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ORIGINAL ARTICLE

Effects of physical activity on levels of anxiety, depression, and stress during the social isolation caused by COVID-19

Maria Eduarda Cavalcante Félix. *Physical Education Department. State University of Paraíba. Paraíba, Brazil.*
Pedro Pinheiro Paes. *Physical Education Department. Federal University of Pernambuco. Pernambuco, Brazil.*
Marlene Salvina Fernandes da Costa. *Superior School of Physical Education. University of Pernambuco. Pernambuco, Brazil.*
Walmir Romário dos Santos. *School of Physical Education and Sport of Ribeirão Preto. University of São Paulo. São Paulo, Brazil.*
Wlaldemir Roberto dos Santos ✉ **.** *Physical Education Department. State University of Paraíba. Paraíba, Brazil.*
Superior School of Physical Education. University of Pernambuco. Pernambuco, Brazil.

ABSTRACT

COVID-19 is a disease caused by the SARS-CoV-2 virus, a new strain within the coronavirus family, which manifests itself in a varied and aggressive manner. The scenario of the COVID-19 pandemic has favored episodes of stress generated by prolonged isolation. Adherence to the practice of physical activity promotes beneficial effects on mental disorders, proving effective in this critical moment. The study's objective was to verify the effects of physical activity on levels of anxiety, stress, and depression during the period of social isolation. It is a cross-sectional study that identified the symptomatology of anxiety, stress, and depression, using the DASS-21. A total of 551 participants responded to the questionnaire online. The results showed that participants who did not engage in exercise before COVID-19 (n = 182) had higher levels of depression (p = .005), while those who engaged in physical activity (n = 323) showed lower indicators of anxiety (p = .010), stress (p = .021), and depression (p = .001). The study revealed that the frequent and continued practice of physical activity minimizes symptoms of anxiety, stress, and depression caused by the prolonged period of social isolation, favoring mental health benefits.

Keywords: Physical activity psychology, COVID-19, Mental health, Physical activity, Social isolation.

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✉ **Corresponding author.** *Superior School of Physical Education, University of Pernambuco. 310 Arnóbio Marques Street, Santo Amaro, Recife, PE 50100-130, Brazil.*
E-mail: wlaldemir.santos@upe.br
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INTRODUCTION

The coronavirus (COVID-19) had its initial records in China in December 2019. On February 25, 2020, the first case of COVID-19 was confirmed in Brazil. Progressing globally, it was declared a pandemic on March 11, 2020 (Dima et al., 2020). The disease is caused by the SARS-CoV-2 virus, a new strain within the coronavirus family. It presents in various forms, with symptoms ranging from mild to severe, where it is estimated that 20% of those affected require hospitalization and 5% require ventilatory support. In such cases, the virus damages the lower respiratory tract, manifesting as pneumonias. Severe respiratory manifestations are the highlight of the disease, following stages of cardiovascular disorder, altering and compromising blood clotting (Schuchmann et al., 2020; Santos et al., 2021).

The pandemic nature triggered urgent disease control measures. Additionally, epidemiological control measures, recommendations for social distancing, and isolation were adopted as effective alternatives in combating virus transmission (Guinancio et al., 2020).

Considering humans as socials beings, the need for interaction with others for personal and professional well-being is recognized by psychology and social sciences, essential for human formation and development (Guinancio et al., 2020; Wilder-Smith and Freedman, 2020). Aware of the complexity of human relationships and the fear of being infected by a lethal virus with a high transmission rate and an unknown treatment, social isolation and loneliness significantly increased the risk of anxiety and depression symptoms (Ribeiro et al., 2020).

Beyond mental health symptoms, the COVID-19 pandemic scenario favoured stress episodes, such as those resulting from prolonged isolation. The entirety of these factors directly compromised, whether in the short or long term, mental health (Galea et al., 2020). Considering the vulnerability of the immune system, the presence of negative emotions is a factor that weakens and promotes the threshold of feelings of anxiety, stress, and depression (Pereira et al., 2020).

