Associations between Physical Activity Level and Mental Health in the Spanish Population: A Cross-Sectional Study

Ángel Denche-Zamorano 1*, Sabina Barrios-Fernandez 2*, Rafael Gómez-Galán 2*, Juan Manuel Franco-García 3*, Jorge Carlos-Vivas 1*, María Mendoza-Muñoz 4,5,6*, Jorge Rojo-Ramos 2*, Alejandro Vega-Muñoz 6*, Konstantinos Gianikellis 8 and Laura Muñoz-Bermejo 2*

1 Promoting a Healthy Society Research Group (PHeSO), Faculty of Sport Sciences, University of Extremadura, 10003 Cáceres, Spain; andezal04@alumnos.unex.es (Á.D.-Z.); jorgecv@unex.es (J.C.-V.)
2 Social Impact and Innovation in Health (InHEALTH), Faculty of Sports Sciences, University of Extremadura, 10003 Cáceres, Spain; rgomez@unex.es (R.G.-G.); jorgerr@unex.es (J.R.-R.); lauramunoz@unex.es (L.M.-B.)
3 Health, Economy, Motricity and Education (HEME) Research Group, Faculty of Sport Sciences, University of Extremadura, 10003 Cáceres, Spain; jmfrancog@unex.es
4 Research Group on Physical and Health Literacy and Health-Related Quality of Life (PHYQOL), Faculty of Sport Sciences, University of Extremadura, 10003 Cáceres, Spain
5 Departamento de Desporto e Saúde, Escola de Saúde e Desenvolvimento Humano, Universidade de Évora, 7004-516 Évora, Portugal
6 Public Policy Observatory, Universidad Autónoma de Chile, Santiago 7500912, Chile; alejandro.vega@uauctonoma.cl
7 Facultad de Economía y Negocios, Universidad Andres Bello, Viña del Mar 2531015, Chile; nicolas.contreras@unab.cl
8 Biomecánica del Movimiento Humano y Ergonomía Research Group (BIOERGON), Faculty of Sport Sciences, University of Extremadura, 10003 Cáceres, Spain; kgiannik@unex.es
* Correspondence: sabinabarrios@unex.es (S.B.-F.); mamendozam@unex.es (M.M.-M.)

Abstract: Physical inactivity and sedentary lifestyles appear to be critical factors in developing mental health problems, including depression, anxiety, and other diseases in developed societies. This study analysed the associations between physical activity level (PAL) and mental health using the Goldberg General Health Questionnaire (GHQ12) in the Spanish population before the COVID-19 pandemic. A cross-sectional design, based on data from the Spanish National Health Survey (ENSE 2017), the last health survey before the pandemic, was carried out with 17,641 participants. Data did not follow a normal distribution, so non-parametric tests were used to analyse intergroup differences, differences at baseline and post hoc, and correlations between variables. Associations were found between the PAL, mental health and all its dimensions. The groups that performed moderate and intense PAL showed lower values in the GHQ12 questionnaire than those who walked or were inactive. Thus, higher PAL was associated with better mental health indicators, including successful coping, self-esteem and stress. This study provides a framework to compare outcomes between the pre- and post-pandemic periods, as the ENSE is performed every five years.

Keywords: exercise; health; psychology; mental disorders; health survey

1. Introduction

Mental disorders are the second leading cause of illness globally [1]. Anxiety and depression are the most prevalent mental disorders in the general population [2]. Mental health problems are associated with a higher prevalence of chronic diseases [3], poor adherence to medical treatment [4], increased morbidity [5–7] and premature mortality [8]. As an example, the 12-month prevalence of anxiety disorders was 13.4% in Europe (69.1 million people), costing more than 74 billion euros [9], and 22% in the United States [10]. Moreover,
the results of international and national studies have demonstrated their great economic and social impact [11,12]. In Spain, mental health disorders are considered, together with neurological diseases, the leading cause of disability among non-infectious diseases [13]. The psychological distress responsible for a great number of mental disorders is defined as “a series of symptoms and experiences of a person’s inner life that are commonly considered to be troubling, confusing or out of the ordinary” [14]. Moreover, the psychiatric morbidity in Spain was 22.2% in 2006 and 22.1% in 2011, with differences according to geographical areas, sex, and economic situation, among others [15].

