular responsiveness; emotional regulation
- Moderators: individual factors; workplace context; environmental and cultural conditions

This integrated framework provides a holistic understanding of how physical activity and spiritually grounded mindfulness can work synergistically to restore autonomic balance and stabilize BPV [30,43].

B. Visual Description of the Conceptual Model

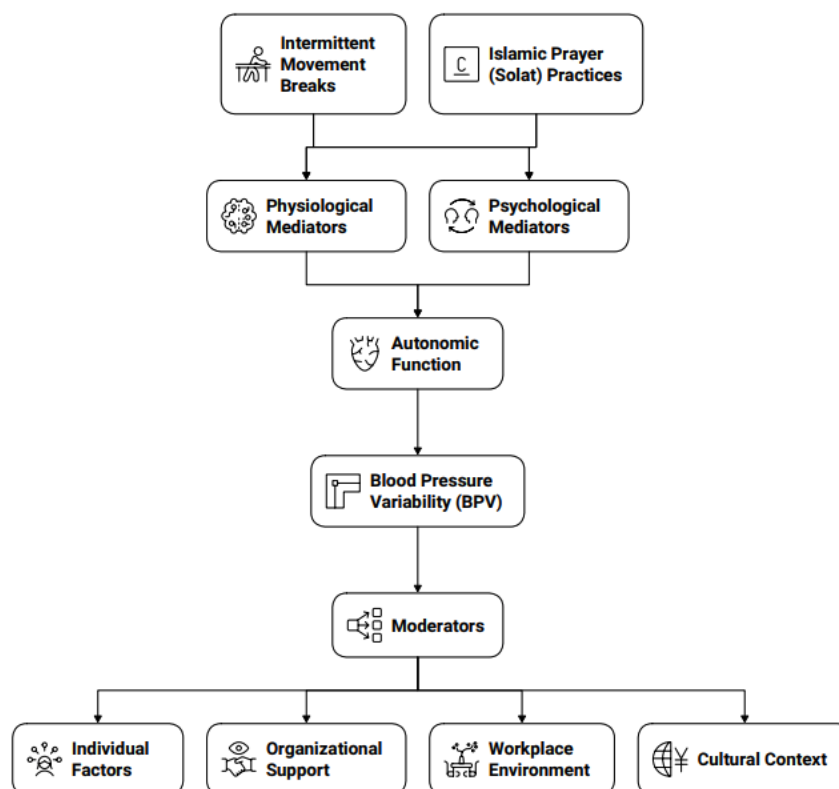


Fig. 1: Conceptual Model Structure: Impact of movement breaks and prayer on blood pressure variability

The conceptual model (Fig. 1) illustrates how intermittent movement breaks and Solat practices influence both physiological mediators (improved circulation, enhanced parasympathetic activity, reduced sedentary time) and psychological mediators (stress reduction, mindfulness, emotional regulation), leading to improved autonomic function. Stable autonomic regulation contributes to healthier BPV patterns—an important predictor of cardiovascular risk [24,42].

The effectiveness of the intervention is shaped by moderators such as organizational support, cultural norms, workplace environment, and individual variation in baseline autonomic function [34].

C. Independent Movement Breaks

1. Intermittent Movement Breaks

Intermittent movement breaks involve low-intensity activities (standing, stretching, walking) performed regularly to interrupt sedentary time. Research shows that even short bouts of movement stimulate skeletal muscle pumps, increase venous return, enhance glucose uptake, and improve endothelial function [38,14]. These mechanisms help stabilize blood pressure patterns and improve autonomic engagement [20].

2. Islamic Prayer (Solat) Practices

Solat incorporates rhythmic postures, controlled breathing, mindful recitation, and spiritual focus. Studies show that Solat acts as light-intensity physical activity while simultaneously activating parasympathetic pathways [2,7]. The meditative aspects promote emotional grounding and reduce sympathetic drive, improving HRV and autonomic balance [23,16]. Solat’s cultural embeddedness enhances acceptance and feasibility in Muslim-majority workplaces [40].

D. Dependent Variables

1. Autonomic Function

Autonomic function—often measured through HRV—reflects the balance of sympathetic and parasympathetic activity. Reduced sympathetic dominance and increased vagal tone indicate healthier autonomic regulation [28]. Interventions targeting stress, breathing, and movement have been shown to increase HRV and reduce cardiovascular strain [19].

2. Blood Pressure Variability (BPV)

BPV reflects dynamic fluctuations in blood pressure over short and long intervals. High BPV is associated with target organ damage, stroke, and mortality [30,24]. Improving autonomic balance and vascular responsiveness contributes to reducing excessive BPV [43].