The World Health Organization (WHO, 2020), in addressing strategies for coping with social isolation and its aftermath, advocates for a conscious consumption of information through reliable sources. This, coupled with a balanced diet and, most importantly, adherence to regular physical activity, is recommended due to its beneficial effects on mental disorders, as well as in the fight against chronic-degenerative diseases (cardiovascular disease, obesity, diabetes, hypertension) that put individuals in a fragile situation against the virus (Jiménez-Pavón et al., 2020).

According to WHO (2019) recommendations, a routine that includes continuous physical activity is a strong ally in the prevention and control of heart diseases, diabetes, cancer, and mental disorders (anxiety, stress, and depression), combating the decrease in cognitive loss, improving mental health, and enhancing people's quality of life. Unfortunately, the scenario of social isolation has hindered physical movement and reinforced a sedentary routine, the results of which will be felt soon. Through physical activity, we release a higher than usual number of neurotransmitters and hormones, such as endorphins, resulting in a reduction and almost negligible presence of depressive and anxious symptoms (Violant-Holz et al., 2020).

Thus, due to the magnitude of the COVID-19 pandemic and the necessity of social isolation, the mental health symptoms related to social isolation, and the promising effects of physical exercise on mental health are undeniable and recommended. Therefore, the present study aimed to investigate the effects of physical activity on levels of anxiety, stress, and depression during the COVID-19 social isolation period.

METHODOLOGY

Type of study and sample

This is a cross-sectional study with a qualitative approach. The sample consisted of 551 participants (182 males and 369 females) from 64 different cities across Brazil, selected through non-probabilistic, convenience, and adherence sampling. Inclusion criteria for the research required participants to be currently in isolation or to have remained in this condition for some time, and to respond to the online questionnaire in its entirety.

The procedures adopted in the study adhered to the guidelines of Resolution 466/12 of the National Health Council for research involving human subjects. The project obtained approval from the Ethics Committee on Human Research at the Federal University of Pernambuco, CAE No. 46978515.6.0000.5208.

Study design

Participants were invited to participate in the research through contact on social media platforms (Instagram, Facebook, Twitter, and WhatsApp). The invitation included an initial presentation about the research and an online questionnaire on the Google Forms platform. Upon accessing the form, participants read the Informed Consent Form (ICF), agreeing to the terms, ensuring anonymity, and the confidentiality of the data.

The questions were divided into sociodemographic aspects (age, gender, ethnicity, profession, city, state); physical activity practices before and during social isolation (frequency, duration, and intensity of these activities); COVID-19 diagnosis (current situation regarding social isolation, duration of isolation); concluding with the Anxiety, Depression, and Stress Scale – DASS 21 (Vignola, 2013). The questionnaire was available for 31 days (from June 29 to July 30, 2021).

To assess symptoms of anxiety, stress, and depression, the Anxiety, Depression, and Stress Scale-21 (DASS 21) adapted and validated for Brazilian Portuguese by Vignola (Vignola, 2013) was used. The DASS-21 consists of self-report subscales containing a set of three four-point Likert-type subscales (0, 1, 2, and 3). Each DASS-21 subscale comprises seven items designed to assess emotional states of anxiety, stress, and depression. The result is obtained by summing the scores of the items for each of the three subscales. The test involves the participant marking which statement applies to them over the past week. High scores on the DASS-21 serve as an alert to professionals, as they may indicate a high level of distress for the evaluated individual. The DASS-21 values were calculated using Cronbach's Alpha to ensure reliability, resulting in 0.92 for the Depression subscale, 0.90 for the Stress subscale, and 0.86 for the Anxiety subscale.

Statistical analysis

The data did not exhibit normality (Shapiro-Wilk) or variance homogeneity (Levene's Test). Descriptive statistics for age (mean, standard deviation, minimum, and maximum), sample percentages, and gender-specific percentages indicating the occurrence of COVID-19, isolation, frequency, and level of physical activity were presented. The Mann-Whitney test for independent samples was employed to analyse the difference in median values of physical activity before COVID-19 and during isolation, as well as gender stratification by anxiety, stress, and depression. A 95% confidence interval was calculated for each variable. Data analysis was conducted using SPSS software, version 20.0 (IBM, USA), considering a significance level of 5% ($p < .05$).