Psychological distress symptomatology implies a breakdown in daily functioning, including anxiety, depression, loss of self-confidence and the inability to make decisions, among others. In different national health surveys, mental health status is usually identified with self-administered tools, such as the General Health Questionnaire (GHQ-12) [16]. The GHQ-12 defines psychiatric morbidity by classifying subjects as possible “psychiatric cases” or not. Different authors have described the existence of three dimensions including successful coping, self-esteem and stress [17–19]. The GHQ-12 has been used in the Spanish National Health Survey (ENSE) to analyse the evolution of the population’s mental health, establish comparisons between groups or check the impact of specific situations, such as economic crises or pandemics [20].

Sedentary lifestyles and physical inactivity contribute to depression, anxiety, stress, and other symptomatology and mental disorders [21]. Research suggests that physical activity (PA) can lead to physiological changes that improve motivation, self-esteem, and lower stress levels. Exercise can reduce anxiety [22] and depression [23,24], even in extreme situations, such as during the COVID-19 pandemic [25]; thus, improving physical fitness can be a strategy to address the impact of an unhealthy lifestyle on mental health [26]. PA increases the endorphin and monoamine levels and decreases cortisol, improving patients’ mood [27]; exercise also increases the production of neurotransmitters [28,29] and attenuates the hypothalamic–pituitary–adrenal axis response to stress [29,30]. In addition, PA practice reduces blood pressure, improves cardiovascular fitness, and weight loss, and prevents chronic diseases such as cancer, diabetes, hypertension, obesity, osteoporosis, and cognitive impairment [31–33]. It also helps in mental and emotional aspects such as depression or anxiety [22], increased positive feelings associated with self-efficacy, and decreased negative thoughts [23,24]. Furthermore, PA practice often involves a social factor and the creation of routines that help people deal with depression, anxiety and stress [34].

Several studies have found associations between the PA practice and mental health improvements related to anxiety [22] and depression [34,35], reducing the risk of depression in the elderly [36]. Performing PA is also linked to increased positive feelings associated with self-efficacy and decreased negative thoughts [37,38]. Moreover, improvements in the muscular and skeletal system, cardiorespiratory, metabolic system [39] and decreased pain have been reported [40], all of which are key factors for physical and mental well-being and health. As far as we know, there are no studies published on the association between Physical Activity Level (PAL) and mental health in the Spanish population. The latest Spanish National Health Survey (ENSE 2017) [41], conducted by the Ministry of Health, Consumer Affairs and Social Welfare and the National Statistics Institute every five years, collected information on the health status of the Spanish population and was the last one before the pandemic. Therefore, this study aimed to analyse the associations between the different PAL and the mental health dimensions before the COVID-19 pandemic in Spain, providing a framework for future baselines to compare the effects of the pandemic on the associations between the variables described, based on new post-pandemic studies.

2. Materials and Methods

2.1. Study Design and Ethical Aspects

This manuscript reports a descriptive correlational study based on data from the Adult Questionnaire used in the ENSE 2017 to collect information on people from 15 to
103 years old [42], and whose interviews were held between October 2016 and 2017 by experienced surveyors.

Regulation 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals concerning the processing of personal data and on the free movement of personal data and derogating from Directive 95/46/EC [43] states that files for public use are not confidential; therefore, neither the application of data protection principles to anonymised information nor the approval of accredited ethics committees is required.

2.2. Participants

A stratified three-phase random sampling was carried out in the Spanish population, considering people aged between 15 and 103 years, resulting in a 23,089 sample. A total of 10,595 men and 12,494 women were interviewed. In this research, 5312 individuals were excluded as the ENSE 2017 [41] did not ask about PA in the 69+ age group, and 136 individuals were excluded because they did not present complete data on the variables of interest for this study. Finally, the sample for our study was composed of 17,641 participants, including 8469 men and 9172 women (Figure 1).

