v. 3, n. 3, 2023

International Journal of Health Science

CAN THE PRACTICE OF PHYSICAL EXERCISE BE A PROTECTIVE FACTOR FOR MENTAL HEALTH DURING THE COVID-19 PANDEMIC?

Maria do Socorro Cirilo-Sousa
Associate Graduate Program in Physical Education: UPE/UFPB
Universidade Regional do Cariri – URCA
Crato-Ceará
http://lattes.cnpq.br/1311716213397850

Ana Tereza de Sousa Brito
Associate Graduate Program in Physical Education: UPE/UFPB
João Pessoa- Paraíba
http://lattes.cnpq.br/6803499490357182

Daniel Alves Pereira
Universidade Regional do Cariri – URCA
Crato-Ceará
http://lattes.cnpq.br/7566888331879478

Janyeliton Alencar de Oliveira
Associate Graduate Program in Physical Education: UPE/UFPB
Instituto Federal de Ciências e Tecnologia da Paraíba -IFPB
João Pessoa – Paraíba
http://lattes.cnpq.br/0617681310688634

Edna Ferreira Pinto
Associate Graduate Program in Physical Education: UPE/UFPB
Universidade Regional do Cariri – URCA
Iguatu-Ceará
http://lattes.cnpq.br/7075193691313443

Pedro Henrique Marques de Lucena
Associate Graduate Program in Physical Education:: UPE/UFPB
Centro Universitário de João Pessoa - UNIPÊ
João Pessoa-Paraíba
http://lattes.cnpq.br/2629985789866586

Victor Hugo Lacerda Badu de Sousa
Universidade Federal da Paraíba – UFPB
João Pessoa-Paraíba
http://lattes.cnpq.br/5077454930142045

Natália Herculano Paz
Associate Graduate Program in Physical Education: UPE/UFPB
Centro Universitário de João Pessoa - UNIPÊ
João Pessoa-Paraíba
http://lattes.cnpq.br/7473799157085343

Pedro Augusto Mariz Dantas
Associate Graduate Program in Physical Education:: UPE/UFPB
Instituto Federal de Ciências e Tecnologia da Paraíba -IFPB
Campina Grande-Paraíba
http://lattes.cnpq.br/0274740183761222

Carlos Renato Paz
Associate Graduate Program in Physical Education: UPE/UFPB
Instituto Federal de Ciências e Tecnologia da Paraíba -IFPB
Campina Grande-Paraíba
http://lattes.cnpq.br/3807375225646491

Renata Golveia Nunes
Centro Universitário de João Pessoa -UNIPÊ
João Pessoa-Paraíba
http://lattes.cnpq.br/5451938582728546

Thiago Batista Campos de Sousa
Faculdade Integrada de Patos – FIP
Patos-Paraíba
http://lattes.cnpq.br/7629302033791114

Ravi Cirilo Targino de Araujo
Associate Graduate Program in Physical Education: UPE/UFPB
João Pessoa-Paraíba
http://lattes.cnpq.br/6929454021673244

Abstract: The objective of the study was to verify the practice of physical exercise as a protective factor for mental health during the COVID-19 pandemic. A sample of N=137 individuals, age (31.50 ± 13.08 years), n=45 men and n=92 women, people, answered an online questionnaire built on Google Forms, divided into five domains: 1- Data from Identification: information regarding age, sex, marital status, level of education, state of residence, whether the participant was socially isolated during the period of filling out the questionnaire; 2- Analysis of lifestyle aspects before and during the covid-19 pandemic: physical exercise (frequency, intensity, type, time); 3- Beck Anxiety and Depression Scales. Analyzes were performed using SPSS version 25. Categorical variables are described as absolute numbers and percentages, and continuous variables as mean ± standard deviation (SD) and binary logistic regression. In logistic regression analysis (expressed as odds ratio; 95% confidence interval). Sedentary individuals were more likely to have moderate to severe symptoms of anxiety (OR 2.85CI95%:1.38-5.88) and depression (OR 2.92CI95%1.41-6.04). It is concluded that the practice of physical exercise can be a protective factor for mental health in times of the COVID-19 pandemic.
Keywords: Anxiety; depression; health; physical training.

