

LEISURE-TIME PHYSICAL ACTIVITY AND ITS RELATIONSHIP WITH GENDER AND WALKING TIME TO THE PARK OR GYM¹

Recebido em: 13/12/2022

Aprovado em: 27/05/2023

Licença: 

*Claudio Damião Rosa*²

Universidade Estadual de Santa Cruz (UESC)

Ilhéus – BA – Brasil

<https://orcid.org/0000-0002-1939-2716>

*André Katayama Yamada*³

Universidade Estadual de Santa Cruz (UESC)

Ilhéus – BA – Brasil

<https://orcid.org/0000-0002-2894-5407>

*Marcos R. T. P. Menuchi*⁴

Universidade Estadual de Santa Cruz (UESC)

Ilhéus – BA – Brasil

<https://orcid.org/0000-0003-2833-7070>

ABSTRACT: In this cross-sectional study, we describe the leisure-time physical activity (LTPA) of 374 adults who answered an online questionnaire. We also explored the relationship between LTPA, gender, and walking time to the nearest park or gym from the participant's residence. As expected from a recruitment process prone to include physically active individuals, the prevalence of LTPA during the last week was 80.2% (CI95%: 75.8 - 84.1). Our median participant reported having performed 280 (CI95%: 240 – 340) minutes of LTPA during the last week. The prevalence of LTPA and the duration of light and total LTPA were similar between men and women. However, in our sample, women practiced more moderate LTPA and men more vigorous LTPA. The relationship between LTPA and walking time distance to the nearest park or gym is not linear, meaning that living closer to parks or gyms does not necessarily imply more LTPA.

KEYWORDS: Cross-sectional studies. Leisure activities. Recreation.

ATIVIDADE FÍSICA DE LAZER E SEU RELACIONAMENTO COM GÊNERO E TEMPO DE CAMINHADA ATÉ O PARQUE OU ACADEMIA

RESUMO: Neste estudo transversal, descrevemos a atividade física no lazer (AFL) de 374 adultos que responderam a um questionário online. Também exploramos a relação

¹ O presente trabalho foi realizado com apoio da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Código de Financiamento 001.

² Mestre em Desenvolvimento Regional e Meio Ambiente.

³ Doutor em Educação Física.

⁴ Doutor em Ciências do Movimento.

entre AFL, gênero e tempo de caminhada até o parque ou academia mais próximo da residência do participante. Como esperado de um recrutamento propenso a incluir indivíduos fisicamente ativos, a prevalência de AFL na última semana foi de 80,2% (IC95%: 75,8 - 84,1). Nosso participante mediano relatou ter realizado 280 (IC95%: 240 – 340) minutos de AFL na última semana. A prevalência de AFL e a duração da AFL leve e total foram semelhantes entre homens e mulheres. No entanto, em nossa amostra, as mulheres praticaram mais AFL moderadas e os homens AFL vigorosas. A relação entre AFL e distância de caminhada até o parque ou academia mais próxima não é linear, indicando que morar mais perto de parques ou academias não implica necessariamente em mais AFL.

PALAVRAS-CHAVE: Estudo transversal. Atividades de lazer. Recreação.

Introduction

Physical activity (PA) is commonly understood as body movement that increases energy expenditure compared to rest and can be classified as light, moderate, or vigorous (BANGSBO *et al.*, 2019). Leisure-time physical activity (LTPA) is the practice of PA during free time (ITO; KONO; WALKER, 2020). An interesting aspect of LTPA is that it tends to be more modifiable than other PA domains such as work and transportation. For example, it is more convenient to opt for a leisure activity that involves more PA (e.g., walking instead of watching television) than to start a job that includes more PA (e.g., trash collector or bricklayer).

