Health Promotion and Physical Activity
ISSN 2544-9117 ▪ 2025; 31(2): 14-25
doi: 10.55225/hppa.676

HPPA • 2025; 31 (2): 14-25

# Physical activity levels of faculty in the higher education institutions in the Philippines during the peri-pandemic times: A comparative analysis

Mary-Grace Kang[1 A,B,D-G], Paul Christian Reyes[1 A,D,F,G], Maribeth Anne Gelisanga[2 A-G], Shobie Roselle Vicente[3 A,B,F,G], Jerrecho Pituk[4 A,B,F,G], Alicia Bañas[5 A,B,F,G], Rene John Futalan[6 A,B,F,G], Paulo Maria Pagkatipunan[7 A,B,F,G]

[1]University of the Philippines, College of Allied Medical Professions, Manila, Philippines; [2]University of the Philippines, Philippine General Hospital, Manila, Philippines; [3]Lyceum of the Philippines University, College of Arts and Sciences, Philippines; [4]De La Salle – College of Saint Benilde, School of Multidisciplinary Studies, Philippines; [5]Philippine Christian University, College of Nursing and Health Sciences, Philippines; [6]De La Salle University Manila, College of Liberal Arts, Manila, Philippines; [7]University of the Philippines, College of Medicine, Manila, Philippines

## Abstract

**Purpose:** The COVID-19 pandemic compounded the roadblock to optimal engagement in physical activity (PA) among educators. In the Philippines, there is a paucity of studies exploring the PA levels of higher education institution (HEI) faculty during the peri-pandemic times. This study aimed to compare the PA levels of Filipino HEI faculty before, during, and after the COVID-19 pandemic.

**Material and methods:** This cross-sectional survey gathered and compared data on the PA of HEI faculty during the peri-pandemic times using the International Physical Activity Questionnaire (IPAQ) – Long Form. Participants from five institutions of higher learning in Manila, Philippines were invited to answer the survey following pre-determined eligibility criteria.

**Results:** Eighty-one HEI faculty members participated in the survey. The majority of HEI faculty did not meet the World Health Organization's PA recommendations across time points. Pre-pandemic PA yielded the highest level of engagement with a median PA of 780 (300–1410) minutes. Post-hoc comparisons revealed statistically significant differences in PA level only between post- and pre-pandemic periods ($p < 0.0001$) and during and before the pandemic ($p < 0.0001$). Active transportation using bicycles significantly increased during the post-pandemic period.

**Conclusions:** Results of this study provide baseline information on the level of PA engagement of HEI faculty during the peri-pandemic times. Information can be used to explore factors influencing their engagement and identify strategies to promote PA across domains and in diverse contexts. Post-pandemic implications include strengthening initiatives to promote PA among HEI staff through sustainable PA policies and programs.

Original article

## Keywords

- exercise
- fitness
- university
- educator
- survey

## Contribution

A – Preparation of the research project
B – Assembly of data
C – Conducting of statistical analysis
D – Interpretation of results
E – Manuscript preparation
F – Literature review
G – Revising the manuscript

## Corresponding author

**Mary-Grace D.P. Kang**
e-mail: mldelapena2@up.edu.ph
University of the Philippines Manila
College of Allied Medical Professions
Department of Physical Therapy
Pedro Gil Street, Ermita, Manila 1003
Philippines
tel.: +63 285 267 125

Article into

### Article history

- Received: 2025-09-01
- Accepted: 2025-10-31
- Published: 2025-11-28

### Publisher

University of Applied Sciences in Tarnow
ul. Mickiewicza 8, 33-100 Tarnow, Poland



### Conflict of interest

None declared.

### Financing

This research did not receive any grants from public, commercial or non-profit organizations.

# Introduction

Teaching in a tertiary education setting poses a range of mental and physical demands, including sustained sitting and standing throughout the day. This generally impedes opportunities for engaging in physical activity, which directly poses risks for developing musculoskeletal disorders[1] and non-communicable and lifestyle diseases.[2] The advent of the COVID-19 pandemic further compounded this challenge due to mobility restrictions in the community, changes in work setup, as well as the lack of physical interaction with peers. Higher education institutions (HEIs) were all compelled to adjust to work-from-home arrangements and remote learning delivery mode,[3] which limited some routine opportunities for engaging in PA such as physical tasks done in the course of work, mobility to and from the workplace, and activities involving students and peers, among others.

A systematic review in 2021 found that a general decrease in PA levels and an increase in sedentary behaviors were seen in the majority of studies during the COVID-19 pandemic across the healthy population and persons with medical conditions.[4] Prior to this, the literature on PA also documented a generally high prevalence of low PA levels among educators.[5-6] In a survey done in Asia, Africa, Europe and the Americas in 2020, they found a net increase in daily sitting time of 5 to 8 hours per day among the respondents.[7] With the shift to a remote learning delivery mode, this could be a related trend among HEI educators given the nature of classes delivered via online platforms, which may usually be done in front of a desk workstation. This was observed even among physical education (PE) and sports educators, where there was a noted decline in PA levels at the onset of the pandemic.[8]

Although a number of available studies looked at the PA levels of educators, these were limited to exploring the associations of PA with well-being and life satisfaction.[9] The majority of pandemic-related studies conducted among educators were on effects on their mental health, but not much on the measurement of PA levels and whether they met the recommended levels. According to the WHO, adults should engage in at least 150 to 300 minutes of moderate-intensity, 75 to 150 minutes of vigorous-intensity, or an equivalent combination of these throughout the entire week.[2] Meanwhile, older adults aged 65 years and above should include moderate or greater intensity strength and balance training on most days of the week.[2] A helpful way to measure PA levels is through the use of physical activity questionnaires, which may look at various moderate- or vigorous-intensity activities done for work, transportation, housekeeping, recreation, and other domains as forms of PA engagement.[10]

To date, there is also no available literature that identifies and compares PA levels among HEI faculty before the pandemic, during the pandemic, and during the period of gradually moving out of the pandemic. This also applies to the Philippine context where there is paucity of studies exploring the PA levels of HEI faculty. Further, there is a gap in information regarding whether HEI educators in the Philippines are also aware of the importance of PA engagement, the PA recommendations, and can seek alternative strategies in challenging contexts, such a pandemic.