INTRODUCTION

In 2019, China experienced an outbreak of pneumonia of unknown cause, concentrated in the city of Wuhan, located in Hubei province. Quickly, similar cases began to appear in different places around the world and, in view of this, several countries mobilized to identify the causative agent. Only in January 2020, after ruling out respiratory pathogens such as influenza, avian adenovirus influenza, infectious atypical pneumonia (SARS) and Middle East Respiratory Syndrome (MERS), were they able to identify the genetic sequence of the new virus, which was named COVID-19 by belong to the betacoronavirus genus (1). Although its origin comes from animals, it was discovered that the virus can be transmitted between humans (2), with an incubation period of approximately 5 days(3), presenting the following symptoms: fever, cough, shortness of breath, muscle pain, headache, confusion, chest pain and diarrhea (2,4,5).

Also in February 2020, the first cases were confirmed in Brazil and, since then, several actions have been taken in order to contain the spread of the disease. Given the lack of knowledge, the speed with which the disease spread and even the absence of vaccines and antivirals, classic and rigorous health measures (surveillance, detection, isolation of infected people and quarantine of exposed people) were taken with the aim of minimizing the spread of COVID-19 (6). In addition to these, others were adopted, such as: washing hands, maintaining social isolation, avoiding touching the eyes, nose and mouth, maintaining respiratory hygiene, guidance on the use of masks and in which situations health services must be sought (6). One of the main fights against COVID-19 has been social distancing, which is a voluntary measure and consists of keeping at least two meters of distance between people, when outside their homes, the suspension of trade, meetings and other types of events. that generate crowds of people. However, this detachment, or social isolation, has been causing several losses, due to divergences in strategies for coping with COVID-19, as well as generating an increase in anxiety, depression and stress in the population (6–8), interfering with

performance of mental health. Anxiety is understood as a vague and unpleasant emotional state, characterized by the presence of tension or discomfort arising from the anticipation of danger, leading to restlessness and psychological disturbance that is intertwined with future thoughts (9).

A review study on psychological effects during quarantine, in different epidemics, reported several negative psychological effects, including emotional disturbances, depression, stress, low mood, irritability, insomnia and post-traumatic stress symptoms (10). Although staying at home seems to be the safest way to avoid contamination, the distancing and social isolation measures adopted during quarantine result in significant changes in lifestyle, which can have negative consequences on psychological and emotional aspects (11).

Thus, in the face of this pandemic and social isolation scenario, the regular practice of physical exercise seems to be a very promising therapy in controlling stress, anxiety and depression levels, probably due to the possibility of raising levels of well-being, mood and self-esteem, controlling lipid and glucose levels, overall quality of life, improving sleep quality, strengthening the immune system (8,12–16). The research hypothesis is that the habitual practice of physical exercise may be associated with lower chances of presenting moderate to severe symptoms of anxiety and depression. Thus, the objective of the study is to verify the practice of physical exercise as a protective factor for mental health during the COVID-19 pandemic.

MATERIALS AND METHODS

This research is characterized by a descriptive, comparative cross-sectional, retrospective and concurrent epidemiological study (17).

SAMPLE

The sample consisted of 137 (n=45 men and n=92 women), aged 31.50 ± 13.08 years, degree of amplitude, between 19 and 63 years. The criteria to be included in the study were: age ≥ 18 years old and internet access; and exclusion: not residing in Brazil, duplicate responses and questionnaires sent after the delimited period for return. The research was approved by the Research Ethics Committee of the "Universidade Regional do Cariri" (CAAE nº 33932720.9.0000.5055) and was in line with the provisions of resolution nº 466/12 of the National Health Council.

INSTRUMENTS

QUESTIONNAIRE

An online questionnaire was prepared on Google Forms with objective questions to assess issues related to aspects of lifestyle related to physical activity before and during the period of the COVID-19 pandemic. The questionnaire included five sessions. The first one was used to obtain consent to participate in the research. The second session consisted of six questions related to sociodemographic aspects, including age, marital status, gender (male and female), education level, state of residence, and whether the participant was in social isolation when filling out the questionnaire, we understand by isolation those who decided to stay at home and only went out for essential activities such as working, going to the supermarket, pharmacy or resorting to some health service. The third session was organized by analyzing the recall period: before the pandemic and during the pandemic (referring to the time when the questionnaire was completed). For this, six questions about the practice of physical activity were asked, related to the regular practice of physical activity, weekly frequency, intensity and duration of the

sessions of physical activity in the specified recall periods. The fourth and fifth sessions were designed to assess the mental health of the participants, for this purpose the Beck Anxiety and Depression scales were used, using the recall period in the same way: before the pandemic period and during the Covid-19 pandemic (moment filling in the form).