RESULTS

A total of 551 volunteers participated in the study, with a mean age of 26.1 ± 7.8 years, divided by gender: female (n = 348), with a mean age of 26.3 ± 8.4 years, and male (n = 182), with a mean age of 25.6 ± 6.5 years.

Table 1. Median values of physical activity before COVID-19 and during isolation, stratified by gender and categorized by anxiety, stress, and depression.

Variables			***p*-value**
Physical Activity Before COVID-19	Group Yes (n = 323)	Group No (n = 228)	
Anxiety	5.0 ± 5.2	8.0 ± 5.6	.234
Stress	8.0 ± 5.4	11.0 ± 5.6	.569
Depression	6.0 ± 5.5	10.0 ± 6.2	.005*
Physical activity in isolation	Group Yes (n = 323)	Group No (n = 228)	
Anxiety	5.0 ± 5.1	7.0 ± 5.8	.010*
Stress	8.0 ± 5.3	9.5 ± 5.9	.021*
Depression	7.0 ± 5.4	8.0 ± 6.4	<.001*
Gender	Group Women (n = 348)	Group Men (n = 203)	
Anxiety	7.0 ± 5.5	3.0 ± 4.8	.005*
Stress	10.0 ± 5.4	7.0 ± 5.3	.348
Depression	8.0 ± 5.9	5.0 ± 5.4	.005*

*Note. *significant difference p < .05.*

Comparing participants who engaged in physical activity before COVID-19 (n = 323) and those who did not (n = 228), we observed higher levels of depression among those who did not engage in physical activity (p = .005). When comparing individuals who engaged in physical activity during the period of social isolation (coincidentally, also 323 participants practiced physical activity, and 228 did not), we observed a significant pattern of results for depression. We noted higher levels in the domains of anxiety (p = .010), stress (p = .021), and depression (p = .001) for those who did not engage in physical activity during the isolation period. When stratifying by gender, we observed that women statistically presented higher levels of anxiety (p = .005) and depression (p = .005) (Table 1).

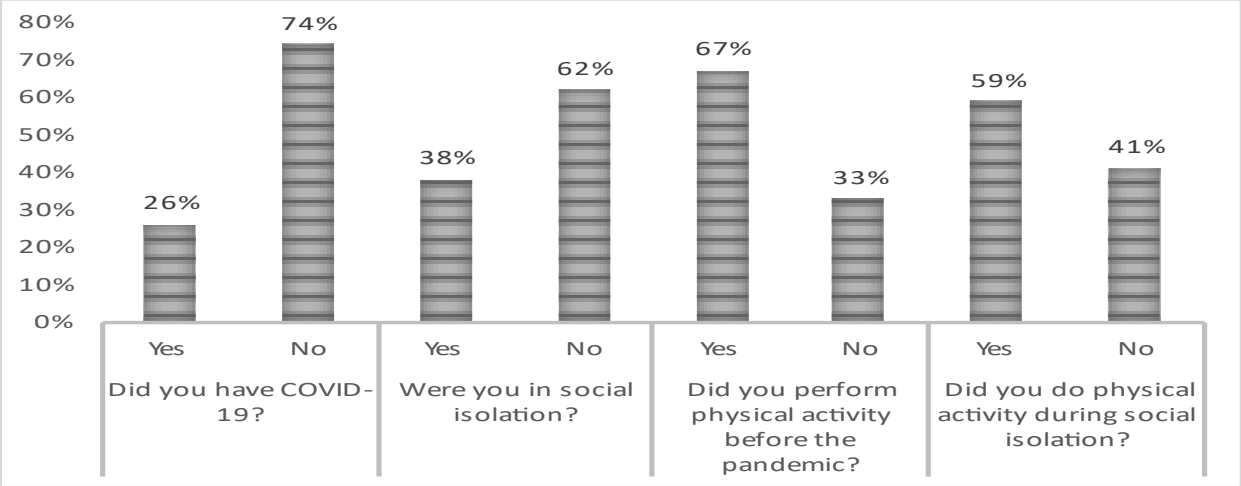

Figure 1. Percentages indicating the occurrence of COVID-19, social isolation, and physical activity practice.

