



## ***Physical Activity and Employee Well-Being among Employees during the Covid-19 Pandemic in Jakarta***

**Novika Grasiawaty<sup>1,2\*</sup> and Qiftiyah Damiati Putri<sup>1</sup>**

<sup>1</sup>Fakultas Psikologi, Universitas YARSI, Jakarta, Indonesia, <sup>2</sup>Adam Smith Business School, University of Glasgow, Scotland

\*Email: [novika.grasiawaty@yarsi.ac.id](mailto:novika.grasiawaty@yarsi.ac.id)

### ***Abstract***

*Physical activity has been found to influence employee well-being. This study examines the relationship between physical activity and employee well-being among employees in Jakarta during the pandemic. Using the International Physical Activity Questionnaire (IPAQ) and the Employee Well-Being (EWB) Scale—both adapted into Indonesian—data were collected from 97 participants through online questionnaires via Google Forms. Most participants were female (56.7%) with an average age of 30.1 years (SD = 9.21), recruited through accidental sampling. Person correlation test between these two variables revealed a significant relationship between physical activity and employee well-being ( $r = 0.201$ ,  $p < 0.05$ ). The analysis reveals relationships between well-being dimensions (life, workplace, and psychological well-being) and physical activity levels (walking, vigorous, moderate, and total IPAQ score) among employees. Moderate activity is positively correlated with life ( $r = 0.238$ ,  $p < .05$ ) and workplace well-being ( $r = 0.286$ ,  $p < .01$ ), while vigorous activity is associated with workplace well-being ( $r = 0.27$ ,  $p < .01$ ). The total IPAQ score shows a positive relationship with workplace well-being ( $r = 0.237$ ,  $p < .05$ ) and correlates with both vigorous ( $r = 0.874$ ,  $p < .001$ ) and moderate activities ( $r = 0.718$ ,  $p < .001$ ). Walking shows no significant correlation with any well-being dimension. This research support previous studies that correlated physical activity solely with health, finding that physical activity also correlates with employee well-being and can enhance it. Findings from this research provide insights into the potential impact of physical activity on well-being in a pandemic context.*

**Keywords:** *employee well-being, Indonesian, pandemic Covid-19, physical activity*

## **1. INTRODUCTION**

Maintaining or adopting physical activity routines has been shown to have beneficial effects, especially for well-being and mental health. Carriedo et al. (2020) observed that older adults who sustained their physical activity levels experienced improved psychological well-being. Cheval et al. (2020) emphasize the growing concern of rising sedentary behaviour during leisure time, showing its strong association with declines in physical and mental health, which, in turn, adversely affects overall well-being. The relationship between leisure-time physical activity and mental health is further strengthened by the study conducted by Rampisheh et al., (2022). Their findings indicate a strong association between such activities and enhanced mental health, which, in turn, contributes to overall well-being. Additionally, the research by Jaiswal and Arun (2021) emphasizes the significance of leisure time activities, encompassing both physical and emotional aspects, in improving employee well-being.

Engaging in physical activities during leisure time is crucial for enhancing individual well-being, a fact that has become even more significant during the COVID-19 pandemic. The shift to work-from-home arrangements due to the pandemic has resulted in a decrease in physical activity levels among employees (Xiao et al., 2020). This decline in physical activity

has raised concerns about its potential impacts on overall well-being. Studies have shown that a perceived decrease in physical activity is associated with higher stress and anxiety levels (Duncan et al., 2020). This transition has led to a notable decrease in physical activity levels among employees, raising concerns about potential impacts on their overall well-being.

Numerous studies have highlighted the positive impact of physical activity on physical health. A review study by Penedo and Dahn (2005) revealed that participants regularly engaging in physical activities generally exhibited more desirable health conditions across various physical parameters. Kruk (2009) emphasized the importance of regular participation in physical activities for health and well-being, a notion widely accepted by the general population. Blair, et al. (1992) argued that the type of physical activity is less important compared to the maximal energy expenditure it entails; consistent practice leads to improved fitness and balanced health. Therefore, physical activity significantly influences physical health.