E. Mediating Variables (Mechanisms of Action)

1. Reduced Sedentary Exposure

Interrupting prolonged sitting prevents venous pooling, improves metabolic activity, and maintains vascular tone—mechanisms that support autonomic stability [27,29].

2. Parasympathetic Activation

Solat triggers parasympathetic activation through slow breathing, rhythmic movement, and mindfulness [22,2]. Increased vagal tone enhances HRV and stabilizes BPV.

3. Stress and Cortisol Regulation

Movement breaks improve mental refreshment [18], and Solat induces a relaxation response similar to mindfulness meditation [12]. Lower cortisol enhances autonomic recovery and reduces sympathetic activation [11].

4. Vascular and Cardiovascular Regulation

Both movement and Solat enhance endothelial function, nitric oxide release, and arterial flexibility [38,7]. Improved baroreflex sensitivity further stabilizes BPV [10].

5. Emotional Regulation and Cognitive Recovery

Solat improves emotional regulation and internal calmness [9], while movement breaks reduce mental fatigue [18]. Emotional stability reduces sympathetic arousal, improving autonomic function.

F. Moderating Variables (Factors Influencing Intervention Effectiveness)

1. Individual Factors

Age, BMI, health status, motivation, and baseline autonomic function influence responsiveness to interventions [37].

2. Organizational and Workplace Factors

Availability of prayer spaces, leadership support, workload, and workplace culture shape intervention feasibility [34].

3. Environmental Context

Cultural perceptions of prayer at work, office layout, and noise levels affect uptake [40].

4. Social and Peer Support

Colleagues' behaviors influence adoption through modelling and reinforcement, consistent with Social Learning Theory [3].

G. Proposed Mechanisms of Action

Mechanism 1: Breaking Sedentary Patterns – Movement increases venous return and shear stress, improving vascular function and reducing BPV [38].

Mechanism 2: Parasympathetic Enhancement via Solat – Mindful recitation and slow breathing increase vagal tone and HRV [22,23].

Mechanism 3: Stress Modulation – Solat and movement reduce cortisol, lowering sympathetic activity [11].

Mechanism 4: Synergistic Integration – Combined physical activation and mindfulness yield stronger autonomic benefits than either alone [12].

Mechanism 5: Circadian Alignment – Solat’s fixed timing supports physiological rhythm stability and BPV regulation [24].

H. Theoretical Underpinnings

The framework draws on Social Learning Theory [3], Stress and Coping Theory [11], Polyvagal Theory [32], and occupational ecological models [34]. These theories explain behavior adoption, stress regulation, vagal pathways, and workplace influences.

4. DISCUSSION

This conceptual paper proposes an integrative framework combining intermittent movement breaks and Islamic prayer (Solat) as a novel approach to addressing autonomic dysfunction and BPV among sedentary office workers. The framework draws upon multidisciplinary evidence and theoretical underpinnings to demonstrate how physical activity, mindfulness, and culturally embedded practices can be synergistically aligned to address a major occupational health issue [29,27,7]. The following discussion elaborates on its theoretical contributions, practical relevance, policy implications, and research opportunities, as well as potential limitations and anticipated criticisms.

A. Implications for Theory

1. Advancing the Integration of Physical and Mindfulness Practices

The proposed conceptual framework contributes theoretically by bridging two research domains that are typically examined independently: (1) physical activity interventions aimed at reducing sedentary behavior, and (2) mindfulness or spiritually grounded practices linked to parasympathetic activation [13,12,23]. Intermittent movement breaks have traditionally been conceptualised through frameworks related to musculoskeletal and metabolic health [14,20], while Solat has been treated primarily within psychosocial or spiritual well-being contexts [2,22,40]. By integrating these domains, the model provides a more comprehensive understanding of how physiological and psychological mechanisms jointly influence autonomic function and BPV [43,24]. This challenges the conventional dichotomy between “physical” and “mind–body” interventions and highlights the need to conceptualise workplace health behavior through multi-systemic pathways.

2. Extending Autonomic Nervous System (ANS) Theory in Occupational Settings

Autonomic imbalance is increasingly recognised as a key pathway linking sedentary behavior to cardiovascular risk [19,37]. However, ANS theory has rarely been applied to culturally anchored workplace practices. The proposed framework expands ANS theory by identifying how structured behavioral routines—such as Solat and movement breaks—can influence vagal activation, reduce sympathetic arousal, and modulate baroreflex sensitivity [32,22,10]. This integration foregrounds the potential of combining behavioral and spiritual practices to achieve autonomic recovery, providing new theoretical grounds for future empirical testing.