BECK'S ANXIETY SCALE

The scale can have a maximum result of 63 points, its classification of anxiety symptoms was: 0-10 = no or minimal; 11-19 = mild to moderate; 20-30 moderate; 31-63 severe (18). However, to meet the purpose of the study, anxiety was dichotomized into absence of symptoms (0-10) or presence of anxiety symptoms (11-63) (18).

BECK DEPRESSION SCALE

If the scores are between 0 and 9 points, the absence of depression or minimal depressive symptoms is attributed; scores of 10 to 18 points are assigned to mild to moderate depression; from 19 to 29 points moderate to severe depression and from 30 to 63 points severe depression (18). However, to meet the purpose of the study, depression was dichotomized into no symptoms (0-9) or prevalent depression symptoms (10-63).

PROCEDURES

A snowball sampling strategy was used, focused on recruiting the general public during the COVID-19 pandemic. The survey was disseminated through researchers on social networks and messaging applications, and made available through a link for access, when opening the link to access the questionnaire, the individual had access to the Free and Informed Consent Form and only after that, those who consented in participating in the research, they accessed the questionnaire. The questionnaire link was available for filling out for a period of 30 days, about three months after the quarantine decree was established by the Brazilian states in which the volunteers of this research resided.

STATISTICAL ANALYSIS

Analyzes were performed using SPSS version 25. Categorical variables are described as absolute numbers and percentages, and continuous variables as mean ± standard deviation (SD). The scores referring to minimal to severe symptoms for anxiety and depression were transformed into binary variables and designated as dependent variables absence and presence of symptoms. The practice of physical activity was analyzed through a dichotomous question that the individuals answered "whether they practiced any physical-sporting activity during the period of social distancing". Thus, the sample was grouped into two categorization situations, yes and no for the practice of physical activity during the pandemic. Those who answered "yes" also reported the frequency, that is, "how many days a week they performed physical activities". Consequently, the frequency of practice was divided into three groups: those who do not exercise were classified as a reference category, the others were, who practice 1-4 days and those who practice 5-7 days a week. Exercise duration: do not practice, up to 30 minutes, 30-60 minutes and above 60 minutes. Exercise intensity: do not practice, light, light to moderate, moderate to exhausting and exhausting.

Raw estimates of odds ratios (OR) related to the association between the variables of interest and outcomes were obtained, as well as the adjusted odds ratios (Adjusted Odds Ratio – OR adj.) and their respective intervals of 95 % confidence (95% CI). The models

estimate the chance of individuals with a given characteristic (exposure) developing the outcome, compared to individuals who do not have that given characteristic of developing the outcome. All tests were two-tailed and the final significance level adopted was $p < 0.05$.