![Figure 1. Chart outlining the study sample's eligibility criteria.](image)

2.3. Measures and Variables

The considered and created variables for this research were:
- Age: taken from the AGEa variable of the ENSE 2017 (years).
- Sex: taken from the SEXOa variable from the ENSE 2017 (male or female).
- Mental health: the Spanish version of the Goldberg General Health Questionnaire (GHQ-12) was used. This questionnaire evaluates psychological health based on the answers to 12 items graded from 0 to 3, forming an overall index with the sum of all the answers. The total score ranges from 0 (the best condition) to 36 (the worst). The GHQ-12 presents high internal consistency ($\alpha = 0.86$) [16]. The GHQ-12 is a self-administered screening test for non-psychotic psychiatric disorders, widely used in clinical settings and the general population both for its brevity and its psychometric characteristics. Although its factor structure has been a matter of debate, discussing whether it is composed of one factor, two (depression/anxiety and social dysfunction) or three factors, in this study we...
agree with the three-factor option [44] based on the factor analysis results: successful coping (FI), self-esteem (FII) and stress (FIII) [17,45]:

- Successful coping (FI): obtained by summing 6 items (1, 3, 4, 7, 8 and 12); scores ranged from 0 to 18 (0, the best; 18, the worst) and external validity of 0.82 with a p-value of 0.001.
- Self-esteem (FII): obtained by summing 4 items (6, 9, 10 and 11), with scores between 0 and 12 (0, the best; 12, the worst) and external validity of 0.70 with a p-value of 0.001.
- Stress (FIII): obtained by summing 3 items (2, 5 and 9), with scores between 0 and 9 (0, the best, 9, the worst) and external validity of 0.75, with a p-value of 0.001.

The Physical Activity Index (PAI) [46] was created by combining several PA factors with the answers obtained in the ENSE 2017. The factors were:

- Intensity: intense activity (10), moderate activity (5) and mild activity (0).
- Frequency: on the question “how many days did you practise intense and moderate PA?” the following values to the possible answers: “0” for zero days, “1” for one day per week, “2” for two or three days per week and “3” for more than three days per week.
- Duration: on the questions “how much time did you spend in total on intense PA? and, how much time did you spend in total on moderate PA?” a value of “1” was given for less than 30 min and “1.5” for 30 min or more.

So, the formula to find the PAI was $= (\text{intensity factor for intense activity} \times \text{frequency factor for intense activity} \times \text{duration factor for intense activity}) + (\text{intensity factor for moderate activity} \times \text{frequency factor for moderate activity} \times \text{duration factor for moderate activity})$. The factors were applied to intensity, frequency, and duration questions. PAI values range from 0 to 67.5 (a maximum of 45 for intense and 22.5 for moderate activities). Mild activities did not add value to the PAI. Thus, six PAL were established:

- “Inactive”: participants with PAI = 0 who answered the question “now think about how much time you spent walking in the last 7 days”, with “no day more than 10 min at a time”.
- “Insufficient”: participants with PAI = 0 who answered the question “now think about how much time you spent walking in the last 7 days” or stated, “at least one day more than 10 min consecutively”.
- “Low”: participants with a Physical Activity Index (PAI) score between 1 and 15 (75th percentile).
- “Medium”: individuals with a PAI score between 16 and 30 (90th percentile).
- “High”: participants with a PAI score between 31 and 45 (95th percentile).
- “Very high”: individuals with a PAI over 45 (values above the 95th percentile).