This study, therefore, aimed to answer the following research questions:

1. Is there a change in PA level trends among HEI faculty in South Manila before, during the onset, and after the pandemic?
2. During these timepoints, did HEI faculty demonstrate a shift in the domain/s of PA they engaged in?
3. Do the HEI faculty meet the recommended PA levels (as defined by WHO) before, during the onset, and after the pandemic?

Results of this study may contribute to describing the levels of physical activity among Filipino college and university faculty in the context of the pandemic. Indirectly, having them measure their PA levels in various domains could also raise their awareness of how much PA they were engaging in and how much more they needed to meet recommended standards. As an aggregate, PA measurements can also serve as baseline data for future research that explores other variables that may be associated with PA. This may help identify barriers, facilitators or alternative opportunities that can help address the lack of PA in the home, work, and recreation contexts. Ultimately, this study can provide policymakers and program developers information to help guide in the creation of PA-related policies and programs for the higher education workforce.

# Material and methods

## Design

The study utilized a cross-sectional design to compare the target population's characteristics at a single point of data collection.[11] The survey aimed to gather quantitative data on the physical activities of higher education faculty before, during, and after the COVID-19 pandemic. The study was approved by the respective

participating institutions, and informed consent was obtained from the participants.

## Setting

The study was conducted among five higher education institutions in Manila, Philippines. These were public and private colleges and universities that offer a wide array of programs in the graduate and undergraduate levels. Academic programs ranged from hospitality and tourism, arts, business, engineering, law to medicine and nursing. These institutions converted to remote learning to ensure the continuity of teaching-learning activities despite the mobility restrictions due to the COVID-19 pandemic.

## Participants

Study participants were faculty members from any of the five higher education institutions that implemented remote teaching-learning activities during the COVID-19 pandemic. Total enumeration was done based on the number of faculty members reported by each institution's human resource division. The faculty were invited to participate in the study between February and May 2023. The timing of data collection allowed participants to contrast the whole experience among the various learning delivery modes.

Specific criteria applied in participant selection were the following: 1) with official appointment as a faculty member at the time of data collection; and 2) taught at least 2 semesters before the pandemic (before January 2019) in full face-to-face delivery mode; at least two semesters during the COVID-19 pandemic via remote learning, and 3) were involved in blended teaching-learning delivery mode at the time of data collection. Participants were excluded from the study if they 1) had a period of unemployment in the academe setting within the last 2 years, 2) were on leave during the last 2 years; 3) shifted work in different HEIs in the last 2 years; or 4) declined consent to be part of the study.

## Instrument

The International Physical Activity Questionnaire (IPAQ) – Long Form[10] was used as the main instrument for collecting data regarding the participants' physical activity levels. The IPAQ was developed by an International Consensus Group in 1998–1999 as a tool to allow standardized comparisons among various countries for large-scale surveillance of PA.[10,12] It is widely used for large-scale surveillance of PA levels and has several translated versions. The English version of IPAQ – Long Form was used to segregate information on the different domains of PA apart from work-related tasks, such as transportation, housework, recreation, and time spent sitting.

Under the Creative Commons license CC BY 4.0, modifications were made to align with the objectives of this study. Modifications included (1) asking about their PA levels during the pandemic and pre-pandemic times in conjunction with asking their present PA levels in the last 7 days (referred to in this study as post-pandemic period); (2) omitting cues that did not apply to the context of the Philippines (i.e. shoveling snow for vigorous activities, transportation via tram); (3) obtaining information on activities that constituted their mentioned time of doing moderate and vigorous PA; (4) and adding demographic information to describe the characteristics of the sample. The survey instrument was pilot tested among the faculty members of a college from one of the participating higher education institutions. The participants in the pilot test shared similar characteristics specified in the abovementioned eligibility criteria. They were not invited to participate in the full-scale implementation of the survey to reduce the risk of bias due to familiarity with the survey items.

As the instrument required a long reference period of recall, the study employed several methods to improve recall.[13] Strategies included providing landmarks that could help facilitate recall of information, asking about the recent time then thinking backward, giving more details and concrete elaborations per question, and providing adequate time. The layout of the survey questions was also intended so that each item per time point would be juxtaposed with each other (see additional file) for ease of comparison.

## Data collection

The items of the IPAQ – Long Form and the questions on demographic characteristics were combined and transformed into an online survey form through the Qualtrics platform to facilitate the collection of data. The study invitation contained the details of the study and the anonymous link to the informed consent form and survey questions. These were disseminated through the official information or public affairs messaging system of each participating higher education institution. A printed version of the survey was also made available for those who preferred to answer through pen-and-paper method. Data collection ran from February to May 2023.