Besides physical health, physical activity yields numerous benefits for individual's mental health. Blair et al. (1992) noted that consistent physical activity enhances fitness and health balance. Regular physical activity contributes to an individual's well-being, aligning with Jurakić, et.al, (2009) view on the close relationship between physical activity and well-being. Related to mental health, physical activity is also known to buffer negative impact of mental illness (Richardson et al., 2005; Vancampfort, et al., 2015). It can help to reduce symptoms of depression or anxiety (Dinas, et.al, 2011; Matias, et.al, 2022; Meng et al., 2021; Roshanaei-Moghaddam, et.al, 2009) and later improving mood (Hamer, et.al, 2012). Recent studies have identified a significant relationship between physical activity and both fitness and stress levels (Lindberg et al., 2018; Werneck et al., 2022).

One explanation for the underlying mechanism linking physical activity to enhanced well-being is rooted in biologic physiology. Neurochemicals such as norepinephrine, serotonin, and dopamine, which are associated with feelings of happiness (Basso & Suzuki, 2017) are influenced by physical activity. Studies have shown that physical activity can induce positive feelings by affecting these neurochemicals (Basso & Suzuki, 2017). Moreover, physical activity induces various neurochemical processes, including the enhancement of dopamine, serotonin, norepinephrine, lactate, brain-derived neurotrophic factor (BDNF), which may facilitate neuroplasticity (Neufer et al., 2015) and later enhance the mood and feeling of happiness.

Psychological health pertains to one's mental state, and its quality significantly affects employee well-being. High psychological well-being correlates with elevated employee well-being (Juniper, 2010). Both physical and psychological health are pivotal factors influencing employee well-being (Danna & Griffin, 1999). Danna and Griffin (1999) proposed that actual physical health and well-being of employees are interconnected. Page and Vella-Brodrick (2009) proposed three comprehensive theoretical models for employee mental health: Life Well-Being (LWB), Workplace Well-Being (WWB), and Psychological Well-Being (PWB). WWB encompasses not just job satisfaction, but also positive emotions related to work (Zheng, et al., 2015)

Physical activity reduces anxiety and depression, fostering positive emotions that impact job performance and satisfaction. Studies explored the impact of physical health on employee well-being at work, finding that activities like "lunchtime walking" and the Walk4Work program can enhance workplace well-being (Brown, et al., 2012; Brown, et al., 2014). An individual's satisfaction with life is a component of Life Well-Being. Wiese, et al., (2018) found a correlation between leisure-time physical activities aimed at physical health and enhanced life satisfaction.

In the workplace setting, engaging in physical activity encourages employees to establish boundaries between work and personal life, thus contributing to a better work-life

balance. The study by (Sonnetag & Fritz, 2007) showed that engaging in enjoyable, non-work-related activities facilitates mental disengagement, which is crucial for restoring mental energy and supporting employee well-being. Similarly, the study Heuse, et al., (2021) using the JD-R framework, found that dedicating time to personal activities helps prevent burnout and stress among employees, leading to improved well-being.

Another study in the workplace setting highlights how physical activity contributes to enhanced well-being, particularly through the self-efficacy framework. Employees who engage in physical activity develop a stronger belief in their abilities which can lead to reduced anxiety (Barene & Krusturp, 2022; Hutchinson & Tenenbaum, 2007). Barene and Krusturp (2022) further supports this, showing that employees participating in physical activity programs experience increased self-efficacy. This boost in self-belief often extends to other areas, helping employees maintain overall well-being. In conclusion, physical activities undertaken by employees in their leisure time plays a pivotal role in enhancing their well-being, through reducing stress, improving mood and fostering strong sense of self-efficacy.