2.4. Statistical Analysis

Statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS, Version 25, IBM SPSS, Armonk, NY, USA) software. Data distribution was analysed using the Kolmogorov–Smirnov test, and deciding to use non-parametric tests based on the results. Then, a descriptive statistical analysis was carried out to characterise the sample, by presenting age, mental health, successful coping, self-esteem, stress, and PAI variables using medians and interquartile ranges, complemented by means and standard deviations. The PAL was characterized using the absolute and relative frequencies of the population in its different levels, in total population and by sex. The Mann–Whitney U and the Chi-square tests for continuous and ordinal variables, respectively, were used to check potential differences between sexes and groups. The Kruskal–Wallis test was carried out to find differences at baseline between PAL and continuous variables from the GHQ-12, in addition to the post hoc Mann–Whitney U test to identify differences between the various PAL groups. Additionally, the effect size was calculated by using the z value ($r = Z/\sqrt{N}$), interpreted as 0.1 = small effect, 0.3 = medium and 0.5 = large effect [47]. Finally, a Spearman correlation study with the Bonferroni adjustment was carried out to
analyse the associations between PAL and mental health dimensions. For all analyses, two-sided \( p \)-values \( \leq 0.05 \) were considered statistically significant.

3. Results

Table 1 shows sociodemographic sample information \((n = 17,641)\). Significant differences were found between general mental health status, self-esteem, successful coping, stress, PAI and PAL and sex of participants. Specifically, male participants presented higher scores in mental health and lower scores in PAI.

Table 1. Goldberg General Health Questionnaire and physical activity level according to age, mental health, and its dimensions.

| Age (Years) | Total \((N = 17,641)\) | Men \((N = 9172)\) | Women \((N = 8471)\) | \( p \)-Value |
|-------------|---------------------|-------------------|---------------------|-----------|
| Participants | Median (IQR) | 47 (21) | 47 (21) | 47 (21) | 0.274 a |
| | Mean (SD) | 45.8 (14.1) | 45.7 (14.1) | 46.0 (14.1) |  |
| GHQ-12 total scores (Mental health) | Median (IQR) | 9 (5) | 9 (6) | 10 (5) | <0.001 a |
| | Mean (SD) | 10.1 (4.7) | 9.7 (4.5) | 10.5 (4.9) |  |
| FI: Successful coping | Median (IQR) | 6 (0) | 6 (0) | 6 (0) | <0.001 a |
| | Mean (SD) | 6.2 (1.8) | 6.2 (1.7) | 6.3 (1.8) |  |
| FII: Self-esteem | Median (IQR) | 1 (4) | 1 (3) | 2 (4) | <0.001 a |
| | Mean (SD) | 2.1 (1.8) | 1.9 (2.2) | 2.2 (2.4) |  |
| FIII: Stress | Median (IQR) | 3 (2) | 2 (3) | 3 (3) | <0.001 a |
| | Mean (SD) | 2.5 (2.1) | 2.2 (2) | 2.7 (2.1) |  |
| Physical Activity Index (PAI) | Median (IQR) | 0 (22.5) | 0 (30) | 0 (15) | <0.001 a |
| | Mean (SD) | 11.8 (17.6) | 14.6 (19.4) | 9.2 (15.3) |  |
| Physical Activity Level (%) | | | | | |
| Inactive \((PAI = 0)\) | 2497 (14.2%) | 1157 (13.7%) | 1340 (14.7%) |  |
| Insufficient \((PAI = 0)\) | 8005 (45.6%) | 3364 (40%) | 4641 (50.7%) |  |
| Low \((PAI = 1–15)\) | 2417 (13.8%) | 1116 (13.3%) | 1301 (14.2%) |  |
| Medium \((PAI = 16–30)\) | 2436 (13.9%) | 1329 (15.8%) | 1107 (12.1%) | <0.001 b |
| High \((PAI = 31–45)\) | 1452 (8.3%) | 941 (11.2%) | 511 (5.6%) |  |
| Inactive \((PAI = +45)\) | 754 (4.3%) | 508 (6%) | 246 (2.7%) |  |

IQR: interquartile range; SD: standard deviation; GHQ-12: Goldberg’s General Health Questionnaire, scores between 0 and 36; FI Successful Coping: scores between 0 and 18. 0, the best coping and 18, the worst; FII Self-esteem: scores 0–9, 0 the best self-esteem and 9, the worst); FIII Stress: scores between 0 and 9. 0, no stress and 9, very stressed; PAI: Physical Activity Index, considering only intense and moderate physical activity, scores 0–67.5; Inactive: \( PAI = 0 \), reporting not going out for more than 10 min at a time; Insufficient: \( PAI = 0 \), reporting to walk more than 10 min; \( a \): \( p \)-value from Mann–Whitney U test; \( b \): \( p \)-value from Chi-square test.