The practice of PA has been associated with several health benefits (PALUCH *et al.*, 2022). The health benefits of PA may be even more important during the Coronavirus pandemic (COVID-19) since many people have experienced mental health problems related to social isolation (RODRÍGUEZ-REY; GARRIDO-HERNANSAIZ; COLLADO, 2020). The practice of PA during the pandemic, including LTPA, has been associated with several benefits for individuals (CAVALCANTE *et al.*, 2021; SCHUCH *et al.*, 2020; TESTA *et al.*, 2021). In Brazil, for instance, Schuch *et al.* (2020) observed that individuals who underwent ≥ 30 minutes/day of moderate to vigorous PA or ≥ 15 minutes/day of vigorous PA were less likely to report depressive symptoms and

anxiety. In another study with Brazilians, Testa *et al.* (2021) found that physically active teachers had lower burnout rates than inactive teachers. Still, the results of Cavalcante *et al.* (2021) indicate that individuals who spent more time in vigorous PA tended to have better sleep quality. Despite these relationships, studies indicate that a considerable proportion of the Brazilian population is not engaging in LTPA during the pandemic (BATISTA; ANJOS JUNIOR; NEVES, 2022; CROCHEMORE-SILVA *et al.*, 2020; TAVARES *et al.*, 2020). For example, a population study conducted in the city of Bagé in the Rio Grande do Sul found that only 24.4% of participants reported having performed LTPA during the pandemic (CROCHEMORE-SILVA *et al.*, 2020).

Whereas there is evidence that the pandemic affected the practice of PA, including LTPA, few studies were conducted in Brazil to understand participation in LTPA during the pandemic (MENUCHI *et al.*, 2021; TAVARES *et al.*, 2020). Thus, little is known about the prevalence and time in minutes of Brazilians' LTPA during the pandemic period. This includes information on possible gender inequalities and the relationship of LTPA to the environment where people live. Because LTPA may be a protective factor for some effects of COVID-19 (PITANGA *et al.*, 2021), this information can assist public managers in planning their actions to minimize the impacts of the pandemic.

Regarding gender differences in Brazilians' LTPA, previous studies found that men tend to engage more in these activities than women (CROCHEMORE-SILVA *et al.*, 2020; ROSA *et al.*, 2020). As an example, Rosa *et al.* (2020) found that men undergraduates were 40% more likely to engage regularly in nature-based recreation than women undergraduates. This is in line with Shaw's framework (1994) which acknowledge that women tend to face more leisure constraints (e.g., family

responsibilities and fear of violence) than men and may be influenced by cultural patterns of leisure engagement.

Concerning the relation between LTPA and the environment, several studies have found that people that live closer to outdoor recreation areas are more likely to engage in recreational activities outdoors (LIN *et al.*, 2014; THOMPSON; ASPINALL; MONTARZINO, 2008). For example, Lin *et al.* (2014) found that people who visited parks in the previous week had a greater nearby park coverage than people who did not visit parks in the previous week. Thus, whereas other factors may also influence LTPA (e.g., work), living closer to environments that favor LTPA might help people to be more active.

One of the aspects that differentiate the present study from previous studies on the subject is that the participant's recruitment may have promoted the participation of more physically active individuals than should be observed in the general population. Whereas we are interested in understanding LTPA participation based on prevalence, central tendency measures (e.g., median) and variability (e.g., range), we also explore the relationship between LTPA, gender, and walking time to two leisure spaces in the city: park and gym. We analyzed these spaces because they have characteristics that encourage LTPA (e.g., equipment). Thus, we have three main objectives: (a) to describe participants' LTPA; (b) to assess the relation between LTPA and gender; and, (c) to assess the relation between LTPA and the walking time to the park or gym closest to the participant residence. Whereas 29% of our participants replied to the survey before the pandemic and 71% during the pandemic, it is not our goal to assess the impact of the pandemic on LTPA. This causal link can only be established through longitudinal studies (ANTONAKIS *et al.*, 2010; ROSA; CHAVES; *et al.*, 2023; ROSA; DELABRIDA, 2021).

Method

Participants

Any person ≥ 18 years old living in Brazil was eligible for this study. We did not establish a minimum or maximum sample size a priori (CUMMING, 2014). Because larger samples provide more precise estimates, we made an effort to include as many participants as possible (CUMMING, 2014). Three hundred and seventy-four adults answered the online questionnaire, of which, 211 women, 161 men, and two declared to be of another gender. The majority of participants were between 18 and 49 years old (84%). Eighty percent of participants have at least completed an undergraduate degree. A hundred and eight participants replied to the questionnaire before March 11, 2020, the day that the World Health Organization (WHO) characterized COVID-19 as a pandemic, and 266 replied to the questionnaire after this period. Each participant replied to the questionnaire once.