RESULTS

Variable	Average ±DP
Age (years)	
Women	31.43 ± 10,45
Men	31.62 ± 10.37
States **Ceará** **Paraíba** **Pernambuco** **Others**	**n (%)** 106 (77.4) 21 (15.3) 6 (4.4) 4 (2.9)
Genre	
Women	92 (67.2)
Men	45 (32.8)
Age group	
18-34 years old	90 (65.7)
≥35 years	47 (34.3)
Scholarity	
Complete high school	7 (4.4)
incomplete higher education	42 (30.7)
complete higher education	27 (19.7)
Postgraduate	45 (32.8)
Master or doctor	16 (11.7)
Marital status	
Not married	72 (55.6)
Married	38 (27.7)
Stable union	15 (10.9)
Divorced	8 (5.8)
Other	4 (2.9)
Social isolation	
Totally	32 (23.4)
Partially	99 (72.3)
Not	6(4.4)
The person performs physical activity before the pandemic	
Yes	112 (81.8)
Not	25 (18.2)
Perform physical activity during the pandemic	
Yes	88 (64.2)
Not	49 (35.8)
Frequency of physical activity before the pandemic	
None	18 (13.1)
1-4 days	56 (40.9)
5-7 days	63 (46.0)
Frequency of physical activity during the pandemic	
None	45 (32.6)
1-4 days	56 (40.6)
5-7 days	36 (26.1)
Duration of physical activity before the pandemic	
The person did not practice	18 (13.1)
Up to 30 minutes	13 (9.5)
30 to 60 minutes	74 (54.0)
Over 60 minutes	32 (23.4)
Duration of physical activity during a pandemic	
Does not practice	34 (24.6)
Up to 30 minutes	32 (23.2)
30 to 60 minutes	55 (39.9)
More than 60 minutes	16 (11.6)
Intensity of activity before the pandemic	
None to very light	15 (10.9)
Light	6 (4.4)
Mild to moderate	24 (17.5)
Moderate to exhausting	67 (48.9)
Exhaustive	25 (18.2)
Intensity of activity during the pandemic	
None to very light	28 (20.3)
Light	13 (9.4)
Mild to moderate	21(15.2)
Moderate to exhaustive	60 (43.5)
Exhaustive	15 (10.9)

Table 1. Characteristics of study participants (n=137).

Variable	**Before**	**During**
Anxiety	11.15± 13.60	12.25±14.27
Depression	6.15± 9.22	9.69± 9.00

Table 2. Score of anxiety and depression levels by the Beck Scales before and during the Covid-19 pandemic (n=137).

Variable	ANXIETY		DEPRESSION	
	OR GROSS (CI 95%)	OR ADJUSTED	OR GROSS	OR ADJUSTED
Practice of physical exercise Yes/No	2.85 (1.38- 5.88)	4.61(0.37-56.07)	2.92 (1.41-6.04)	4.78 (0.37- 61.44)
Feminine	2.20 (0.95- 5.09)	-	3.45(1.46-8.16)	-
Masculine	3.21(0.75- 13.68)	-	5.06 (1.27- 24.56)	-
weekly frequency				
no day	1 ref	1 ref	1 ref	1 ref
1-4 days	0.37 (0.16-0.85)	0.55(0.27- 11.4)	0.42 (0.18-0.95)	0.38 (0.16-0.86)
5-7 days	0.45 (0.18-1.11)	0.66(0.23-1.90)	0.45 (0.18-1.13)	0.43(0.17-1.08)
Duration				
Does not practice	1 ref	1 ref	1 ref	1 ref
Up to 30 minutes	0.78 (0.29- 2.06)	2.59 (0.49-13.48)	0.46 (0.17- 1.26)	0.76 (0.15-3.89)
30 to 60 minutes	0.50 (0.21- 1.21)	1.82(0.33-10.92)	0.26 (0.10- 0.64)	0.33(0.06-1.87)
Over 60 minutes	0.20 (0.49-0.85)	0.99(0.10-9.42)	0.23 (0.62-0.87)	0.41 (0.04-3.41)
Intensity				
None to very light	1 ref	1 ref	1 ref	1 ref
Light	1.01 (0.27-3.78)	0.92(0.17-4.92)	0.40(0.10-1.56)	0.21 (0.13-1.14)
Mild to moderate	0.65(0.20- 2.03)	1.01(0.16-6.14)	0.25(0.77-0.87)	0.18(0.02-1.29)
Moderate to exhaustive	0.34 (0.13-0.86)	0.52(0.09-2.78)	0.23(0.09- 0.60)	0.22 (0.03-1.22)
Exhaustive	0.99 (0.28- 3.48)	0.96(0.20-4.66)	0.97(0.26-3.49)	0.68(0.13-3.43)

1ref: reference value

Or brute: no tweaks.

Or adjusted: adjusted for gender, de, social isolation, physical exercise practice, frequency, duration and intensity.