Significant correlations were found between PAL and mental health in the total population (Table 2). Significant differences were found between mental health and all its dimensions (GHQ-12) in the “Inactive” and “Insufficient” PAL groups and between these two and the rest of the groups \((p < 0.001)\), finding better mental health at higher PAL. Again, in the total population, a 3 points difference was found between the “Inactive” and “Medium”, “High”, and “Very high” groups’ median scores, representing a reduction of 27.3%. A 3.53 point difference was also found in the GHQ-12 mean scores between the “Inactive” and “Very high” groups, which means a reduction of 31.4%. Thus, a higher PAL was associated with better mental health, according to the GHQ-12 results.
Table 2. Using the Goldberg General Health Questionnaire and the physical activity level comparison, mental health outcomes were measured.

| PAI          | GHQ-12 | PAI          | Medians Diff | Means Diff | \( p^* \) | \( p^{**} \) | Effect Size |
|--------------|--------|--------------|--------------|------------|----------|------------|-------------|
| **Inactive** |        |              |              |            |          |            |             |
| Median       | 11     | Insufficient | 1            | 1.64       | <0.001   | 0.119      |             |
| IQR          | 5      | Low          | 2            | 2.63       | <0.001   | 0.241      |             |
| Mean         | 12.04  | Medium       | 3            | 2.91       | <0.001   | 0.276      |             |
| SD           | 6.11   | High         | 3            | 3.20       | <0.001   | 0.293      |             |
|              |        | Very high    | 3            | 3.53       | <0.001   | 0.294      |             |
| **Insufficient** |      |              |              |            |          |            |             |
| Median       | 10     | Inactive     | −1           | −1.64      | <0.001   | 0.119      |             |
| IQR          | 5      | Low          | 1            | 0.99       | <0.001   | 0.088      |             |
| Mean         | 10.40  | Medium       | 2            | 1.27       | <0.001   | 0.123      |             |
| SD           | 4.73   | High         | 2            | 1.56       | <0.001   | 0.125      |             |
|              |        | Very high    | 2            | 1.89       | <0.001   | 0.125      |             |
| **Low**      |        |              |              |            |          |            |             |
| Median       | 9      | Inactive     | −2           | −2.63      | <0.001   | 0.241      |             |
| IQR          | 5      | Insufficient | −1           | −0.99      | <0.001   | 0.088      |             |
| Mean         | 9.41   | Medium       | 1            | 0.28       | <0.001   | 0.045      |             |
| SD           | 3.96   | High         | 1            | 0.57       | <0.001   | 0.071      |             |
|              |        | Very high    | 1            | 0.90       | <0.001   | 0.109      |             |
| **Medium**   |        |              |              |            |          |            |             |
| Median       | 8      | Inactive     | −3           | −3.20      | <0.001   | 0.276      |             |
| IQR          | 5      | Insufficient | −2           | −1.56      | <0.001   | 0.125      |             |
| Mean         | 8.84   | Low          | −1           | −0.57      | <0.001   | 0.071      |             |
| SD           | 3.57   | Medium       | 0            | −0.29      | 0.090    | 0.027      |             |
|              |        | Very high    | 0            | 0.33       | 0.015    | 0.051      |             |
| **High**     |        |              |              |            |          |            |             |
| Median       | 8      | Inactive     | −3           | −3.53      | <0.001   | 0.294      |             |
| IQR          | 4      | Insufficient | −2           | −1.89      | <0.001   | 0.125      |             |
| Mean         | 8.51   | Low          | −1           | −0.90      | <0.001   | 0.109      |             |
| SD           | 3.62   | Medium       | 0            | −0.62      | <0.001   | 0.069      |             |
|              |        | High         | 0            | −0.33      | 0.015    | 0.051      |             |