Although previous studies have established a general relationship between physical activity and well-being, limited research has addressed this relationship in the context of pandemic-induced lifestyle changes, especially among employees in urban settings like Jakarta. Jakarta, as Indonesia's capital and one of the world's most densely populated cities, presents distinct challenges and dynamics in this regard. Unlike many other cities, Jakarta's heavy traffic congestion, limited green spaces, and high levels of air pollution have historically restricted residents' ability to engage in regular outdoor physical activity, often contributing to a sedentary lifestyle (Andriyani et al., 2021; Dewi & Wuryaningsih, 2019). The pandemic intensified these constraints, as work-from-home (WFH) mandates reduced access to gyms, parks, and public exercise facilities, further limiting people's options for maintaining physical activity (Carriedo et al., 2020; Van Luchene et al., 2021; Vancini et al., 2020)

This study aims to address these gaps of limited study of the relationship between physical activities and well-being in the context of pandemic. We focus on understanding how specific types and frequencies of activity impact well-being within Jakarta's unique urban setting. Specifically, this research seeks to answer the question: What is the relationship between physical activity and employee well-being during the pandemic among employees in Jakarta? By exploring these nuanced effects, this research provides insights into the role of physical activity in sustaining well-being amid the challenges of pandemic-induced lifestyle shifts.

## **2. METHOD**

### **2.1. Procedure and Sampling**

In this study, the target sample consists of adult employees aged between 18 and 64 years during the year 2021, who were working in Jakarta amid the COVID-19 pandemic. This demographic focus is based on data from the Central Bureau of Statistics (BPS, 2021), which indicates that the productive age range in Indonesia spans from 15 to 64 years. Moreover, the highest incidence of positive COVID-19 cases at the time was within the 19-64 age group. This decision aligns with the Indonesian Employment Law, Article 1, number 26 of Act No. 13 of 2003, which defines children as individuals under the age of 18, thereby establishing the sample age range for this research as 18-64 years. The characteristics of the sample in this study are as follows: (1) Employees working in a company/institution. (2) Aged between 18-64 years as of the year 2021. (3) Employed in the Jakarta Capital Region (DKI Jakarta) and (4) Actively working during the COVID-19 pandemic period. Convenience sampling was used for sample selection, involving the distribution of surveys via smartphones to individuals meeting specific criteria. Data collection was conducted through online questionnaires using Google Forms.

## **2.2. Measurements**

### **2.2.1. Physical Activity**

In this research, physical activity was measured using the International Physical Activity Questionnaire (IPAQ) (Bauman et al., 2009). The IPAQ is an internationally designed and standardized instrument, enabling comparison of physical activity levels across different countries. The initiative to develop a global instrument was taken by M.L. Booth in 1996, which was later pursued by the International Consensus Group (ICG) in 1998 to create the IPAQ. It was officially launched in Geneva in 2002. IPAQ was adapted for use in the Indonesian context using recommendation by Beaton, et al. (2000) using translate-back translate method and expert judgement. The researchers undertook a process of translation from English into Indonesian, followed by a subsequent retranslation back into English, a method commonly referred to as 'back translation'. The expert judgment testing of the International Physical Activity Questionnaire (IPAQ) was conducted by two experts in measurement and industrial psychology from the Centre of Psychometry, Research and Applicability of Health Psychology, Faculty of Psychology, Universitas YARSI. The purpose was to ensure that the items in the questionnaire remained aligned with the research objectives and were culturally appropriate for the Indonesian context. As a result of this expert review, several minor modifications were suggested to the items in the IPAQ, as such: "Ingat kembali" (Recall) was revised to "mohon diingat kembali" (Please recall). Example for the item: *During the last 7 days, on how many days did you walk for at least 10 minutes at a time in your leisure time?*

The IPAQ encompasses five general activity domains: recreational physical activities, domestic activities like gardening, work-related activities, travel-related physical activities, and leisure time physical activities. However, in this study the researcher focused exclusively on Section IV of the IPAQ-Long Form, which pertains to recreation, sports, and leisure activities. This focus was chosen because, following a readability assessment, Section IV was found to be the most relevant to the study's objective of examining physical activity. Section IV consists of 6 questions: three about the number of days and three about the duration in minutes. These six questions encompass three domains of physical activity: walking, vigorous activity, and moderate activity. The total IPAQ score is calculated by multiplying the number of days and minutes, resulting in a score in minutes. This score indicates how long participants engaged in specific physical activities over the last 7 days in minutes.