3. Incorporating Cultural–Religious Dimensions into Occupational Health Theory

Most occupational health models emphasize organizational, environmental, and psychosocial variables but often neglect cultural and religious practices that shape employee behavior and well-being [34]. By situating Solat as a legitimate component of workplace health, the framework advances theory toward a more inclusive understanding of culturally embedded wellness behaviors [40]. This contributes to a growing body of literature advocating for culturally responsive occupational health interventions that integrate spiritual and cultural practices within evidence-based health promotion [9,39].

B. Implications for Practice

1. A Low-Cost, Feasible, and Naturally Integrated Intervention

One of the greatest strengths of the proposed intervention is that it builds upon practices already widely observed in Muslim-majority workplaces. Solat is routinely integrated into daily schedules, meaning that its use as a health-promoting mechanism does not require major behavioral changes, financial investments, or additional infrastructure [7,40]. Movement breaks are similarly simple, requiring only minimal modifications to workplace norms and schedules [34]. Together, they offer a practical and cost-effective strategy for addressing sedentary-related health risks at scale [13,37].

2. Enhanced Employee Well-Being and Productivity

Research suggests that regular breaks—both physical and psychological—improve alertness, reduce mental fatigue, support emotional regulation, and enhance cognitive performance [18,12]. Integrating movement and prayer breaks may support employees in managing work stress and maintaining sustained attention. Improved autonomic balance and stable BPV may reduce fatigue and foster long-term health, ultimately enhancing overall productivity and workplace engagement [20,43].

3. Cultural Acceptance and Leadership Support

The integration of Solat within workplace health strategies aligns naturally with the cultural and religious values of many employees, which may foster high levels of acceptance and adherence compared to generic exercise programs [40,16]. Moreover, organizational leaders who support religious accommodation and employee wellness may benefit from improved morale, reduced absenteeism, and a stronger sense of community [34].

4. Flexibility and Adaptability Across Workplaces

The proposed framework is adaptable to a wide range of workplaces, including offices, government institutions, universities, and service industries. Non-Muslim employees can participate in equivalent mindfulness-based or movement routines, promoting inclusivity [12,9]. This flexibility supports broad adoption and encourages workplaces to tailor the intervention to their specific cultural, operational, and spatial contexts [34].

C. Implications for Policy

1. Supporting National and International Health Agendas

The intervention aligns with multiple policy priority areas, including World Health Organization recommendations to reduce physical inactivity and promote workplace wellness, International Labour Organization guidelines for safer, healthier workplaces, and Sustainable Development Goals (SDG 3 and SDG 8) focusing on well-being and decent work [31,37]. By offering a culturally responsive strategy that also addresses global health priorities, the framework serves as a model for governments and organizations seeking practical ways to reduce non-communicable disease risks in the workforce.

2. Institutionalizing Prayer-Friendly and Physically Active Workplaces

Policymakers could integrate movement and prayer breaks into occupational safety and health guidelines, particularly in Muslim-majority countries [7,40]. This includes encouraging employers to provide adequate prayer spaces, allowing structured micro-breaks for movement, and developing national guidelines that promote culturally aligned wellness programs. Such policies can lead to more holistic workplace health promotion strategies that consider physical, psychological, and cultural well-being [34,31].

3. Cost-Effectiveness and Long-Term Health Outcomes

Interventions aimed at autonomic function and BPV can significantly reduce healthcare expenditure by lowering the risk of hypertension, cardiovascular disease, and stress-related disorders [43,24]. Policymakers who promote integrated micro-breaks may find considerable long-term cost savings at both institutional and national levels [13,37].

D. Implications for Future Research

The conceptual framework opens several avenues for empirical investigation:

1. Testing the Integrated Intervention Model

Studies should examine whether combining Solat and movement breaks produces superior autonomic and BPV outcomes compared with Solat alone, movement breaks alone, or no intervention. Randomized crossover trials, quasi-experiments, and longitudinal designs would be particularly useful [43,24].

2. Exploring Mechanistic Pathways

Future research could measure HRV indices, cortisol rhythms, baroreflex sensitivity, arterial stiffness, circadian BP patterns, and psychological markers such as stress, mindfulness, and fatigue to clarify the relative contribution of physical versus mindfulness components [10,12,23].

3. Examining Moderators and Individual Differences

Research should identify who benefits most, and whether age, BMI, fitness, or religiosity influence outcomes, as well as how job demands or organizational culture shape intervention effectiveness [37,16]. Understanding moderators will support tailored interventions.

4. Implementation Science Studies

To ensure sustainability, researchers should explore organizational readiness, leadership support, social norms, feasibility across diverse workplace settings, and strategies for inclusive participation among non-Muslims [34,31].