## Data analysis

Data gathered were analyzed using the Statistical Package for Social Science (SPSS 24 for Windows). Demographic data of participants were analyzed and presented descriptively. Nominal data were expressed in frequencies and percentages, while ratio and interval data were expressed in median and interquartile ranges. The Shapiro-Wilk test indicated that continuous variables were not normally distributed. Hence, the Friedman test was used to analyze and compare the PA levels across time points and the PA spent for each domain. Two-factor repeated measures ANOVA was performed to analyze the potential shift in PA domains across the timepoints. The level of significance for the study was set at 0.05.

# Results

A total of 119 participants accepted the invitation to participate in the study. However, only 81 participants proceeded to complete the survey. Among those who continued with their participation in the study, the respondents aged 43 years on average and were mostly male (n = 45). Around 33% (n = 27) of the participants taught in the higher education setting for more than 16 years while 25% (n = 20) had served in the academe between 6 and 10 years. The rest of the participants worked in higher education between 11 and 15 years (n = 17, 22%) and between 1 and 5 years (n = 15, 19%), respectively. Forty-two participants worked part-time while 39 participants rendered full-time work.

Meanwhile, approximately half of the participants were under the overweight category of the BMI classification system. Eight of the participants had a form of disability that prevented them from participating in PA. More than half of the participants handled courses that entailed PA while a similar number of participants engaged in prolonged sitting time. Most of the participants did not have existing PA programs in their respective institutions.

## Physical activity levels of HEI faculty

Analysis of time spent doing PA across the three time points indicated varying levels of PA engagement among the participants. Figure 1 summarizes the aggregate amount of physical activity undertaken by the participants across the PA domains. The amount of PA comprised time spent doing job-related PA, transportation, housework, and recreation, sport or leisure. Specifically, pre-pandemic PA yielded the highest level of engagement, with a median PA of 780 (300–1410) minutes. In contrast, physical activity engagement during the pandemic was the lowest among the time points, yielding a median amount of physical activity of 410 (165–870) minutes whereas post-pandemic PA had a median PA of 480 (220–915) minutes. Further, post-hoc comparisons revealed statistically significant differences in PA level only between post- and pre-pandemic periods ($p < 0.0001$) and during the pandemic and pre-pandemic times ($p < 0.0001$) but not between after and during the pandemic ($p = 0.202$).

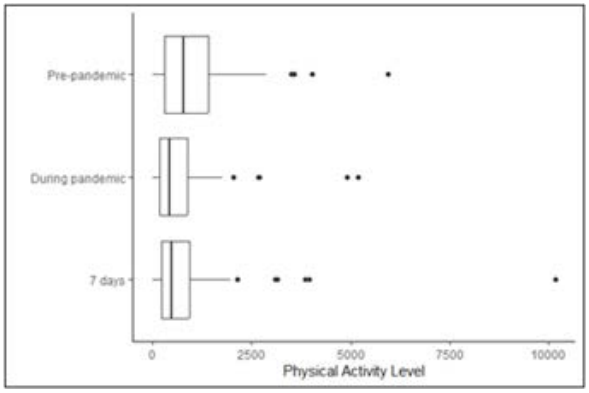


**Figure 1.** Boxplot distribution of physical activity levels across time points

## Shift in domains of PA

There is a statistically significant interaction ($p < 0.0001$) between the PA domains and the time periods, indicating changes in PA mode across time. Post-hoc comparisons of physical activity domains across time periods for the moderate PA intensity type revealed that walking ($p < 0.001$) and transportation using vehicles ($p < 0.001$) were significantly less during the pandemic as compared to before the pandemic. A similar trend was also noted after the pandemic as compared to the pre-pandemic period. Conversely, transportation using bicycles ($p < 0.001$) significantly increased coming out from the pandemic versus pre-pandemic times. Meanwhile, post-hoc comparisons of physical activity domains across time periods for vigorous PA were not performed as there was no sufficient evidence to support varying PA levels in at least two of three time periods and in at least two of the domains. There was also no sufficient evidence to support the interaction between the PA domains and the time periods.

## Adherence to recommended PA levels

Broadly, results indicate that the majority of Filipino HEI faculty did not meet the recommended amounts of vigorous and moderate PA across domains and time points (see Table 1). Only approximately 18% of participants were able to engage in the recommended amount of vigorous PA while only 22% met the recommended level of moderate PA across domains. Among the domains and across PA intensities (i.e., moderate, vigorous), participants engaged in PA in the form of housework and family care (n = 122) most frequently, followed by recreation and leisure (n = 95) and job-related PA (n = 78). In the job-related and recreation domains and among the time points, the highest number of participants that performed the recommended moderate and vigorous activity level was during the pre-pandemic period while the least was during the pandemic. On the contrary, more participants met the recommended levels of moderate PA through housework and family care during the pandemic compared to other domains and time points.