Procedure

We used a non-probabilistic sampling approach to allow us to recruit physically active participants with the limited resources available. To do this, the dissemination of the study involved print and digital content themed on healthy habits and physical activity in a four-arm approach (CALLEGARO; MANFREDA; VEHOVAR, 2015; FETER *et al.*, 2021). First, public and private universities were contacted and a standardized email with a link to access the survey was sent to contacts in these institutions. Second, social media campaigns (i.e., Facebook®, Instagram®, Twitter®, and YouTube®) were used to make the survey's link available for different groups. Third, media like newspapers, TV, and radio were contacted by email and social media to inform the population about the present study. Finally, each researcher involved in

this survey shared the link with the questionnaire access to personal contacts. Participants were invited to access the webpage of our project (<https://moveilheus.uesc.br/>) and fill out the questionnaire, which was available during four periods from November 2019 to April 2021. Information about the objectives, risks, and benefits of the study was provided to the participants on the first page of the online survey. All participants provided their informed consent by agreeing with answering the questionnaire. This research was approved by the Human Research Ethics Committee at the State University of Santa Cruz (CAAE: 02273118.8.0000.5526).

Instruments

The questionnaire available on the project webpage was built based on two validated instruments:

International Physical Activity Questionnaire (IPAQ): We used the Brazilian version of the IPAQ (MATSUDO *et al.*, 2001) to collect information on LTPA (Table 1). Vespasiano, Dias e Correa (2012) did a literature review related to the use of the IPAQ with Brazilians and concluded that this measure has acceptable test-retest reliability. Internal consistency is not relevant for the IPAQ because analyses are done at the item level, not at aggregate scores (AERA; APA; NCME, 2014; ROSA; FRIED; *et al.*, 2023).

Neighborhood Environment Walkability Scale (NEWS): The following question from the Brazilian version (MALAVASI *et al.*, 2007) of the NEWS (SAELEN; SALLIS; FRANK, 2003) was analyzed in the present study: “About how long would it take to get from your home to the nearest businesses or facilities listed below if you walked to them? Please put only one check mark (✓) for each business or facility”. The response options were: 1-5 minutes, 6-10 minutes, 11-20 minutes, 21-30 minutes, more

than 31 minutes, or don't know. Here we analyze the answers for two leisure spaces: park and gym. Malavasi *et al.* (MALAVASI *et al.*, 2007) reported an almost perfect test-retest reliability for the Brazilian version of the NEWS. Similar to the IPAQ, internal consistency is not relevant for us because analyses are done at item level (AERA; APA; NCME, 2014; ROSA; FRIED; *et al.*, 2023).

Table 1: Questions Used to Collect Information About Leisure-Time Physical Activity

4a	Not counting any walking you have already mentioned, during the last 7 days, on how many days did you walk for at least 10 minutes at a time in your leisure time?
	Sem contar qualquer caminhada que você tenha citado anteriormente, em quantos dias da última semana você caminhou por pelo menos 10 minutos contínuos no seu tempo livre?
4b	How much time did you usually spend on one of those days walking in your leisure time?
	Nos dias em que você caminha no seu tempo livre, quanto tempo no total você gasta POR DIA?
4c	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?
	Em quantos dias da última semana você fez atividades físicas moderadas no seu tempo livre por pelo menos 10 minutos, como pedalar ou nadar a velocidade regular, jogar bola, vôlei, basquete, tênis?
4d	How much time did you usually spend on one of those days doing moderate physical activities in your leisure time?
	Nos dias em que você faz estas atividades físicas moderadas no seu tempo livre quanto tempo no total você gasta POR DIA?
4e	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?
	Em quantos dias da última semana você fez atividades físicas vigorosas no seu tempo livre por pelo menos 10 minutos, como correr, fazer aeróbicos, nadar rápido, pedalar rápido ou fazer jogging?
4f	How much time did you usually spend on one of those days doing vigorous physical activities in your leisure time?
	Nos dias em que você faz estas atividades físicas vigorosas no seu tempo livre quanto tempo no total você gasta POR DIA?