Table 3. Odds ratio for having moderate to severe symptoms of anxiety and depression DURING the pandemic (n = 137)

Table 1 shows the characteristics of the study participants. Responses of 137 individuals from four states (Ceará = 106; Paraíba = 21; Pernambuco 6 = and others = 4) were analyzed. The mean age of the participants was 31.50 ± 13.08 years, The participants were aged between 18 and 34 years (65.7%) and ≥ 35 years (34.3%) (women 31.43 ± 10.45) (men 31.62±10.37). Most were female (67.2%), male (32.8%). Regarding the level of education, 45 (32.8%) had a postgraduate degree, followed by incomplete higher education 42 (30.7%), complete higher education 27 (19.7%). With regard to marital status, more than most are single (55.6%), married (27.7%), stable union (10.9%), divorced (5.8%) and other (2.9%). When asked if they were in social isolation most answered partially (72.3%), totally (23.4%) and only (6.4%) were not following social isolation.

As for the regular practice of physical exercise before the pandemic (81.8%) answered yes and (18.2%) said they did not exercise. However, during the pandemic there was a reduction in people who were exercising (64.2%) and an increase in physical inactivity (39.6%). That is (17.6%) stopped exercising during the pandemic and became sedentary. Regarding the number of days on which the participants practiced physical exercise, before the pandemic (13.1%) they did not exercise on any day, 1-4 days corresponded to (40.9%) and 5-7 days (46%). And during the pandemic (32.6%) do not exercise on any day, 1-4 days (40.9%) and 5-7 days (26.1%).

The duration of physical activities in the period prior to the pandemic is reflected as follows: (9.5%) of the participants trained for up to 30 minutes, (54%) between 30 and 60 minutes, and (23.4%) trained for more than 60 minutes. However, in the pandemic (23.2%) they practice up to 30 min, (39.9%) between 30 and 60 min and (11.6%) exercise more than 60 min.

With regard to the intensity of exercise before the pandemic period (10.9%) was classified as none or very light, (4.4%) light, (17.5%) light to moderate, moderate to exhausting (48.9%) and exhausting (18.2%). During the pandemic, (20.3%) answered none or very mild, mild (9.4%), mild to moderate (15.2%), moderate to exhausting (43.5%), exhausting (10.9%).

Table 2 presents the results of anxiety and depression levels according to the classification table. Regarding anxiety, there was an increase in the average when comparing before the pandemic 11.15±13.60 and during 12.25±14.27, thus, these results classify them with the presence of mild to moderate symptoms. The average of responses on the depression scale is 6.15 ± 9.22 before the pandemic period and 9.69 ± 9.00 during the pandemic, both classifying with absence or minimal depressive symptoms.

Table 3 shows data on odds ratios for moderate to severe symptoms of anxiety and depression. Regarding the practice of physical activity, according to the raw model, sedentary people are (OR 4.61; CI 95% 1.37-56.07) more likely to have symptoms of anxiety and (OR 4.78; CI 95% 1.37-61.44) to have symptoms of depression when compared to people who are active.

The sex category when compared, there are no significant differences between sedentary men (OR 3.21; 95% CI 0.755-13.689) and women (OR 2.20; 95% CI 0.956-5.09) in relation to anxiety symptoms when compared to physically active individuals. However, regarding depression, sedentary men are 5.6 (OR 5.06; CI 95% 1.27-24.56) and women are 3.4 (OR 3.45; CI 95% 1.46-8.16) times more likely to have depressive symptoms when compared to their peers active.

The weekly frequency of exercise practice in the model without adjustments, showed that people who exercised 1-4 days a week are less likely to have anxiety symptoms according to the respective values (OR 0.37 95%CI 0.16-0.85), and with regard to depression both in the raw model (OR 0.42 CI95% 0.18-0.95) and in the adjusted one (OR 0.50; CI95% 0.03-0.93) individuals who practice 1-4 days are less likely to have symptoms of depression, when compared to sedentary people.

Regarding the duration of exercise, according to the raw model, volunteers who participate in activities longer than 60 minutes have (OR 0.20 CI 95%0.49-0.85) lower risks of having anxiety symptoms. And in depression, those who practice between 30 and 60 minutes (OR 0.26 CI 95% 0.10-0.64), over 60 minutes (OR 0.23 CI 95% 0.62-0.87) when compared to those who do not practice. With regard to exercise intensity, individuals who reported practicing moderate to exhausting activities (OR 0.34 CI 95% 0.13-0.86) according to the raw model, were less likely to have anxiety. With regard to depression, physical activity at moderate to exhaustive intensity (OR0.23 CI 95%0.09-0.60) and light to moderate intensity (OR0.25 CI 95%0.77-0.87) seem to be associated with lower depressive symptoms.