**Table 1.** Summary of average time and number of participants meeting the World Health Organization physical activity recommendations

| Domain | Time point | Vigorous PA | | Moderate PA | |
|---|---|---|---|---|---|
| | | Average time (minutes) of all participants | Number of teachers meeting recommended levels | Average time (minutes) of all participants | Number of teachers meeting recommended levels |
| Job-related | Pre-pandemic | 84.4 | 18 | 78.8 | 14 |
| | During the pandemic | 47.7 | 13 | 44.1 | 8 |
| | Post-pandemic | 55.5 | 15 | 55.6 | 10 |
| Housework, house maintenance and caring for the family | Pre-pandemic | 59.3 | 11 | 185.2 | 28 |
| | During the pandemic | 106.2 | 11 | 213.5 | 35 |
| | Post-pandemic | 170.2 | 11 | 173.8 | 26 |
| Recreation, sport, leisure | Pre-pandemic | 65.1 | 21 | 58 | 15 |
| | During the pandemic | 43.8 | 12 | 56.2 | 14 |
| | Post-pandemic | 56.1 | 19 | 49.8 | 14 |

# Discussion

This study aimed to explore and compare the PA levels of university and college faculty in the southern part of Manila across timepoints and to also identify potential shifts in PA participation in reference to the COVID-19 pandemic. Results of this study indicate that most Filipino higher education faculty did not meet the PA recommendations across time points and domains. Varying levels of and shifts in PA engagement were also noted across time points, with active transportation significantly increased during and transitioning out from the pandemic. However, taken together, the shifts were still not enough for most participants to meet the recommendations.

Although only focused on HEI faculty in the southern part of Manila, this study was the first to explore the PA level of university educators in the Philippines during the peri-pandemic times, contributing to the body of empirical evidence on educators' PA participation both locally and globally. The results of this study generally concur with the earlier reported low PA level of educators in other countries during[4,8] and even prior to the pandemic.[5-6] This points to a widespread and perennial challenge in promoting physical activity across the education workforce, which was further compounded by the restrictions posed by the COVID-19 pandemic.

Results of this study also show that HEI faculty demonstrated some significant shifts in the domains of PA they engaged in across the time points in the context

of the pandemic. Specifically, walking was significantly less during the pandemic as compared to before the pandemic and in the post-pandemic period compared to pre-pandemic times. Conversely, transportation using bicycles significantly increased coming out from the pandemic versus pre-pandemic times. This finding generally suggests a possible compensation of some participants for decreased opportunities to be physically active due to the mobility restrictions (e.g., physical distancing) brought about by community lockdowns during the pandemic. The adoption of active transportation strategies, such as cycling, was also present in other studies examining the impact of the COVID-19 pandemic on physical activity engagement among adults.[14-15] From a broader perspective, this highlights a novel opportunity that the pandemic presented to further emphasize the role of other forms of active transport in physical activity engagement, as advocated by the recommendations in the Global Action Plan in Physical Activity 2018–2030.[16]

Despite not reaching statistically significant differences, other shifts in PA domains were also noted from the survey responses. Conduct of recreational PA during the pandemic was mostly limited to those that could be performed at home due to community lockdowns, further reinforcing the contribution of domestic PA to promoting physical activity.[17-18] There was also generally increased housework-related PA and modifications of work-related PA to fit the remote teaching-learning environment during the pandemic compared to the pre-pandemic period. Similar to active transportation, both trends point to possible compensatory strategies for reduced PA opportunities and maximizing a single environment or setting (i.e., home) for job-related and housework PA during the pandemic. As an example, PE teachers were still able to perform some course-related activities involving physical exertion (e.g., weightlifting, calisthenics) despite the online delivery of teaching-learning content. The results of this study are consistent with the findings of other studies related to the forms of physical activity engagement of elementary and secondary school teachers[19-20] as well as the broader context and literature of physical activity during the pandemic.[21-24]

This study provides baseline information on the level of PA of university and college faculty in the southern part of Manila across time points and in the context of the pandemic. Knowledge of their PA levels can be used as a starting point for designing tailored PA programs as part of the health and wellness initiatives for employees. Components of the program may include information sessions on the concepts and importance of PA paired with experiential activities to increase their confidence in doing varied forms of PA depending on their preferences. This strategy is consistent with the findings of a realist review highlighting the importance of a tailored and stakeholder-informed approach to creating intervention programs for university employees and in influencing positive and immediate changes on their PA engagement.[25] Further, university workplaces can explore ways to integrate regular physical activity into educators' daily routines and monitor their PA during school hours[26,27] as part of organization-level strategies to promote active lifestyle among university employees.

The results of this study also emphasize the need for more studies exploring and understanding the factors that influence Filipino HEI faculty members' engagement in PA. This type of studies may provide insights on personal and contextual influences that have potential impact on HEI faculty's perceptions on PA. Knowledge of the influencing factors may help inform the creation and implementation of PA-related policies and programs as part of the advocacy for healthy workplaces and healthy universities in the country.[28-29] This study also affirms the need to strengthen initiatives to promote PA in diverse public health contexts through sustainable PA policies and programs. Specifically, evidence-informed PA programs that are responsive or adaptable to changing conditions, such as a pandemic, may prove beneficial not just in promoting PA among HEI faculty,[8,19] but also in future-proofing organizations from future health-related challenges. This strategy is broadly consistent with global recommendations for post-pandemic PA promotion.[30]

This study also acknowledges these limitations. First, the data only came from one geographic location limiting the generalizability of the results to the bigger population of HEI faculty in the country. Second, recall bias was present as the questionnaire involved a long reference period of recall. Nonetheless, strategies were incorporated to help mitigate its impact, such as providing cues to facilitate recall of information and asking participants to think from recent time, during the peak of the pandemic, and then to pre-pandemic time.

## Conclusion

This study indicates that most Filipino higher education faculty did not meet the PA recommendations across time points and domains. Varying levels of PA engagement were also noted during the peri-pandemic times. Active transportation significantly increased during the post-pandemic period. Future studies can explore the factors influencing educators' engagement in PA, starting from job-related PA, to better inform the creation of sustainable policies and programs for the higher education workforce.