Note: Below the original questions are the questions in Portuguese.

Data Analysis

Based on the recommendations from Amrhein, Greenland and Mcshane (2019) and Cumming (2014), we focused on relevant estimates and their 95% confidence intervals (CI) and did not conduct any null-hypothesis significance test. We calculated the prevalence, range, and median in minutes of LTPA over the last week for men and women. Confidence intervals (CI) 95% for prevalence were calculated using an online calculator (<https://sample-size.net/confidence-interval-proportion/>) and CI95 % for medians were calculated using the formulae described by professor Jean-Yves Le Boudec (see <https://www.youtube.com/watch?v=cxUWQCwxQgk>). Regarding prevalence, participants who reported zero minutes of LTPA were organized into one group, and participants who reported more than zero minutes of LTPA were organized into another group. The median of LTPA during the week, in minutes, was organized into five categories of walking time between the person's home and the nearest park or gym. We chose the median because it is a measure of central tendency that is less influenced by extreme values than the mean (ERCEG-HURN; WILCOX; KESELMAN, 2013). The data analyzed in this study are available upon reasonable request.

Results

Concerning the prevalence of LTPA, of the 108 participants who replied to the questionnaire before the pandemic, 75% (CI95%: 65.8 - 82.8] engaged in LTPA in the last week. Because this prevalence was just slightly higher among the 266 participants who replied during the pandemic (82.3% (CI95%: 77.2 - 86.7)), we decided to analyze the results from all participants together. The overall prevalence was 80.2% (CI95%: 75.8 - 84.1). This prevalence was similar between men (81.4% (CI95%: 74.5 - 87.1) and women (79.1% (CI95%: 73.0 - 84.4)). We organized the range and median of LTPA

time, in minutes during the last week, for men and women and all participants in Table 2.

The number of participants in each category of walking time to leisure spaces is described in Table 3. In Table 4, we organize the median, in minutes, of LTPA during the last week according to walking time to the nearest park or gym.

Table 2: Range (minimum, maximum), Median [95% Confidence Interval], in Minutes During the Last Week, of Light/Walking, Moderate and Vigorous LTPA for Men and Women

Variables	LTPA			
	Walk	Moderate	Vigorous	Total LTPA
Total range	0, 5390	0, 3550	0, 3080	0, 12020
Men range	0, 2550	0, 2310	0, 2940	0, 4890
Women range	0, 5390	0, 3550	0, 3080	0, 12020
Total median	60 [40 - 80]	60 [0 - 90]	0 [0 - 60]	280 [240 - 340]
Men median	60 [30 - 90]	30 [0 - 20]	30 [0 - 120]	280 [200 - 360]
Women median	60 [30 - 100]	60 [0 - 100]	0 [0 - 60]	270 [180 - 380]

Note: LTPA = Leisure-time physical activities.

Table 3: The Number of Participants in Each Walk Time Category to the Park or Gym

Leisure space	Walking time to leisure space						
	No answer	1-5 minutes	6-10 minutes	11-20 minutes	21-30 minutes	More than 31 minutes	I do not know
Park	31	57	49	36	24	62	115
Gym	30	78	84	64	39	52	27

Table 4: Median [95 % Confidence Interval], in Minutes, of LTPA During the Last Week According to the Distance to the Nearest Park or Gym

Leisure space – LTPA type	Walking time to leisure space				
	1-5 minutes	6-10 minutes	11-20 minutes	21-30 minutes	More than 31 minutes
Park – walking	60 [0 - 150]	60 [20 - 120]	120 [60 - 240]	120 [0 - 280]	50 [0 - 120]
Park – moderate LTPA	120 [0 - 180]	120 [40 - 280]	160 [0 - 300]	30 [0 - 280]	50 [0 - 180]
Park – vigorous LTPA	60 [0 - 180]	60 [0 - 180]	30 [0 - 240]	60 [0 - 240]	0 [0 - 120]
Park – total LTPA	360 [180 - 480]	360 [180 - 600]	355 [280 - 660]	300 [80 - 900]	300 [120 - 480]
Gym – walking	35 [0 - 80]	90 [60 - 120]	90 [0 - 180]	60 [0 - 140]	40 [0 - 90]
Gym – moderate LTPA	15 [0 - 140]	180 [60 - 240]	20 [0 - 140]	0 [0 - 180]	35 [0 - 120]
Gym –	25 [0 - 140]	85 [0 - 180]	70 [0 - 180]	0 [0 - 120]	0 [0 - 120]