Regarding the incidence of COVID-19 (Figure 1), the sample reveals that 26% of the participants reported having contracted the disease, with 64% of this group being women. Furthermore, 38% stated that they adhered to social isolation, with the majority being women (74%). Regarding physical activity before the pandemic, 67% of the participants claimed to engage in it, with women taking the lead at 56%. Surprisingly, during the period of social isolation, 59% indicated that they continued with their physical activities, with women predominantly represented in this group, totalling 52%.

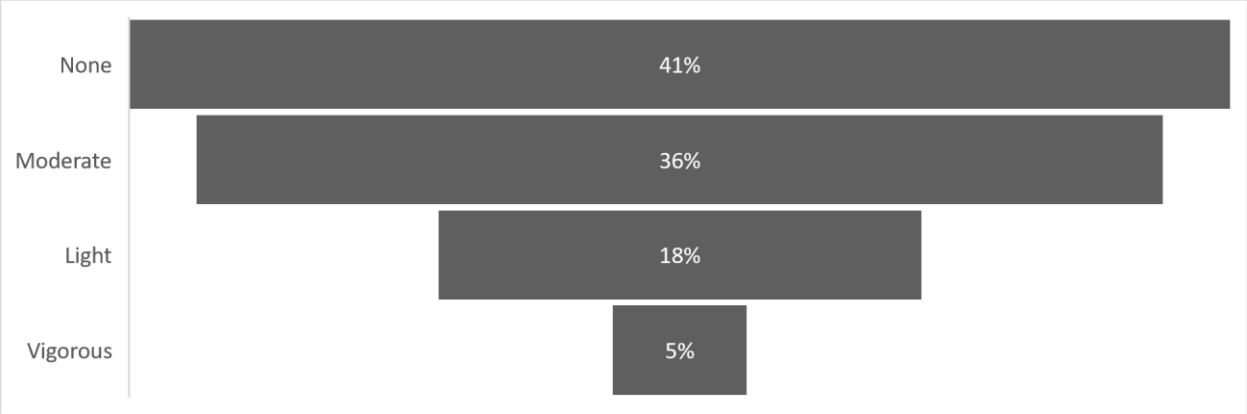

Figure 2. Percentages of reported high levels of physical activity.

Regarding the high level of physical activity reported by the subjects, it was observed that the majority who reported engaging in physical activity during social isolation did so with moderate intensity (36%), with a majority being women (59%). Additionally, 18% engaged in light activity, of which 74% were women, and only 5% participated in vigorous activity, with the majority being women (52%) (Figure 2).

DISCUSSION

This study aimed to investigate the effects of physical activity on levels of anxiety, stress, and depression during the COVID-19 social isolation period. The main findings of this investigation revealed that the group engaging in physical activity during the isolation period exhibited lower levels of anxiety, stress, and depression when compared to the group that did not engage in any physical activity. This aligns with the recommendation of the Brazilian Society of Sports Medicine and Exercise, emphasizing the importance of physical exercise as an alternative for improving immune function and the body's defences against infectious agents with pandemic transmission levels, such as COVID-19 (Júnior et al., 2020).

Additionally, Cardinal et al. (2015) emphasize the regularity of physical exercise as a preventive measure to enhance and boost immune function for the entire population, as a strategy to reduce anxiety and stress. Such measures, during periods of social isolation, should be undertaken by individuals not infected with COVID-19 or those exhibiting symptoms similar to the infection. Exercise should be suspended, even for those asymptomatic to the virus, and they should be promptly referred to a medical emergency unit.

However, certain recommendations must be followed and appropriately guided by professionals in the field. Jiménez-Pavón et al. (2020), in their study, suggest that during the social isolation period, physical exercises should be performed at home or in outdoor locations without crowds. The recommended frequency is five to seven times weekly, with the intercalation of intensity and volume levels of training to stimulate the cardiorespiratory system.