IQR: interquartile range; SD: standard deviation; GHQ-12: Goldberg’s General Health Questionnaire, scores between 0 and 36; Medians Diff: mental health medians differences for every physical activity level; Means Diff: mental health means differences for every physical activity level; \( p^* \): Kruskal–Wallis value: mental health measured by GHQ-12 as response and physical activity level as a factor; PAI: Physical Activity Index, considering only intense and moderate physical activity, scores 0–67.5; Inactive: PAI = 0, reporting not going out for more than 10 min at a time; Insufficient: PAI = 0, reporting to walk more than 10 min; Low: PAI between 1 and 15; Medium: PAI between 16 and 30; High: PAI between 31 and 45; Very high: PAI > 45; \( p^{**} \): Mann–Whitney U test: resulting from the mental health median comparison for every physical activity level.

In the men’s subgroup, differences were found between the “Inactive” and “Inadequate” PAL groups and between these and the other levels (Table 3). The median decreased by 11 points in the “Inactive” group and to 8 points in the “Medium”, “High”, and “Very high” groups, as in the total population. The groups’ mean scores on the GHQ-12 decreased as the level of PA increased, from a value of 12.04 in the “Inactive” group to 8.51 in the “Very high” group, with a difference of 3.53 points, which means a reduction of 29.3%.

In the women’s subgroup, significant differences were also found between the “Inactive” and “Low” PAL groups with the rest of the levels (Table 4). The median of the different groups decreased as the level of PA increased. The median decreased from 10 to 9 in the “Inactive” and “Low” groups, reaching 8 in the rest of the groups, representing a 20% decrease. Between the “Inactive” and “Poor” groups, the mean difference was 1.77 points on the GHQ-12, with the difference between the “Inactive” and “Very High” groups being 3.43 points less, representing a 27.6% reduction in score.
The Successful Coping factor (mental health factor 1) scored better with higher levels of PA in the total population. Significant differences were found between the “Inactive” and “Poor” groups and between these and the other groups (Table 5). The medians were the same for all groups. However, the groups’ median decreased as the PAL increased from 6.80 in the “Inactive” group to 5.76 in the “Very high” group.

The self-esteem factor (mental health factor 2) scored better at a higher PAL, with significant differences found between the “Inactive” and “Insufficient” groups and between these and the rest of the groups (Table 6). The median was 2 in the “Inactive” and “Insufficient” groups and 1 in the other groups. The group mean decreased as the PAL increased, with a reduction of 1.69 points between the “Inactive” and the “Very high” groups.

Table 3. Mental health outcomes using the Goldberg General Health Questionnaire and the physical activity level comparison in men.