vigorous LTPA					
Gym – total LTPA	270 [180 - 360]	405 [240 - 540]	300 [150 - 540]	210 [60 - 360]	255 [110 - 400]

Note: LTPA = Leisure-time physical activities.

Discussion

The present study is one of the few to provide information about the practice of LTPA before and during the pandemic period in Brazil. In our sample, the prevalence of LTPA was high ($\geq 75\%$) among both the 108 participants who replied to the questionnaire before and the 266 who replied to the questionnaire during the pandemic. Overall, we found that even using a sample strategy directed to recruit physically active individuals 1/5 of the participants did not engage in LTPA during the last week. Thus, encouraging LTPA may be important even for groups who tend to be already physically active. That is important because increasing LTPA in less active individuals may improve their quality of life (KIM; KIM; THAPA, 2020; ZHOU *et al.*, 2021). We also observed that, even during the pandemic period, some people remained physically active during their leisure time. This means that the pandemic by itself does not preclude regular engagement in LTPA. Although physically active, our participants tended to practice more light and moderate LTPA than vigorous LTPA, which is in agreement with the literature (KATAPALLY; CHU, 2020).

Regarding the relationship between LTPA and gender, our results indicate similarities between men and women in prevalence, time spent walking, and total LTPA. This result for prevalence differs from what was observed by Crochemore-Silva *et al.* (2020) in a study with the general population of a city in the Rio Grande do Sul. These authors found a difference of 20 percentage points in the prevalence of LTPA between men and women, indicating that men were more active during their leisure time. Thus, whereas the prevalence of LTPA can be substantially different between men and women in the general population, this prevalence is more similar when we consider

a group of more physically active individuals. In addition to the results on prevalence, we found that women in our sample devoted more time to moderate activities and men to vigorous activities (Table 2). Although these results may indicate a gender difference in the preference for moderate and vigorous LTPA, our data do not allow us to extend confidently these findings beyond our sample. Considering these findings, incentives specifically directed for women to engage in LTPA are more justifiable in the general population than in a group of more physically active individuals.

Concerning the distance to the nearest park or gym, there was considerable variability in walking time to these locations in our sample (Table 3). Unfortunately, some participants live a relatively long walk to these leisure spaces. For example, 62 participants lived more than a 31-minute walk from the nearest park and 52 participants lived more than a 31-minute walk from the nearest gym.

Our data show that the relationship between LTPA and walking time to parks and gyms is not linear and varies depending on the intensity of LTPA (Table 4). For instance, our results indicate that people who live between 11 and 30 minutes of walking to the nearest park tend to walk more during leisure than people who live close to or farther from the nearest park. The median of the first group is 120 minutes of walking during the week, twice the median of participants living closer or farther from the park. However, again, the ability to infer beyond the sample is limited. Studies with a larger number of participants are necessary to better clarify this relationship.

Despite being informative about the prevalence and duration of LTPA, our study has some limitations. As previously recognized, there is considerable variability in the data making it tentative to generalize some results beyond our sample. Regarding generalizability, this study involved a highly educated sample of young and relatively active Brazilian adults. Thus, future studies are necessary to extend these findings to

larger populations. In addition, it should be borne in mind that both the LTPA and the walking time distance to the nearest park and gym were estimated based on information provided by the participants. Thus, this time and distance are likely an approximation of real values (MALAVASI *et al.*, 2007; MATSUDO *et al.*, 2001).

Whereas our study highlights the existence of individuals who remained physically active during the pandemic period, it also points to the existence of inactive people. In our sample, we observed a high prevalence of LTPA and greater adherence to light, moderate, and vigorous PA, respectively. Additionally, we provide preliminary evidence on the relationship between LTPA, gender, and walking distance to the nearest park and gym. Studies with larger samples can help to clarify these relationships.