Upon analysing the sample by gender, it was observed that women significantly reported higher levels of anxiety (p = .005) and depression (p = .005). According to some studies (Lazarim, 2020; Loiola et al., 2020), women frequently experience depressive symptoms due to their involvement in dual, and often triple, work roles, juggling between paid employment, household chores, and childcare (Lazarim, 2020). Other contributing factors include emotional factors (mood swings, anxiety, and stress), biological conditions (reproductive period, pregnancy, and postpartum), and hormonal changes (PMS, perimenopause, and menopause). Given this scenario, it is evident that women tend to exhibit greater variations in anxiety, stress, and depression levels (Lazarim, 2020; Loiola et al., 2020).

In this perspective, physical exercise emerges as a non-pharmacological alternative for the treatment and maintenance of mental health, offering benefits in terms of hormonal regulation and the prevention of chronic-degenerative diseases (diabetes, hypertension, cardiovascular diseases, among others). It acts as a robust ally in combating mental disorders (Li et al., 2020).

Justifying the regular practice of physical activity during social isolation, the present study observed that the group maintaining physical exercise during this period showed lower levels of anxiety (p = .010), stress (p = .021), and depression (p = .001). Similarly, Corrêa et al. (2020) noted that maintaining exercise during the pandemic reduced symptoms of stress, anxiety, and depression. This observation aligns with findings from Cruz et al. (2021), who identified that the more active population has a 33.3% lower chance of presenting symptoms of anxiety and stress.

The mandatory social isolation combined with the fear of contracting a lethal virus (COVID-19) has led to a range of emotions in the population, mostly negative, such as anxiety, depression, and frustration. Additionally, the sense of uncertainty on a global scale, not only in health but also in the economic and financial aspects, adds concerns that impact positive emotions, such as feelings of joy, happiness, and the pleasure of living (Li, Wang, Xue, Zhao & Zhu, 2020).

Depression, classified as a psychiatric disorder, manifests in varying degrees (mild, moderate, and severe) with symptoms such as irritability, insomnia, and deep sadness. Characterized by mental and physical overload, family support plays a significant role in preventing the development of feelings of incapacity and demotivation, requiring medicinal intervention and specialized monitoring to avoid severe forms of the illness (Júnior et al., 2020). Sedentary behaviour, identified as the absence of physical activity, can be a concerning risk factor for mental health. However, regular physical activity, in many cases, mitigates the effects of mental disorders (Ferreira et al., 2020). In the same vein, the present study highlighted higher levels of depression (p = .005) in subjects who did not engage in physical activity.

It is undeniable that the COVID-19 pandemic has become a focal point of study for healthcare professionals, and devising effective strategies to combat and prevent the disease has been a considerable challenge. However, physical health measures, implemented through physical exercise, have proven to be the most effective contribution during this period, positively impacting psychological well-being during isolation and social distancing, making it less detrimental (Wang et al., 2020).

Based on these findings, it is evident that regular physical activity plays a significant role in alleviating depressive symptoms (Maciel et al., 2021; Matsudo et al., 2020), in addition to promoting physical well-being. Therefore, maintaining levels of physical activity during social isolation is suggested as a preventive measure to support mental health, reducing levels of anxiety, stress, and depression (Matsudo et al., 2020; WHO, 2020).

CONCLUSION

Based on the findings of the present study, we conclude that engaging in physical activity should occur frequently and consistently to minimize symptoms of anxiety, stress, and depression caused by the prolonged period of social isolation, thereby promoting mental health benefits and improving overall quality of life. It is important to emphasize that physical exercise plays a fundamental role in physical well-being, with these benefits extending to the treatment and care of mental health. However, the pandemic-induced isolation marked an unprecedented and unpredictable period. Some limitations were reported in the investigation, such as the self-reported level of physical activity, the understanding of different activity levels indicated by the sample, and the lack of experimentation with remotely supervised physical exercise for the group engaging in physical activity during the social isolation period. Therefore, we suggest that studies highlighting the practice of exercise as a supportive effect in post-COVID-19 pandemic treatment be further explored to measure the consequences of this unfortunate occurrence, which brought about numerous changes in the daily lives of people worldwide.

AUTHOR CONTRIBUTIONS

Research design, data collection, data analysis, and text writing: Félix, M. E. C.; Santos, W. R. Results analysis and text writing: Paes, P. P.; Costa, M. S. F.; Santos, Walmir R. Text revision and translation: Santos, W. R.