# References


[1] Erick PN, Smith DR. Musculoskeletal disorders in the teaching profession: an emerging workplace hazard with significant repercussions for developing countries. *Ind Health*. 2015;53(4):385-386. doi: 10.2486/indhealth.2014-0218.

[2] Physical activity. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/physical-activity. Published 2024. Accessed December 8, 2024.

[3] Simbulan NM. The Philippines – COVID-19 and its impact on higher education in the Philippines. https://headfoundation.org/2020/06/04/covid-19-and-its-impact-on-higher-education-in-the-philippines/. Published 2020. Accessed January 21, 2023.

[4] Stockwell S, Trott M, Tully M, et al. Changes in physical activity and sedentary behaviours from before to during the COVID-19 pandemic lockdown: a systematic review. *BMJ Open Sport Exerc Med*. 2021;7(1):e000960. doi: 10.1136/bmjsem-2020-000960.

[5] Brito WF, Santos CL, Marcolongo AA, et al. Physical activity levels in public school teachers. *Rev Saude Publica*. 2012;46(1):104-109. doi: 10.1590/s0034-89102012000100013.

[6] Dumlao-Abadilla D. *Most Filipinos lack exercise – study*. https://business.inquirer.net/223197/filipinos-lack-exercise. Published 2017. Accessed January 20, 2023.

[7] Ammar A, Brach M, Trabelsi K, et al. Effects of COVID-19 home confinement on eating behaviour and physical activity: Results of the ECLB-COVID19 International Online Survey. *Nutrients*. 2020;12(6):1583. doi: 10.3390/nu12061583.

[8] Erdogan R, Yilmaz M, Aydemir I. Determination of physical education and sports teachers' nutrition habits and physical activity levels in the global epidemic (COVID-19) process. *Asian J of Edu and Train*. 2021;7(1):51-59. doi: 10.20448/journal.522.2021.71.51.59.

[9] Randall K, Ford TG, Kwon KA, et al. Physical activity, physical well-being, and psychological well-being: Associations with life satisfaction during the COVID-19 pandemic among early childhood educators. *Int J Environ Res Public Health*. 2021;18(18):9430. doi: 10.3390/ijerph18189430.

[10] Craig CL, Marshall AL, Sjostrom M, et al. International physical activity questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc*. 2003;35(8):1381-1395. doi: 10.1249/01.mss.0000078924.61453.fb.

[11] Portney LG, Watkins MP. *Foundations of Clinical Research*. USA: Pearson Education Inc; 2009.

[12] Graff-Iversen S, Anderssen SA, Holme IM, Jenum AK, Raastad T. An adapted version of the long International Physical Activity Questionnaire (IPAQ-L): Construct validity in a low-income, multiethnic population study from Oslo, Norway. *Int J Behav Nutr Phys Act*. 2007;20:4:13. doi: 10.1186/1479-5868-4-13.

[13] Sauro J, Lewis J. *Six Ways to Improve Participant Recall*. https://measuringu.com/six-ways-to-improve-recall/. Published 2021. Assessed February 10, 2024.

[14] Brooks JH, Tingay R, Varney J. Social distancing and COVID-19: An unprecedented active transport public health opportunity. *Br J Sports Med*. 2021;55(8):411-412. doi: 10.1136/bjsports-2020-102856.

[15] Manz K, Krug S. Change in sports activity and walking and cycling for transport since the COVID-19 pandemic: Results of the GEDA 2021 study. *J Health Monit*. 2022;7(4):22-35. doi: 10.25646/10666.

[16] World Health Organization. *Global Action Plan on Physical Activity 2018–2030: More Active People for a Healthier World*. Geneva, World Health Organization; 2018.

[17] Murphy MH, Donnelly P, Breslin G, Shibli S, Nevill AM. Does doing housework keep you healthy? The contribution of domestic physical activity to meeting current recommendations for health. *BMC Public Health*. 2013;13:966. doi: 10.1186/1471-2458-13-966.

[18] Smith LP, Ng SW, Popkin BM. No time for the gym? Housework and other non-labor market time use patterns are associated with meeting physical activity recommendations among adults in full-time, sedentary jobs. *Soc Sci Med*. 2014;120:126-134. doi: 10.1016/j.socscimed.2014.09.010.

[19] Aperribai L, Cortabarria L, Aguirre T, Verche E, Borges Á. Teacher's physical activity and mental health during lockdown due to the COVID-2019 pandemic. *Front Psychol*. 2020;11:577886. doi: 10.3389/fpsyg.2020.577886.

[20] Vilchez JA, Kruse J, Puffer M, Dudovitz RN. Teachers and school health leaders' perspectives on distance learning physical education during the COVID-19 pandemic. *J Sch Health*. 2021;91(7):541-549. doi: 10.1111/josh.13030.

[21] Kingsley J, Diekmann L, Egerer MH, Lin BB, Ossola A, Marsh P. Experiences of gardening during the early stages of the COVID-19 pandemic. *Health Place*. 2022;76:102854. doi: 10.1016/j.healthplace.2022.102854.

[22] Li X, Farrukh M, Lee C, et al. COVID-19 impacts on mobility, environment, and health of active transportation users. *Cities*. 2022;131:103886. doi: 10.1016/j.cities.2022.103886.

[23] Pietsch S, Linder S, Jansen P. Well-being and its relationship with sports and physical activity of students during the coronavirus pandemic. *Ger J Exerc Sport Res*. 2022;52(1):50-57. doi: 10.1007/s12662-021-00750-6.