### **2.2.2. Employee Well-being**

In this study, employee well-being was measured by Employee Well-being (EWB) Scale developed by Zheng et al. (2015). This scale comprises 19 items and encompasses three dimensions: Life Well-Being, Workplace Well-Being, and Psychological Well-Being. The EWB Scale is noted for its high reliability, with a reported reliability coefficient of 0.94. This instrument has been previously utilised in research by He, et al. (2019), where it demonstrated a reliability value of 0.93. Zheng et al. (2015) developed the EWB Scale to reflect the cultural context of China, emphasizing an evaluation of well-being from a perspective that appreciates positive aspects and collective culture. This approach aligns with Hofstede and Hofstede's findings (as cited in Jatmika, 2017) regarding Indonesian employees working for IBM, which portrayed Indonesia as a collectivist nation. Consequently, considering Indonesia's collectivist cultural background, the researchers decided to use this scale, deeming it appropriate for the cultural context of the study's Indonesian participants. The Employee Well-being Scale developed by Zheng et al. (2015) consists of 19 questions, each evaluated using a 7-point Likert scale. This scale ranges from 1, representing 'strongly disagree', to 7, indicating 'strongly agree'. In this study, the research question seeks to determine the correlation between the dimensions of IPAQ (International Physical Activity Questionnaire) and EWB (Employee Well-Being). Given that the objective is to assess the strength and direction of association between these two

continuous variables, rather than predicting one from the other, Pearson correlation is an appropriate analysis method.

### 3. RESULTS

The initial participant pool comprised 100 individuals, which was subsequently refined to a cohort of 97 for detailed analysis. The gender distribution within the sample was predominantly female, with females constituting 56.7% of the participant base. The mean age of the cohort was 30.1 years, exhibiting a standard deviation of 9.21, indicative of a broad age dispersion among the subjects. A significant proportion of the participants, 22.7%, were domiciled in Central Jakarta, denoting a concentration in this urban locale. Educational attainment within the sample was notably high, with 55.7% possessing a bachelor’s degree (Strata 1). This demographic detail underscores the educational background of the participants. Marital status varied, with a slight majority, 52.6%, being unmarried. The employment demographic skewed towards the private sector, with 54.7% of the participants employed therein. The work modalities of the participants were diverse; 30.9% were engaged in remote work (Work from Home, WFH), an equivalent proportion in office-based work (Work from Office, WFO), and 38.2% in a hybrid arrangement of both WFH and WFO. This distribution highlights the varied work environments amidst the study. The modal working pattern was a 5-day week, as reported by 63.9% of the participants, with an average of 5.031 working days ( $SD = 1.005$ ). In terms of economic status, the principal income bracket was between IDR 5,000,000 to 10,000,000, encompassing 36.1% of the participants, signifying a middle-income range.

Prior to conducting the main analysis, the researcher performed a normality test using the Kolmogorov-Smirnov method, which yielded a result of 0.125, indicating a normal distribution of the data. The principal analysis employed Pearson's correlation coefficient, conducted using JASP software, to examine the relationship between variables (see Table 1).

**Table 1.**  
*Correlation Analysis Result between IPAQ and EWB*

Variable	1	2	3	4	5	6	7
1. Life well-being							
2. Workplace well-being	0.800***						
3. Psychological well-being	0.620***	0.793***					
4. Walking	0.030	0.012	0.105				
5. Vigorous activity	0.152	0.270**	0.131	0.259*			
6. Moderate activity	0.238*	0.286**	0.146	0.239*	0.623***		
7. Total IPAQ	0.163	0.237*	0.161	0.664***	0.874***	0.718***	
8. Total EWB	0.889***	0.947***	0.889***	0.058	0.199	0.243*	0.204*

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

The Pearson’s correlation results provide insights into the relationships between different well-being dimensions (life, workplace, and psychological well-being) and levels of physical activity (walking, vigorous activity, moderate activity, and total IPAQ score) among employees. Physical activity levels also exhibit several significant associations with well-being. Moderate activity correlates positively with life well-being ( $r = 0.238, p < .05$ ) and workplace well-being ( $r = 0.286, p < .01$ ), indicating that moderate exercise contributes positively to these aspects of well-being. Vigorous activity is significantly correlated with workplace well-being ( $r = 0.27, p < .01$ ), suggesting that higher intensity exercise may particularly benefit workplace-related outcomes. Furthermore, the total IPAQ score,

representing overall physical activity, shows a positive relationship with workplace well-being ( $r = 0.237, p < .05$ ) and moderate correlations with vigorous ( $r = 0.874, p < .001$ ) and moderate activities ( $r = 0.718, p < .001$ ). Meanwhile, walking does not show any significant correlation with life, workplace, or psychological well-being.