REFERENCES

- AERA; APA; NCME. *Standards for Educational and Psychological Testing*. Washington, D.C: American Educational Research Association, 2014.
- AMRHEIN, Valentin; GREENLAND, Sander; MCSHANE, Blake. Scientists rise up against statistical significance. *Nature*, v. 567, n. 7748, p. 305–307, 20 mar. 2019.
- ANTONAKIS, John *et al.* On making causal claims: a review and recommendations. *The Leadership Quarterly*, v. 21, n. 6, p. 1086–1120, dez. 2010.
- BANGSBO, Jens *et al.* Copenhagen Consensus statement 2019: physical activity and ageing. *British Journal of Sports Medicine*, v. 53, n. 14, p. 856–858, jul. 2019.
- BATISTA, Fabiano Eloy Atílio; ANJOS JUNIOR, Edwaldo Sérgio Dos; NEVES, Mariana Rodrigues da Costa. Lazer em Tempos de Pandemia da Covid-19. *Licere*, v. 25, n. 2, p. 25–55, 26 ago. 2022.
- CALLEGARO, Mario; MANFREDA, Katja Lozar; VEHOVAR, Vasja. *Web survey methodology*. California: Sage Publications, 2015.
- CAVALCANTE, Marcos Venício *et al.* Associations between physical activity and sleep quality in the pandemic context of social distancing. *Research, Society and Development*, v. 10, n. 1, p. e8610111471, 3 jan. 2021.
- CROCHEMORE-SILVA, Inácio *et al.* Physical activity during the COVID-19 pandemic: a population-based cross-sectional study in a city of South Brazil. *Ciência & Saúde Coletiva*, v. 25, n. 11, p. 4249–4258, nov. 2020.

CUMMING, Geoff. The new statistics: Why and how. *Psychological Science*, v. 25, n. 1, p. 7–29, jan. 2014.

ERCEG-HURN, David M; WILCOX, Rand R; KESELMAN, Harvey J. Robust statistical estimation. In: LITTLE, TODD D (Org.). *The oxford handbook of quantitative methods in Psychology*. Oxford University Press, 2013.

FETER, N. *et al.* Sharp increase in depression and anxiety among Brazilian adults during the COVID-19 pandemic: findings from the PAMPA cohort. *Public Health*, v. 190, p. 101–107, jan. 2021.

ITO, Eiji; KONO, Shintaro; WALKER, Gordon J. Development of cross-culturally informed leisure-time physical activity constraint and constraint negotiation typologies: The case of Japanese and Euro-Canadian adults. *Leisure Sciences*, v. 42, n. 5–6, p. 411–429, 23 nov. 2020.

KATAPALLY, Tarun Reddy; CHU, Luan Manh. Digital epidemiological and citizen science methodology to capture prospective physical activity in free-living conditions: a SMART Platform study. *BMJ Open*, v. 10, n. 6, p. e036787, 28 jun. 2020.

KIM, Changwook; KIM, Jinwon; THAPA, Brijesh. Bidirectional association between leisure time physical activity and well-being: Longitudinal evidence. *Journal of Leisure Research*, v. 51, n. 5, p. 559–580, 19 out. 2020.

LIN, Brenda B *et al.* Opportunity or orientation? Who uses urban parks and why. *PLOS ONE*, v. 9, n. 1, p. 1–7, 2014.

MALAVASI, Leticia de Matos *et al.* Neighborhood Walkability Scale (NEWS - Brazil): back translation and reliability. *Revista Brasileira de Cineantropometria & Desempenho Humano*, v. 9, n. 4, p. 339–350, 2007.

MATSUDO, Sandra *et al.* International Physical Activity Questionnaire (IPAQ): study of validity and reliability in Brazil. *Revista Brasileira de Atividade Física & Saúde*, v. 6, n. 2, p. 5–18, 2001.