[24] Schaefer KJ, Tuitjer L, Levin-Keitel M. Transport disrupted – Substituting public transport by bike or car under Covid 19. *Transp Res Part A Policy Pract*. 2021;153:202-217. doi: 10.1016/j.tra.2021.09.002.

[25] Kang MG, Lunar FR, Ruiz RM, et al. A realist review of effective university-based wellness programs on physical activity, occupational balance, and vocal health. *Philippine J Health Res Dev*. 2024;45(1):10-17.

[26] Parra GC, Tan EB. Teachers' physical activity: A necessity for stability of schools' culture during the COVID-19 pandemic. *Int J Innov Edu Res*. 2021;9(4):183-191. doi: 10.31686/ijier.vol9.iss4.3039.

[27] Rupp R, Wallmann-Sperlich B, Bucksch J. Strategies and barriers to implementing physically active teaching in universities from the perspective of lecturers: A qualitative study. *BMC Public Health*. 2025;25(1):855. doi: 10.1186/s12889-025-22075-x.

[28] ASEAN Health Promotion Network. AUN Healthy University Framework. https://mahidol.ac.th/temp/2019/04/Healthy-University-Framework.pdf. Published 2017. Accessed December 8, 2024.

[29] DOH-DOLE-CSC Joint Administrative Order No. 2023-0001 National Policy Framework on the Promotion of Healthy Workplace. Department of Health. https://dmas.doh.gov.ph:8083/Rest/GetFile?id=745160. Published 2023. Accessed October 21, 2024.

[30] Richards J, Siefken K, Pratt M, et al. Navigating physical activity promotion and policy in the post-COVID-19-pandemic era. *J Phys Act Health*. 2024;21(12):1412-1422. doi: 10.1123/jpah.2024-0206.

# Appendix: Sample of survey tool covering the demographic questionnaire and the adapted version of the International Physical Activity Questionnaire — Long Form

## PART I. Demographic information

1. Age
2. Sex
   - ☐ Male
   - ☐ Female
3. Years in teaching
   - ☐ 1–5 years
   - ☐ 6–10 years
   - ☐ 11–15 years
   - ☐ 16 years and above
4. Body Mass Index classification at present (insert BMI calculator)
5. With condition or circumstance/s that may impede physical mobility and movement?
   - ☐ Yes
   - ☐ No
6. School of Affiliation
7. Teaching part-time or full-time?
   - ☐ Full-time
   - ☐ Part-time
8. Course/subject matter taught entails physical exertion during teaching-learning activities (e.g. Physical education, movement sciences, predominantly skills laboratory, and the like)
   - ☐ Yes, please specify course handled
   - ☐ No, please specify course handled
9. With prolonged sitting time at work (at least 50% of the working hours)?
   - ☐ Yes
   - ☐ No
10. With existing physical activity programs in institution/school?
    - ☐ Yes, please specify
    - ☐ No

## PART II. International Physical Activity Questionnaire

(adapted from original tool from the IPAQ Group, 2005, http://www.ipaq.ki.se)

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the (1) **last 7 days**, (2) **during the peak time of the pandemic**; and (3) **during pre-pandemic time.** Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport. Think about all the **vigorous** and **moderate** activities that you did in the **last 7 days**, **during the peak time of the pandemic**, **and during pre-pandemic time.**

**Vigorous physical activities** refer to activities that take hard physical effort and make you breathe much harder than normal.

**Moderate activities** refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.w

**PART 1: JOB-RELATED PHYSICAL ACTIVITY**

The first section is about your work as a teacher. This includes paid jobs, farming, volunteer work, course work, and any other unpaid work that you did outside your home. Do not include your other part-time work nor related to teaching or unpaid work you might do around your home, like housework, yard work, general maintenance, and caring for your family. These are asked in Part 3.

1. Do you currently have a job or do any unpaid work outside your home?
   - ☐ Yes
   - ☐ No, Skip to PART 2: TRANSPORTATION

The next questions are about all the physical activity you did as part of your paid or unpaid work. This does not include traveling to and from work.

| | | |
|---|---|---|
| 2. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, heavy construction, or climbing up stairs as part of your work? Think about only those physical activities that you did for at least 10 minutes at a time. | 2. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you do vigorous physical activities like heavy lifting, digging, heavy construction, or climbing up stairs as part of your work? Think about only those physical activities that you did for at least 10 minutes at a time. | 2. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you do vigorous physical activities like heavy lifting, digging, heavy construction, or climbing up stairs as part of your work? Think about only those physical activities that you did for at least 10 minutes at a time. |
| ☐ days per week | ☐ days per week | ☐ days per week |
| **No vigorous job-related physical activity? Skip to question 4** | | |
| 3. How much time did you usually spend on one of those days doing **vigorous** physical activities as part of your work? | 3. How much time did you usually spend on one of those days doing **vigorous** physical activities as part of your work? | 3. How much time did you usually spend on one of those days doing **vigorous** physical activities as part of your work? |
| ☐ minutes per day | ☐ minutes per day | ☐ minutes per day |
| Again, think about only those physical activities that you did for at least 10 minutes at a time. | | |
| 4. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads as part of your work? Please do not include walking. | 4. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you do moderate physical activities like carrying light loads as part of your work? Please do not include walking. | 4. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you do moderate physical activities like carrying light loads as part of your work? Please do not include walking. |
| ☐ days per week | ☐ days per week | ☐ days per week |
| **No vigorous job-related physical activity? Skip to question 6** | | |
| 5. How much time did you usually spend on one of those days doing moderate physical activities as part of your work? | 5. How much time did you usually spend on one of those days doing moderate physical activities as part of your work? | 5. How much time did you usually spend on one of those days doing moderate physical activities as part of your work? |
| ☐ minutes per day | ☐ minutes per day | ☐ minutes per day |
| Please specify what mode(s) of moderate activities you perform: | Please specify what mode(s) of moderate activities you perform: | Please specify what mode(s) of moderate activities you perform: |
| 6. During the last 7 days, on how many days did you walk for at least 10 minutes at a time as part of your work? Please do not count any walking you did to travel to or from work. | 6. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you walk for at least 10 minutes at a time as part of your work? Please do not count any walking you did to travel to or from work. | 6. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you walk for at least 10 minutes at a time as part of your work? Please do not count any walking you did to travel to or from work. |
| ☐ days per week | ☐ days per week | ☐ days per week |
| **No job-related walking? Skip to PART 2: TRANSPORTATION** | | |