#### **4. DISCUSSION**

Physical activity shows varying levels of influence across well-being dimensions, with moderate and vigorous activity demonstrating significant positive correlations with life and workplace well-being. The positive correlation between moderate activity and life well-being and workplace well-being suggests that employees who engage in moderate forms of exercise experience an enhanced sense of well-being. This could be due to the ability of moderate exercise to reduce stress, improve mood, and provide a balance between physical exertion and mental relaxation (Hutchinson & Tenenbaum, 2007). Similarly, the significant relationship between vigorous activity and workplace well-being indicates that high-intensity exercise might have a particularly beneficial impact on employees' professional lives. Vigorous physical activity is known to release endorphins and reduce anxiety, potentially making employees feel more energized, focused, and capable of handling work-related challenges. This correlation highlights the unique role of vigorous activity in promoting workplace-specific well-being, suggesting that organizations might benefit from encouraging employees to engage in higher-intensity physical activities when appropriate.

Interestingly, walking does not show a significant correlation with any dimension of well-being in this analysis. This finding implies that low-intensity physical activities such as walking may not have a strong enough impact to substantially influence life, workplace, or psychological well-being. One possible explanation is that while walking does provide physical movement, it may lack the intensity required to produce significant physiological and psychological benefits that moderate and vigorous activities offer (Beauchamp & Morton, 2011). This outcome suggests that organizations aiming to improve employee well-being through physical activity programs should consider incorporating more moderate to vigorous activities rather than relying solely on walking or other low-intensity exercises.

Another possible explanation is related to the context of the COVID-19 pandemic, where outdoor walking was limited due to public health policies restricting outdoor or crowded activities. In contrast, moderate and vigorous physical activities, such as aerobic or strength training exercises, could be performed indoors, allowing individuals to maintain physical health while adhering to health protocols.

The total IPAQ score, which represents overall physical activity, shows a significant positive relationship with workplace well-being. This association reinforces the idea that a cumulative approach to physical activity, encompassing both moderate and vigorous exercises, can have a beneficial impact on employees' professional lives. Higher overall physical activity is likely to contribute to increased energy levels, reduced stress, and better mental clarity, which can enhance job performance and workplace satisfaction.

This research in line with longitudinal research conducted by Kekäläinen et al. (2020), it is posited that robust well-being can act as a catalyst, encouraging physical activity engagement in middle-aged individuals. In essence, physical activity may serve as a contributory factor in enhancing an individual's well-being. This study extends the findings of previous research by demonstrating that engaging in physical activities during leisure time can positively influence individual well-being, not only in millennials and middle-aged groups but also among employees working during the COVID-19 pandemic. The current study is in concordance with Coon et al. (2011), who suggested that outdoor physical activities, involving environmental interaction, can have a favourable impact on mental well-being. Similarly, this study corroborates the meta-analysis conducted by Haworth and Lewis (2005), which asserted

that active participation in leisure activities can engender positive effects, enhancing general psychological well-being, life satisfaction, and cognitive function. Wiese et al. (2018) also found that engaging in substantial leisure time physical activities significantly contributes to positive influences and life satisfaction, an aspect of Emotional Well-Being (EWB). Another study by Holder et al. (2009) indicated a positive correlation between leisure time physical activities and well-being. The longitudinal study by Kekäläinen et al. (2020) suggested that mental well-being could predict the likelihood of engaging in leisure time physical activities. The positive feelings garnered from physical activities can aid employees in their work, enhancing life quality and overall well-being. This improvement in mood, psychological state, and cognitive function, as revealed in this study, is achievable when individuals allocate time for physical activity.

However, the relatively modest correlation between total physical activity and well-being dimensions indicates that physical activity alone may not fully account for well-being outcomes. Other factors, such as social support, work environment, and personal resources, are also critical for promoting employee well-being. Thus, while encouraging physical activity is beneficial, it should be part of a comprehensive well-being program that addresses multiple facets of employee health and satisfaction.