DISCUSSION

The literature presents several benefits of remaining active during the pandemic, however, the results of this study showed a reduction in physical activity levels compared to before the pandemic. In addition, this work showed that the decrease in physical activity levels are associated with worse psychological well-being. Therefore, the initial hypothesis was confirmed that the practice of physical exercise is a great ally of people's mental health, since it is capable of exerting a neuroprotection factor, being an important non-drug alternative to reduce the population's risk of having symptoms. moderate to severe anxiety and depression during the period of social distancing caused by the Covid-19 pandemic.

Although the World Health Organization recommends that the population remain active during the isolation period, with exercises at home, studies similar to this one show that there was a global decrease in the level of physical activity. Brazilian researchers demonstrated that there was an increase in physical inactivity from 65.5% to 80.1% during the period of adoption of social isolation measures (19). In this perspective,(20) also interviewed 1430 young Italian university students and found that only 44.7% of the sample remained sufficiently active during home confinement. Another study carried out in the United Arab Emirates showed that 32.1% of the participants reported not practicing any physical activity before the pandemic, and this percentage increased to 38.5% (p <0.001) during the pandemic (21), therefore reinforcing our findings.

In addition, this study showed results compatible with the literature, suggesting that there is an inverse association between the practice of physical activity and symptoms of anxiety and depression. According to a survey carried out with Brazilian students, it was observed that individuals who exercised during the pandemic are (OR 0.49 CI 95% 0.25-0.96) less likely than their inactive peers to have symptoms of depression (22). In an investigation carried out in the Pampa region, southern Brazil, it was noted that participants who met the WHO recommendations (weekly physical activity more than ≥150 minutes) had lower associations with symptoms of depression (PR: 0.59; 95% CI : 0.41 – 0.85) and anxiety, (PR: 0.62 95% CI 0.47- 0.81) respectively

(23). An analysis carried out with a sample of 45,550 employees with an average age of 42 years, it was noted that sedentary behavior during leisure time, that is, those who spend 75% of their time inactive, are (OR 3.58 CI 3.27-3.92) more likely to present symptoms of anxiety and depression when compared to active individuals or spend only 25% of their time standing still (24). This neuroprotection resulting from physical exercise occurs through the modulation of different trophic factors derived from the brain, such as the neurotrophic factor (BDNF), in which its expression is increased after physical exercise and positively influences both anxiety and depression(25).

Regarding the weekly frequency of physical exercise, it is clear in this study that there are no indications of additional benefits of exercising more than 4 days a week. It differs from other findings, in which individuals who practice 1-2 times a week have 0.67 (CI 95% = 0.62–0.74) and > 3 days 0.56 (CI 95% = 0.52–0.62) are less likely to report symptoms of depression and anxiety, respectively.

On the other hand, the time spent on physical exercise in this study shows that the longer the time spent, the greater the protection provided by physical exercise. Corroborating this research, a study carried out in the United Kingdom with 902 adults, showed that there is a higher prevalence of moderate to severe symptoms of anxiety and depression in those people who practice only 30 minutes or less of physical activity of moderate to vigorous intensity when compared to those who practice from 30 to 90 minutes or more than 90 minutes(26). Therefore, the WHO recommends that adults and the elderly perform at least 75-150 min of physical exercise per week at vigorous intensity or 150-300 min/week at moderate intensity(27).

Furthermore, this study has shown that exercise performed at light to exhausting intensity can decrease symptoms of anxiety and depression, is therefore reinforced by the following studies. Some scholars showed that participants who practiced ≥30 min of physical activity of moderate to vigorous intensity were 30% less likely to present symptoms of anxiety and depression(28). However, one survey evaluated 13,884 Australian men and found that vigorous activity was associated with a lower chance of moderate to severe depression (OR 0.68, 95% CI 0.54-0.84) compared with moderate physical activity (29). This way, it is recognized through several meta-analyses that, regardless of the intensity, exercise exerts protection against these diseases (30). And one of the possible physiological mechanisms associated with this is that exercise causes a feeling of well-being, which may be related to the identification of physiological coping responses, such as the release of beta-endorphin and central neurotransmitters that alter mood(31).