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DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

REFERENCES

Corrêa, C. A., Verlengia, R., Ribeiro, A. G. S. V., & Crisp, A. H. (2020). Níveis de estresse, ansiedade, depressão e fatores associados durante a pandemia de COVID-19 em praticantes de Yoga. Revista Brasileira de Atividade Física & Saúde, 25, 1-7. https://doi.org/10.12820/rbafs.25e0118

Cruz, L. M. C., Pires, M. M., Reis, V. M. N., Chaves, A. D., & Nacimento, C. A. C. (2021). Prática de exercício físico, ingestão alimentar e estado de ansiedade/estresse de participantes do projeto MOVIP em meio à pandemia de COVID-19. HU Revista, 47, 1-6. https://doi.org/10.34019/1982-8047.2021.v47.32209

Dima, A., Balaban, D. V., Jurcut, C., Berza, I., Jurcut, R., & Jinga, M. (2021). Perceptions of Romanian physicians on lockdowns for Covid-19 prevention. Healthcare, 9(1), 95https://doi.org/10.3390/healthcare9010095

Ferreira, A. L., Fontinele, V. R., de Melo, G. F., & Vilaça, K. H. C. (2020). Orientações de exercício físico em mídias digitais para idosos durante o isolamento social ocasionado pela COVID-19. Revista Kairós-Gerontologia, 23, 687-705.

Galea, S., Merchant, R. M., & Lurie, N. (2020). The mental health consequences of COVID-19 and physical distancing: the need for prevention and early intervention. JAMA internal medicine, 180(6), 817-818. https://doi.org/10.1001/jamainternmed.2020.1562

Gomes, A., Ramos, S., Ferreira, A. R., Montalvão, J., Carvalho Ribeiro, I. M. O., & Lima, F. (2019). A efetividade do exercício físico no tratamento da depressão. Revista Portuguesa de Enfermagem de Saúde Mental, (22), 58-64. https://doi.org/10.19131/rpesm.0264

Guinancio, J. C., de Sousa, J. G. M., de Carvalho, B. L., de Souza, A. B. T., de Araujo Franco, A., de Almeida Floriano, A., & Ribeiro, W. A. (2020). COVID-19: Desafios do cotidiano e estratégias de enfrentamento frente ao isolamento social. Research, Society and Development, 9(8), e259985474-e259985474. https://doi.org/10.33448/rsd-v9i8.5474

Jiménez-Pavón, D., Carbonell-Baeza, A., & Lavie, C. J. (2020). Physical exercise as therapy to fight against the mental and physical consequences of COVID-19 quarantine: Special focus in older people. Progress in cardiovascular diseases, 63(3), 386. https://doi.org/10.1016/j.pcad.2020.03.009

Cardinal, B. J., Park, E. A., Kim, M., & Cardinal, M. K. (2015). If exercise is medicine, where is exercise in medicine? Review of US medical education curricula for physical activity-related content. Journal of Physical Activity and Health, 12(9), 1336-1343. https://doi.org/10.1123/jpah.2014-0316

Júnior, P. G. F., Paiano, R., & dos Santos Costa, A. (2020). Isolamento social: consequências físicas e mentais da inatividade física em crianças e adolescentes. Revista Brasileira de Atividade Física & Saúde, 25, 1-2. https://doi.org/10.12820/rbafs.25e0115

Lazarim, C. A. P. (2020). Entre a casa e a escola: a dupla jornada de mulheres-professoras. Seminário Virtual da Mulher. Retrieved from [Accessed March 01, 2024]: https://anais.eventos.iff.edu.br/index.php/svmulher/article/view/33

Li, S., Wang, Y., Xue, J., Zhao, N., & Zhu, T. (2020). The impact of COVID-19 epidemic declaration on psychological consequences: a study on active Weibo users. International journal of environmental research and public health, 17(6), 2032. https://doi.org/10.3390/ijerph17062032

Loiola, E. F., Costa, B. C., Oliveira, K. L. X., & Borges, L. D. A. R. (2020). Transtornos Mentais Evidentes no Sexo Feminino. Revista Científica da Faculdade de Medicina de Campos, 15(3), 72-76. https://doi.org/10.29184/1980-7813.rcfmc.369.vol.15.n3.2020

Maciel, H. C. R., Hosken, C. L., & Ramos, I. D. S. F. (2021, September). Bem Estar e Isolamento Social: como a pandemia afeta a saúde mental dos brasileiros. In Anais do Congresso Nacional Universidade, EAD e Software Livre (Vol. 2, No. 12).