| | | |
|---|---|---|
| 7. How much time did you usually spend on one of those days walking as part of your work? | 7. How much time did you usually spend on one of those days walking as part of your work? | 7. How much time did you usually spend on one of those days walking as part of your work? |
| ☐ minutes per day | ☐ minutes per day | ☐ minutes per day |
| **PART 2: TRANSPORTATION PHYSICAL ACTIVITY** | | |
| These questions are about how you traveled from place to place, including to places like work, stores, movies, and so on | | |
| 8. During the last 7 days, on how many days did you travel in a motor vehicle like a train, bus, car, or tram? | 8. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you travel in a motor vehicle like a train, bus, car, or tram? | 8. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you travel in a motor vehicle like a train, bus, car, or tram? |
| ☐ days per week | ☐ days per week | ☐ days per week |
| **No traveling in a motor vehicle? Skip to question 10** | | |
| 9. How much time did you usually spend on one of those days traveling in a train, bus, car, tram, or other kind of motor vehicle? | 9. How much time did you usually spend on one of those days traveling in a train, bus, car, tram, or other kind of motor vehicle? | 9. How much time did you usually spend on one of those days traveling in a train, bus, car, tram, or other kind of motor vehicle? |
| ☐ minutes per day | ☐ minutes per day | ☐ minutes per day |
| Now think only about the bicycling and walking you might have done to travel to and from work, to do errands, or to go from place to place. | | |
| 10. During the last 7 days, on how many days did you bicycle for at least 10 minutes at a time to go from place to place? | 10. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you bicycle for at least 10 minutes at a time to go from place to place? | 10. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you bicycle for at least 10 minutes at a time to go from place to place? |
| ☐ days per week | ☐ days per week | ☐ days per week |
| **No bicycling from place-to-place? Skip to question 12** | | |
| 11. How much time did you usually spend on one of those days to bicycle from place to place? | 11. How much time did you usually spend on one of those days to bicycle from place to place? | 11. How much time did you usually spend on one of those days to bicycle from place to place? |
| ☐ minutes per day | ☐ minutes per day | ☐ minutes per day |
| 12. During the last 7 days, on how many days did you walk for at least 10 minutes at a time to go from place to place? | 12. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you walk for at least 10 minutes at a time to go from place to place? | 12. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you walk for at least 10 minutes at a time to go from place to place? |
| ☐ days per week | ☐ days per week | ☐ days per week |
| **No walking from place-to-place? Skip to PART 3: HOUSEWORK, HOUSE MAINTENANCE, AND CARING FOR FAMILY** | | |
| 13. How much time did you usually spend on one of those days walking from place to place? | 13. How much time did you usually spend on one of those days walking from place to place? | 13. How much time did you usually spend on one of those days walking from place to place? |
| ☐ minutes per day | ☐ minutes per day | ☐ minutes per day |
| **PART 3: HOUSEWORK, HOUSE MAINTENANCE, AND CARING FOR FAMILY** | | |
| This section is about some of the physical activities you might have done in and around your home, like housework, gardening, yard work, general maintenance work, and caring for your family. Think about only those physical activities that you did for at least 10 minutes at a time. | | |
| 14. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, chopping wood, shoveling, or digging in the garden or yard? | 14. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you do vigorous physical activities like heavy lifting, chopping wood, shoveling, or digging in the garden or yard? | 14. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you do vigorous physical activities like heavy lifting, chopping wood, shoveling, or digging in the garden or yard? |
| ☐ days per week | ☐ days per week | ☐ days per week |
| **No vigorous activity in garden or yard? Skip to question 16** | | |

| | | |
|---|---|---|
| 15. How much time did you usually spend on one of those days doing vigorous physical activities in the garden or yard? | 15. How much time did you usually spend on one of those days doing vigorous physical activities in the garden or yard? | 15. How much time did you usually spend on one of those days doing vigorous physical activities in the garden or yard? |
| □ minutes per day | □ minutes per day | □ minutes per day |
| Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: |

| | | |
|---|---|---|
| Again, think about only those physical activities that you did for at least 10 minutes at a time. | | |
| 16. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, sweeping, washing windows, and raking in the garden or yard? | 16. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you do moderate physical activities like carrying light loads, sweeping, washing windows, and raking in the garden or yard? | 16. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you do moderate physical activities like carrying light loads, sweeping, washing windows, and raking in the garden or yard? |
| □ days per week | □ days per week | □ days per week |
| **No moderate activity in garden or yard? Skip to question 18** | | |
| 17. How much time did you usually spend on one of those days doing moderate physical activities in the garden or yard? | 17. How much time did you usually spend on one of those days doing moderate physical activities in the garden or yard? | 17. How much time did you usually spend on one of those days doing moderate physical activities in the garden or yard? |
| □ minutes per day | □ minutes per day | □ minutes per day |
| Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: |