CONCLUSIONS

The study concluded that the practice of physical exercise seems to be effective as a protective factor for mental health during the COVID-19 pandemic. However, it has limitations that need to be highlighted, as it is a cross-sectional study, it is not possible to verify whether the direction of the relationship and the inverse cause is possible. Thus, longitudinal studies are needed to better verify the impact of the pandemic on the evolution of anxiety and depression symptoms and the implementation of public policies with physical activity programs to manage the pandemic, and this way, combat physical inactivity and prevent further damage to health. people's mental health.

ACKNOWLEDGMENTS

To the Coordination for the Improvement of Higher Education Personnel (CAPES) for the scholarship and research. The people who participated in the study. To the students of the Physical Education Course at the "Universidade Regional do Cariri" – URCA who were part of the data collection team. To the Associated Graduate Program in Physical Education UPE/UFPB.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

REFERENCES

1.Ficanha EE, Silva EV da, Rocha VMP, Badke MR, Cogo SB, Silva EV da, et al. **Aspectos biopsicossociais relacionados ao isolamento social durante a pandemia de Covid-19: uma revisão integrativa.** Res Soc Dev. 2020; 9(8):1–27.

2. Chan JFW, Yip CCY, To KKW, Tang THC, Wong SCY, Leung KH, et al. **Improved molecular diagnosis of COVID-19 by the novel, highly sensitive and specific COVID-19-RdRp/Hel real-time reverse transcription-PCR assay validated in vitro and with clinical specimens. Journal of Clinical Microbiology.** American Society for Microbiology; 2020: 58(5):1–10.

3. Wilson ME, Chen LH. **Travellers give wings to novel coronavirus (2019-nCoV).** Vol. 27, Journal of Travel Medicine. Oxford University Press; 2020. 27(2):1–3.

4. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. **Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study.** Lancet. 2020.395(10223):507–13.

5. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. **Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China.** Lancet [Internet]. 2020. 395(10223):497-506.

6. Aquino EML, Silveira IH, Pescarini JM, Aquino R, Souza-Filho JA, Rocha A dos S, et al. **Social distancing measures to control the COVID-19 pandemic: potential impacts and challenges in Brazil.** Cien Saude Colet [Internet]. 2020 Jun 1 [cited 2021 Nov 11];25(suppl 1):2423–46.

7. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al**. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China.** Int J Environ Res Public Health [Internet]. 2020 Mar 1 [cited 2021 Nov 11];17(5):3–25.

8. Júnior PGF, Paiano R, Costa A dos S. **Isolamento social: consequências físicas e mentais da inatividade física em crianças e adolescentes.** Rev Bras Atividade Física Saúde. 2020.25:1–2.

9. Allen AJ, Leonard H, Swedo SE. **Current Knowledge of Medications for the Treatment of Childhood Anxiety Disorders.** J Am Acad Child Adolesc Psychiatry. 1995;34(8):976–86.

10. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. **The psychological impact of quarantine and how to reduce it: rapid review of the evidence.** Vol. 395, The Lancet. Lancet Publishing Group; 2020. 395(10227) 912–20.

11. Li S, Wang Y, Xue J, Zhao N, Zhu T. **The impact of covid-19 epidemic declaration on psychological consequences: A study on active weibo users.** Int J Environ Res Public Health[Internet].2020;17(6):1–9.

12. Brady SM, Fenton SAM, Metsios GS, Bosworth A, Duda JL, Kitas GD, et al. **Different types of physical activity are positively associated with indicators of mental health and psychological wellbeing in rheumatoid arthritis during COVID-19.** Rheumatol Int. 2021.41(2):335–344.

13. van Zanten JJCSV, Fenton SAM, Brady S, Metsios GS, Duda JL, Kitas GD. **Mental Health and Psychological Wellbeing in Rheumatoid Arthritis during COVID-19 – Can Physical Activity Help?** Mediterr J Rheumatol [Internet]. 2020.31(Suppl 2):284.

14.Mikkelsen K, Stojanovska L, Polenakovic M, Bosevski M, Apostolopoulos V. **Exercise and mental health. Maturitas** [Internet]. 2017. 106:48–56.