Matsudo, V. K. R., dos Santos, M., & de Oliveira, L. C. (2020). Quarentena sim! Sedentarismo não! Atividade física em tempos de coronavírus. Diagnóstico e Tratamento, 25(3), 116-120. Retrieved from [Accessed March 01, 2024]: https://docs.bvsalud.org/biblioref/2020/11/1129416/rdt_v25n3_116-120.pdf

Pereira, M. D., de Oliveira, L. C., Costa, C. F. T., de Oliveira Bezerra, C. M., Pereira, M. D., dos Santos, C. K. A., & Dantas, E. H. M. (2020). A pandemia de COVID-19, o isolamento social, consequências na saúde mental e estratégias de enfrentamento: uma revisão integrativa. Research, Society and development, 9(7), e652974548-e652974548. https://doi.org/10.33448/rsd-v9i7.4548

Ribeiro, Í. A. P., da Rocha, M. O., Cunha, D. C. L., da Silva Araújo, A., Amaral, I. N., Marques, L. L., & Cunha, M. B. (2020). Isolamento social em tempos de pandemia por COVID-19: impactos na saúde mental da população. Revista Enfermagem Atual In Derme, 92(30). https://doi.org/10.31011/reaid-2020-v.92-n.30-art.741

Santos, N. K., Baptista, L. H. P., da Silva Triani, F., Monteiro, E. R., & Neto, V. G. C. (2021). Análise do nível de atividade física e ansiedade durante o isolamento social no período de pandemia. BIOMOTRIZ, 15(1), 61-71. https://doi.org/10.33053/biomotriz.v15i1.422

Schuchmann, A. Z., Schnorrenberger, B. L., Chiquetti, M. E., Gaiki, R. S., Raimann, B. W., & Maeyama, M. A. (2020). Isolamento social vertical X Isolamento social horizontal: os dilemas sanitários e sociais no enfrentamento da pandemia de COVID-19. Brazilian Journal of Health Review, 3(2), 3556-3576. https://doi.org/10.34119/bjhrv3n2-185

Vignola, R. C. B. (2013). Escala de depressão, ansiedade e estresse (DASS): adaptação e validação para o português do Brasil. Retrieved from [Accessed March 01, 2024]: http://repositorio.unifesp.br/handle/11600/48328

Violant-Holz, V., Gallego-Jiménez, M. G., González-González, C. S., Muñoz-Violant, S., Rodríguez, M. J., Sansano-Nadal, O., & Guerra-Balic, M. (2020). Psychological health and physical activity levels during the COVID-19 pandemic: a systematic review. International journal of environmental research and public health, 17(24), 9419. https://doi.org/10.3390/ijerph17249419

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. International journal of environmental research and public health, 17(5), 1729. https://doi.org/10.3390/ijerph17051729

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. Journal of travel medicine, 27(2), taaa020. https://doi.org/10.1093/jtm/taaa020

World Health Organization. (2019). Considerations for implementing and adjusting public health and social measures in the context of COVID-19: interim guidance, 4 November 2020 (No. WHO/2019-nCoV/Adjusting_PH_measures/2020.2). World Health Organization. Retrieved from [Accessed March 01, 2024]: https://apps.who.int/iris/handle/10665/336374

World Health Organization (WHO). 2020. WHO Guidelines on physical activity and sedentary behaviour: at a glance. Retrieved from [Accessed March 01, 2024]: https://outrightinternational.org/content/world-health-organizations-says-being-trans-not-mental-disorder?gclid=CjwKCAiA0KmPBhBqEiwAJqKK47t7zRhhDuQDtAz5EuSz8u7EfkzZj6sQI5-Gt8-ZDp6MYZGIh-vFKBoChCsQAvD_BwE