MENUCHI, Marcos R. T. P. *et al.* Physical activity and sedentary behavior adaptability to COVID-19 social and mobility constraints: a follow-up study in Ilhéus – Bahia/Brazil. *Brazilian Journal of Motor Behavior*, v. 15, n. 1, p. 34–46, 1 mar. 2021.

PALUCH, Amanda E *et al.* Daily steps and all-cause mortality: A meta-analysis of 15 international cohorts. *The Lancet Public Health*, v. 7, n. 3, p. e219–e228, mar. 2022.

PITANGA, Francisco José Goondim *et al.* Association between leisure time physical activity and mortality by COVID-19 in the brazilian capitals: an ecological analysis. SciELO Preprints. 2021.

RODRÍGUEZ-REY, Rocío; GARRIDO-HERNANSAIZ, Helena; COLLADO, Silvia. Psychological impact and associated factors during the initial stage of the Coronavirus (COVID-19) Pandemic among the general population in Spain. *Frontiers in Psychology*, v. 11, 23 jun. 2020.

ROSA, Claudio D.; FRIED, Eiko I.; *et al.* Four challenges for measurement in

environmental psychology, and how to address them. *Journal of Environmental Psychology*, v. 85, fev. 2023.

ROSA, Claudio D. *et al.* Gender differences in connection to nature, outdoor preferences, and nature-based recreation among college students in Brazil and the United States. *Leisure Sciences*, p. 1–21, 3 ago. 2020.

ROSA, Claudio D.; CHAVES, Talisson Santos; *et al.* Improving the analysis and reporting of studies of nature-based adventure interventions: A review of studies published in JAEOL. *Journal of Adventure Education and Outdoor Learning*, p. 1–20, 29 mar. 2023.

ROSA, Claudio D.; DELABRIDA, Zenith. Método experimental e ensaios clínicos: Metassíntese de artigos de revisão publicados em português [Experimental method and clinical trials: Metassynthesis of review articles published in Portuguese]. *Psico*, v. 52, n. 4, p. e36259, 31 dez. 2021.

SAELENS, Brian E.; SALLIS, James F.; FRANK, Lawrence D. Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. *Annals of Behavioral Medicine*, v. 25, n. 2, p. 80–91, abr. 2003.

SCHUCH, Felipe B. *et al.* Associations of moderate to vigorous physical activity and sedentary behavior with depressive and anxiety symptoms in self-isolating people during the COVID-19 pandemic: a cross-sectional survey in Brazil. *Psychiatry Research*, v. 292, n. 113339, p. 1–4, out. 2020.

SHAW, Susan M. Gender, leisure, and constraint: Towards a framework for the analysis of women's leisure. *Journal of Leisure Research*, v. 26, n. 1, p. 8–22, 13 jan. 1994.

TAVARES, Giselle Helena *et al.* Leisure-time physical inactivity during COVID-19 pandemic in undergraduate from Minas Gerais. *Revista Brasileira de Atividade Física & Saúde*, v. 25, p. e0178, 31 dez. 2020.

TESTA, Saulo *et al.* Teachers' health and lifestyle considering the level of leisure-time physical activity during the COVID-19 pandemic. *Scielo Preprints*, 2021.

THOMPSON, Catharine Ward; ASPINALL, Peter; MONTARZINO, Alicia. The childhood factor: Adult visits to green places and the significance of childhood experience. *Environment And Behavior*, v. 40, n. 1, p. 111–143, 2008.

VESPASIANO, B.S.; DIAS, R.; CORREA, D.A. A utilização do Questionário Internacional de Atividade Física (IPAQ) como ferramenta diagnóstica do nível de aptidão física: Uma revisão no Brasil. *Saúde em Revista*, v. 12, n. 32, p. 49–54, 31 dez. 2012.

ZHOU, Bin *et al.* Leisure satisfaction and quality of life of residents in Ningbo, China. *Journal of Leisure Research*, v. 52, n. 4, p. 469–486, 8 ago. 2021.

Endereço dos Autores:

Claudio Damião Rosa

Endereço eletrônico: claudio2008ilheus@hotmail.com

André Katayama Yamada

Endereço eletrônico: yamadaak@gmail.com

Marcos R. T. P. Menuchi

Endereço eletrônico: mmuesc@gmail.com