15. Pinheiro J da S, Demartini K, Garcia GS, Rossa DT, Jorge MSG, Wibelinger LM. **Exercícios físicos na saúde dos idosos durante a pandemia por covid-19: uma revisão integrativa da literatura.** Temas em Saúde - Edição Espec COVID. 2020;1(1):25–38.

16. Letieri RV, Furtado GE. **Physical exercise during coronavirus disease (COVID-19): Recommendations to remaining active in periods of confinement.** An Acad Bras Cienc. 2020. 92(4):1–3.

17. Thomas JR, Nelson JK, Silverman S. **Métodos de pesquisa em atividade física.** 6 ed. Porto Alegre; Artmed, 2012.

18.Beck AT, Epstein N, Brown G, Steer RA. **An Inventory for Measuring Clinical Anxiety: Psychometric Properties. J Consult Clin Psychol.** 1988;56(6):893–7.

19. Costa CLA, Costa TM, Barbosa Filho VC, Bandeira PFR, Siqueira RCL. **Influência do distanciamento social no nível de atividade física durante a pandemia do COVID-19.** Rev Bras Atividade Física Saúde. 2020. 25:1–6.

20. Gallè F, Sabella EA, Ferracuti S, De Giglio O, Caggiano G, Protano C, et al. **Sedentary behaviors and physical activity of Italian undergraduate students during lockdown at the time of COVID–19 pandemic.** Int J Environ Res Public Health. 2020.17(17):1–11.

21. Ismail LC, Osaili TM, Mohamad MN, Marzouqi A Al, Jarrar AH, Jamous DOA, et al. **Eating habits and lifestyle during covid-19 lockdown in the united arab emirates: A cross-sectional study.** Nutrients. 2020. 12(11):1–20.

22.Esteves CS, Oliveira CR de, Argimon II de L. **Social Distancing: Prevalence of Depressive, Anxiety, and Stress Symptoms Among Brazilian Students During the COVID-19 Pandemic.** Front Public Heal [Internet]. 2021. 27 (8):1–5.

23. Feter N, Caputo EL, Doring IR, Leite JS, Cassuriaga J, Reichert FF, et al. **Sharp increase in depression and anxiety among Brazilian adults during the COVID-19 pandemic: findings from the PAMPA cohort.** Public Health. 2021.190:101–107.

24.Hallgren M, Nguyen TTD, Owen N, Vancampfort D, Smith L, Dunstan DW, et al. **Associations of interruptions to leisure-time sedentary behaviour with symptoms of depression and anxiety.** Transl Psychiatry. 2020.10(1):1–8.

25.Vorkapic-Ferreira C, Góis RS, Gomes LP, Britto A, Afrânio B, Dantas EHM. **Nascidos para correr: A importância do exercício para a saúde do cérebro.** Revista Brasileira de Medicina do Esporte. 2017.23: 495–503.

26. Jacob L, Tully MA, Barnett Y, Lopez-Sanchez GF, Butler L, Schuch F, et al. **The relationship between physical activity and mental health in a sample of the UK public: A cross-sectional study during the implementation of COVID-19 social distancing measures.** Ment Health Phys Act. 2020;19:100345.

27. Bull FC, Al-Ansari SS, Biddle S, Borodulin K, Buman MP, Cardon G, et al. **World Health Organization 2020 guidelines on physical activity and sedentary behaviour [Internet].** Vol. 54, British Journal of Sports Medicine. BMJ Publishing Group Ltd and British Association of Sport and Exercise Medicine. 2020.54 (24) 1451–1462.

28. Schuch FB, Bulzing RA, Meyer J, Vancampfort D, Firth J, Stubbs 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 Res. 2020. 292:1-4.

29. Currier D, Lindner R, Spittal MJ, Cvetkovski S, Pirkis J, English DR. **Physical activity and depression in men: Increased activity duration and intensity associated with lower likelihood of current depression.** J Affect Disord. 2020. 260:426–431.

30.Teychenne M, White RL, Richards J, Schuch FB, Rosenbaum S, Bennie JA. **Do we need physical activity guidelines for mental health: What does the evidence tell us?** Ment Health Phys Act. 2020 Mar;18:100315.

31. Coburn JW, Malek MH. **Fundamentos do personal training.** 2 ed. Barueri, São Paulo; Manole; 2019.