The research also examined the physical activity patterns of employees during the pandemic. Findings indicate that during the pandemic, employees frequently engaged in aerobic physical activities such as running, swimming, and cycling. This aligns with the research questionnaire's IPAQ (International Physical Activity Questionnaire) heavy and moderate physical activity domains, specifically items 3 and 5. The IPAQ scores, divided into three categories of physical activity levels (High (>1000 MET), Moderate (>600 MET), and Low (<600 MET)), revealed that most pandemic-era employees engaged in low-intensity physical activities. This trend may be attributed to government-imposed restrictions on outdoor activities. Hence, activities such as home-based exercises emerged as alternatives for maintaining strong immune systems (Ichsan & Sumirah, 2020).

This study also opens up further discussion about how differences in physical activity during the pandemic may have impacted employee well-being. For current studies, especially in the post-pandemic era, walking outdoors has become more accessible again. It would be valuable to investigate whether renewed access to outdoor activities, including walking, produces different or similar relationships with well-being dimensions. Such research could provide richer insights into how various types of physical activity, both indoors and outdoors, influence well-being in a more typical post-pandemic environment.

Furthermore, this study also investigated correlations among different dimensions of employee well-being and physical activity. This underscores that employee well-being is a multifaceted concept, significantly influenced by different types of physical activity, with the strongest impact observed on workplace well-being. These results suggest that encouraging employees to engage in physical activities, especially moderate to vigorous exercise, could play an essential role in enhancing overall well-being in the workplace. This finding aligns with Adams (2019), who posited that workplace factors influence mental and emotional states, enhancing overall well-being and even impacting physical health. A healthy physical, mental, and emotional state can yield optimal performance, and employees in good health generally experience better life quality and happiness from positive emotions. These aspects are particularly beneficial for employees facing the COVID-19 pandemic, as maintaining physical health is crucial for effective work performance and well-being enhancement.

While this study offers new insights into the relationship between physical activity and employee well-being, it is not without limitations. Firstly, it does not directly explore the physical activities of working employees. Although the IPAQ questionnaire has been widely used and yields credible results, alternative means of directly measuring actual physical activity

minutes are recommended. Additionally, the reliance on online IPAQ questionnaire responses poses risks of misinterpretation and inaccurate perception of the questions. Future research should consider monitoring questionnaire completion offline or in-person. Future studies addressing similar themes should also contemplate other influencing factors, such as physical conditions (specific illnesses, other physical conditions affecting activity), or perceptions of physical activity, to yield more comprehensive results regarding the interrelation of these variables.

Contrary to previous studies by Trost et al. (2002) and Azevedo et al. (2007), which suggested that men are more physically active than women, this study found no significant gender differences in employee well-being related to physical activity. This discrepancy may be due to the limited variety of activities captured in this research. The IPAQ questionnaire, consisting of five parts, was only partially utilised in this study, potentially not fully reflecting the participants' activities. Therefore, future research should consider adjusting the activity questionnaire for a more accurate representation of physical activities.