5. Cost-Benefit and Return-on-Investment Analyses

Economic evaluations may strengthen policy advocacy and encourage employer adoption by quantifying the value of reduced morbidity, improved productivity, and lower healthcare costs [13,43].

E. Limitations of the Conceptual Framework

Although theoretically robust, the framework has several limitations. First, as a conceptual paper, the proposed model is hypothetical and requires empirical testing; its assumptions must be evaluated in real-world trials [43]. Second, variability in Solat practice—including differences in physical performance, intention, and consistency—may influence outcomes and complicate standardization [22,40]. Third, while culturally relevant in Muslim-majority contexts, the model may require adaptation elsewhere to incorporate other mind-body practices such as yoga or tai chi [12]. Fourth, autonomic variables such as HRV and BPV require specialized equipment, expertise, and careful protocol standardization [28,10]. Finally, high-intensity work environments may find it difficult to implement frequent micro-breaks because of operational constraints [34].

F. Addressing Potential Criticisms

Some may argue that Solat is a religious practice and question whether it is appropriate to frame it as a health intervention. However, the framework does not medicalize religious practice; rather, it acknowledges the holistic benefits of Solat in a manner similar to how yoga, tai chi, or meditation are integrated into wellness programs [12,9]. Participation remains voluntary and inclusive, with alternative practices available for non-Muslims.

Concerns about productivity are also anticipated. Evidence suggests that brief micro-breaks improve concentration, reduce fatigue, and enhance cognitive performance, leading to net gains in productivity rather than disruption [18,34]. Similarly, the intervention is not limited to Muslims: non-Muslim employees can practice equivalent mindfulness, breathing, or stretching routines during the same break period [12,9]. Finally, rather than being culturally biased, the model explicitly acknowledges cultural context and offers a framework that can be adapted to other populations by substituting functionally similar mind-body practices [40,39].

Conclusion of Discussion

The proposed integrated model contributes meaningful theoretical and practical insights into workplace health. By combining intermittent movement breaks with the physiological and psychological benefits of Solat, the intervention offers a holistic, low-cost, culturally grounded approach to improving autonomic function and stabilizing BPV [7,13,43]. This conceptual framework lays a strong foundation for future empirical studies and opens new pathways for culturally responsive occupational health promotion.

5. CONCLUSION

Sedentary behavior has become an unavoidable characteristic of modern office work, contributing to rising rates of autonomic dysregulation and cardiovascular risk among employees [29,27]. This conceptual paper offered an integrative framework that positions intermittent movement breaks and Islamic prayer (Solat) as complementary strategies capable of addressing the physiological and psychological pathways linked to autonomic imbalance and BPV. By synthesising evidence from cardiovascular physiology, occupational health, behavioral science, and spiritual well-being research, the model provides a holistic understanding of how these routinely practiced behaviors can work synergistically to restore autonomic function, regulate stress responses, and stabilise haemodynamic patterns [7,43].

The framework highlights several key contributions. First, it advances theoretical understanding by integrating movement-based and mindfulness-based practices into a unified model of autonomic regulation [12,23]. Second, it positions culturally embedded practices—specifically Solat—as legitimate components of workplace health interventions, expanding the conceptual boundaries of occupational health theory and demonstrating the relevance of culturally grounded wellness behaviors [40]. Third, it identifies a multi-system set of mediating mechanisms and moderating factors—such as parasympathetic activation, vascular regulation, stress reduction, and workplace support—that provide a rich foundation for empirical exploration [10,24].

Practically, the proposed intervention is low-cost, feasible, and easily adaptable to the natural rhythm of Muslim-majority workplaces. Movement breaks require minimal resources, while Solat is already institutionalised in many settings [7]. Together, they offer a scalable strategy to not only improve physiological outcomes but also promote mental clarity, reduce stress, and enhance overall employee well-being [18,9]. Policymakers and organizational leaders can leverage this culturally aligned model to support national health goals, reduce the burden of non-communicable diseases, and promote decent and healthy work environments aligned with the Sustainable Development Goals (SDGs) [31,37].

This conceptual paper also identifies important research opportunities, including the need for randomized studies, mechanistic investigations, implementation science approaches, and culturally inclusive adaptation strategies. By addressing these gaps, future research can validate, refine, and expand the proposed framework.

In conclusion, integrating intermittent movement and Solat breaks represents a promising, culturally grounded, and scientifically informed strategy to counteract the harmful effects of prolonged sitting. This approach bridges physical, psychological, and spiritual dimensions of well-being, offering a meaningful pathway toward healthier, more inclusive, and more resilient workplaces [16,40].

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