| | | |
|---|---|---|
| Once again, think about only those physical activities that you did for at least 10 minutes at a time. | | |
| 18. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, washing windows, scrubbing floors and sweeping inside your home? | 18. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you do moderate physical activities like carrying light loads, washing windows, scrubbing floors and sweeping inside your home? | 18. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you do moderate physical activities like carrying light loads, washing windows, scrubbing floors and sweeping inside your home? |
| □ days per week | □ days per week | □ days per week |
| **No moderate activity inside home? Skip to PART 4: RECREATION, SPORT AND LEISURE-TIME PHYSICAL ACTIVITY** | | |
| 19. How much time did you usually spend on one of those days doing moderate physical activities inside your home? | 19. How much time did you usually spend on one of those days doing moderate physical activities inside your home? | 19. How much time did you usually spend on one of those days doing moderate physical activities inside your home? |
| □ minutes per day | □ minutes per day | □ minutes per day |
| Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: |

| | | |
|---|---|---|
| **PART 4: RECREATION, SPORT, AND LEISURE-TIME PHYSICAL ACTIVITY** | | |
| This section is about all the physical activities that you did in the last 7 days solely for recreation, sport, exercise or leisure. Please do not include any activities you have already mentioned. Not counting any walking, you have already mentioned | | |
| 20. During the last 7 days, on how many days did you walk for at least 10 minutes at a time in your leisure time? | 20. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you walk for at least 10 minutes at a time in your leisure time? | 20. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you walk for at least 10 minutes at a time in your leisure time? |
| □ days per week | □ days per week | □ days per week |
| **No walking in leisure time? Skip to question 22** | | |

| | | |
|---|---|---|
| 21. How much time did you usually spend on one of those days walking in your leisure time? | 21. How much time did you usually spend on one of those days walking in your leisure time? | 21. How much time did you usually spend on one of those days walking in your leisure time? |
| □ minutes per day | □ minutes per day | □ minutes per day |
| Think about only those physical activities that you did for at least 10 minutes at a time | | |
| 22. During the last 7 days, on how many days did you do vigorous physical activities like aerobics, running, fast bicycling, or fast swimming in your leisure time? | 22. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you do vigorous physical activities like aerobics, running, fast bicycling, or fast swimming in your leisure time? | 22. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you do vigorous physical activities like aerobics, running, fast bicycling, or fast swimming in your leisure time? |
| □ days per week | □ days per week | □ days per week |
| **No vigorous activity in leisure time? Skip to question 24** | | |
| 23. How much time did you usually spend on one of those days doing vigorous physical activities in your leisure time? | 23. How much time did you usually spend on one of those days doing vigorous physical activities in your leisure time? | 23. How much time did you usually spend on one of those days doing vigorous physical activities in your leisure time? |
| □ minutes per day | □ minutes per day | □ minutes per day |
| Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: | Please specify what mode(s) of vigorous activities you perform: |
| Again, think about only those physical activities that you did for at least 10 minutes at a time. | | |
| 24. During the last 7 days, on how many days did you do moderate physical activities like bicycling at a regular pace, swimming at a regular pace, and doubles tennis in your leisure time? | 24. During the time of the pandemic when you shifted to full remote learning delivery, on how many days did you do moderate physical activities like bicycling at a regular pace, swimming at a regular pace, and doubles tennis in your leisure time? | 24. During the pre-pandemic time with full face-to-face learning delivery, on how many days did you do moderate physical activities like bicycling at a regular pace, swimming at a regular pace, and doubles tennis in your leisure time? |
| □ days per week | □ days per week | □ days per week |
| **No moderate activity in leisure time? Skip to PART 5: TIME SPENT SITTING** | | |
| 25. How much time did you usually spend on one of those days doing moderate physical activities in your leisure time? | 25. How much time did you usually spend on one of those days doing moderate physical activities in your leisure time? | 25. How much time did you usually spend on one of those days doing moderate physical activities in your leisure time? |
| □ minutes per day | □ minutes per day | □ minutes per day |
| Please specify what mode(s) of moderate activities you perform: | Please specify what mode(s) of moderate activities you perform: | Please specify what mode(s) of moderate activities you perform: |

**PART 5: TIME SPENT IN SITTING**

The last questions are about the time you spend sitting while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television. Do not include any time spent sitting in a motor vehicle that you have already reported about.

| | | |
|---|---|---|
| 26. During the last 7 days, how much time did you usually spend sitting on a weekday? | 26. During the time of the pandemic when you shifted to full remote learning delivery, how much time did you usually spend sitting on a weekday? | 26. During the pre-pandemic time with full face-to-face learning delivery, how much time did you usually spend sitting on a weekday? |
| □ minutes per day | □ minutes per day | □ minutes per day |
| 27. During the last 7 days, how much time did you usually spend sitting on a weekend? | 27. During the time of the pandemic when you shifted to full remote learning delivery, how much time did you usually spend sitting on a weekend? | 27. During the pre-pandemic time with full face-to-face learning delivery, how much time did you usually spend sitting on a weekend? |
| □ minutes per day | □ minutes per day | □ minutes per day |