## REFERENCES

- Andriyani, F. D., Biddle, S. J. H., & De Cocker, K. (2021). Adolescents' physical activity and sedentary behaviour in Indonesia during the COVID-19 pandemic: A qualitative study of mothers' perspectives. *BMC Public Health*, 21(1), 1864. <https://doi.org/10.1186/s12889-021-11931-1>
- Barene, S., & Krstrup, P. (2022). Football and Zumba training in female hospital staff: Effects after 12 and 40 weeks on self-reported health status, emotional wellbeing, general self-efficacy, and sleep problems. *International Journal of Environmental Research and Public Health*, 19(3), 1685. <https://doi.org/10.3390/ijerph19031685>
- Basso, J. C., & Suzuki, W. (2017). The effects of acute exercise on mood, cognition, neurophysiology, and neurochemical pathways: A review. *Brain Plasticity*, 3(2), 127–152. <https://doi.org/10.3233/bpl-160040>
- Bauman, A., Ainsworth, B. E., Bull, F., Craig, C. L., Hagströmer, M., Sallis, J. F., & Sjörström, M. (2009). Progress and pitfalls in the use of the International Physical Activity Questionnaire (IPAQ) for adult physical activity surveillance. *Journal of Physical Activity and Health*, 6(S1), S5–S8.
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186–3191.
- Blair, S. N., Kohl, H. W., Gordon, N. F., & Paffenbarger, R. S., Jr. (1992). How much physical activity is good for health? *Annual Review of Public Health*, 13(1), 99–126.
- Brown, D. K., Barton, J. L., Pretty, J., & Gladwell, V. F. (2012). Walks4work: Rationale and study design to investigate walking at lunchtime in the workplace setting. *BMC Public Health*, 12, 1–10.
- Brown, D. K., Barton, J. L., Pretty, J., & Gladwell, V. F. (2014). Walks4Work: Assessing the role of the natural environment in a workplace physical activity intervention. *Scandinavian Journal of Work, Environment & Health*, 40(4), 390–399. <https://doi.org/10.5271/sjweh.3421>
- Carriedo, A., Cecchini, J. A., Fernández-Río, J., & Méndez-Giménez, A. (2020). COVID-19, psychological well-being, and physical activity levels in older adults during the nationwide lockdown in Spain. *The American Journal of Geriatric Psychiatry*, 28(11), 1146–1155. <https://doi.org/10.1016/j.jagp.2020.08.007>
- Cheval, B., Sivaramakrishnan, H., Maltagliati, S., Fessler, L., Forestier, C., Sarrazin, P., & Boisgontier, M. P. (2020). Relationships between changes in self-reported physical activity, sedentary behaviour, and health during the coronavirus (COVID-19) pandemic



- in France and Switzerland. *Journal of Sports Sciences*, 39(6), 699–707. <https://doi.org/10.1080/02640414.2020.1841396>
- Danna, K., & Griffin, R. W. (1999). Health and well-being in the workplace: A review and synthesis of the literature. *Journal of Management*, 25(3), 357–384.
- Dewi, I. G., & Wuryaningsih, C. E. (2019). Aktivitas fisik masyarakat urban di Jakarta Selatan. *Hasanuddin Journal of Midwifery*, 1(1), 23–29.
- Dinas, P., Koutedakis, Y., & Flouris, A. (2011). Effects of exercise and physical activity on depression. *Irish Journal of Medical Science*, 180(2), 319–325.
- Hamer, M., Endrighi, R., & Poole, L. (2012). Physical activity, stress reduction, and mood: Insight into immunological mechanisms. *Psychoneuroimmunology: Methods and Protocols*, 89, 102.
- Heuse, S., Gekeler, B., & Fodor, D. (2021). The role of physical exercise as a personal resource against job stress. *International Journal of Occupational Safety and Ergonomics*, 27(4), 1251–1260.
- Hutchinson, J. C., & Tenenbaum, G. (2007). Attention focus during physical effort: The mediating role of task intensity. *Psychology of Sport and Exercise*, 8(2), 233–245.
- Jaiswal, A., & Arun, C. J. (2021). Impact of happiness-enhancing activities and positive practices on employee well-being. *Journal of Asia Business Studies*, 16(4), 558–573. <https://doi.org/10.1108/JABS-06-2021-0251>
- Juniper, B. (2010). Evaluation of a novel approach to measuring well-being in the workplace. *Journal of Occupational and Environmental Medicine*, 52(3), 258–267.
- Jurakić, D., Pedišić, Ž., & Andrijašević, M. (2009). Physical activity of Croatian population: Cross-sectional study using the International Physical Activity Questionnaire. *Croatian Medical Journal*, 50(2), 165–173.
- Kruk, J. (2009). Physical activity and health. *Asian Pacific Journal of Cancer Prevention*, 10(5), 721–728.
- Lindberg, C. M., Srinivasan, K., Gilligan, B., Razjouyan, J., Lee, H., Najafi, B., & Sternberg, E. M. (2018). Effects of office workstation type on physical activity and stress. *Occupational and Environmental Medicine*, 75(10), 689–695. <https://doi.org/10.1136/oemed-2018-105077>
- Matias, T. S., Lopes, M. V. V., da Costa, B. G. G., Silva, K. S., & Schuch, F. B. (2022). Relationship between types of physical activity and depression among 88,522 adults. *Journal of Affective Disorders*, 297, 415–420. <https://doi.org/10.1016/j.jad.2021.10.051>
- Meng, Y., Luo, Y., Qin, S., Xu, C., Yue, J., Nie, M., & Fan, L. (2021). The effects of leisure time physical activity on depression among older women depend on intensity and frequency. *Journal of Affective Disorders*, 295, 822–830. <https://doi.org/10.1016/j.jad.2021.08.142>
- Neufer, P. D., Bamman, M. M., Muoio, D. M., Bouchard, C., Cooper, D. M., Goodpaster, B. H., & Laughlin, M. R. (2015). Understanding the cellular and molecular mechanisms of physical activity-induced health benefits. *Cell Metabolism*, 22(1), 4–11. <https://doi.org/10.1016/j.cmet.2015.05.011>
- Page, K. M., & Vella-Brodrick, D. A. (2009). The ‘what,’ ‘why,’ and ‘how’ of employee well-being: A new model. *Social Indicators Research*, 90(3), 441–458.
- Penedo, F. J., & Dahn, J. R. (2005). Exercise and well-being: A review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry*, 18(2), 189–193.
- Rampisheh, Z., Ramezani, M., Khalili, N., Massahikhaleghi, P., Hoveidamanesh, S., Darroudi, S., & Tayefi, B. (2022). Physical activity and well-being status among employees of the University of Medical Sciences. *Medical Journal of the Islamic Republic of Iran*, 36(97). <https://doi.org/10.47176/mjiri.36.97>

- Richardson, C. R., Faulkner, G., McDevitt, J., Skrinar, G. S., Hutchinson, D. S., & Piette, J. D. (2005). Integrating physical activity into mental health services for persons with serious mental illness. *Psychiatric Services, 56*(3), 324–331.
- Roshanaei-Moghaddam, B., Katon, W. J., & Russo, J. (2009). The longitudinal effects of depression on physical activity. *General Hospital Psychiatry, 31*(4), 306–315.
- Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology, 12*(3), 204–221.
- Van Luchene, P., Detemmerman, F., & Delens, C. (2021). The influence of COVID-19 lockdown on physical activity, sedentary behavior, and social support specific to physical activity among Belgian adults. *Frontiers in Sports and Active Living, 3*. <https://doi.org/10.3389/fsport.2021.716386>
- Vancampfort, D., Stubbs, B., Ward, P. B., Teasdale, S., & Rosenbaum, S. (2015). Integrating physical activity as medicine in the care of people with severe mental illness. *The Lancet Psychiatry, 2*(4), 295–305. [https://doi.org/10.1016/S2215-0366\(15\)00007-5](https://doi.org/10.1016/S2215-0366(15)00007-5)
- Vancini, R. L., Camargo-Neto, L., Barbosa de L. C. A., Andrade, M. S., Viana, R. B., Nikolaidis, P. T., & Campanharo, C. R. V. (2020). Physical activity and sociodemographic profile of Brazilian people during COVID-19 outbreak: An online and cross-sectional survey. *International Journal of Environmental Research and Public Health, 17*(21), 7964. <https://doi.org/10.3390/ijerph17217964>
- Werneck, A. O., Stubbs, B., Kandola, A., Oyeyemi, A. L., Schuch, F. B., Hamer, M., & Silva, D. R. (2022). Prospective associations of leisure-time physical activity with psychological distress and well-being: A 12-year cohort study. *Psychosomatic Medicine, 84*(1), 116–122. <https://doi.org/10.1097/psy.0000000000001023>
- Wiese, C. W., Kuykendall, L., & Tay, L. (2018). Get active? A meta-analysis of leisure-time physical activity and subjective well-being. *Journal of Positive Psychology, 13*(1), 57–66. <https://doi.org/10.1080/17439760.2017.1374436>
- Zheng, X., Zhu, W., Zhao, H., & Zhang, C. (2015). Employee well-being in organizations: Theoretical model, scale development, and cross-cultural validation. *Journal of Organizational Behavior, 36*(5), 621–644.

### **Acknowledgement**

This study was funded by Universitas YARSI Internal Research Grants 2021-2022.