| PAI       | GHQ-12 | PAI               | Medians Diff | Means Diff | p *        | p **       | Effect Size |
|-----------|--------|-------------------|--------------|------------|------------|------------|-------------|
| Inactive  | Median | 10                | Insufficient | 1          | 1.56       | <0.001     | 0.112       |
| IQR       | 5      | Low               | 2            | 2.51       | <0.001     | 0.226      |
| Mean      | 11.57  | Medium            | 2            | 2.56       | <0.001     | 0.241      |
| SD        | 6.01   | High              | 2            | 2.92       | <0.001     | 0.273      |
| SD        | 3.31   | Very high         | 2            | 3.31       | <0.001     | 0.302      |
| Insufficient | Median | 9                | Inactive     | −1         | −1.56      | <0.001     | 0.112       |
| IQR       | 5      | Low               | 1            | 0.95       | <0.001     | 0.086      |
| Mean      | 10.01  | Medium            | 1            | 1          | <0.001     | 0.108      |
| SD        | 4.7    | High              | 1            | 1.36       | <0.001     | 0.126      |
| SD        | 1.76   | Very high         | 1            | 1.76       | <0.001     | 0.144      |
| Low       | Median | 8                | Inactive     | −2         | −2.51      | <0.001     | 0.226       |
| IQR       | 5      | Insufficient      | −1           | −0.95      | <0.001     | 0.086      |
| Mean      | 9.06   | Medium            | 0            | 0.05       | <0.001     | 0.255      |
| SD        | 3.68   | High              | 0            | 0.41       | 0.015      | 0.055      |
| SD        | 0.81   | Very high         | 0            | 0.81       | <0.001     | 0.113      |
| Medium    | Median | 8                | Inactive     | −2         | −2.56      | <0.001     | 0.241       |
| IQR       | 5      | Insufficient      | −1           | −1         | <0.001     | 0.108      |
| Mean      | 9.01   | Low               | 0            | −0.05      | <0.001     | 0.255      |
| SD        | 3.96   | High              | 0            | 0.36       | 0.164      | 0.029      |
| SD        | 0.76   | Very high         | 0            | 0.76       | <0.001     | 0.085      |
| High      | Median | 8                | Inactive     | −2         | −2.92      | <0.001     | 0.273       |
| IQR       | 5      | Insufficient      | −1           | −1.36      | <0.001     | 0.126      |
| Mean      | 8.65   | Low               | 0            | −0.41      | <0.001     | 0.015      |
| SD        | 3.38   | Medium            | 0            | −0.36      | 0.090      | 0.029      |
| SD        | 0.40   | Very high         | 0            | 0.40       | 0.014      | 0.064      |
| Very high | Median | 8                | Inactive     | −2         | −3.31      | <0.001     | 0.302       |
| IQR       | 4      | Insufficient      | −1           | −1.76      | <0.001     | 0.144      |
| Mean      | 8.25   | Low               | 0            | −0.81      | <0.001     | 0.081      |
| SD        | 3.35   | Medium            | 0            | −0.76      | <0.001     | 0.085      |
| SD        | 0.40   | High              | 0            | −0.40      | 0.014      | 0.064      |

IQR: interquartile range; SD: standard deviation; GHQ-12: Goldberg’s General Health Questionnaire, scores between 0 and 36; Medians Diff: mental health medians differences for every physical activity level; Means diff: between mental health means differences for every physical activity level; p * Kruskal–Wallis value: mental health measured by GHQ-12 as response and physical activity level as a factor; PAI: Physical Activity Index, considering only intense and moderate physical activity, scores 0–67.5; Inactive: PAI = 0, reporting not going out for more than 10 min at a time; Insufficient: PAI = 0, reporting to walk more than 10 min; Low: PAI between 1 and 15; Medium: PAI between 16 and 30; High: PAI between 31 and 45; Very high: PAI > 45; ** p Mann–Whitney U test: resulting from the mental health median comparison for every physical activity level.
Table 4. Mental health outcomes using the Goldberg General Health Questionnaire and the physical activity level comparison in women.

| PAI               | GHQ-12 | PAI | Medians Diff. | Means Diff. | "p" * | "p" ** | Effect Size |
|------------------|--------|-----|---------------|-------------|-------|--------|-------------|
| Inactive         | Median | 12  | Insufficient 1| 1.77        | <0.001| 0.130  |
|                  | IQR    | 6   | Low           | 2.74        | <0.001| 0.255  |
|                  | Mean   | 12.45| Medium        | 3.17        | <0.001| 0.300  |
|                  | SD     | 6.07 | High          | 3.26        | <0.001| 0.275  |
|                  |        |      | Very high     | 3.43        | <0.001| 0.240  |
| Insufficient     | Median | 10  | Inactive−1   | −1.77       | <0.001| 0.130  |
|                  | IQR    | 5   | Low           | 0.97        | <0.001| 0.085  |
|                  | Mean   | 10.68| Medium        | 1.40        | <0.001| 0.122  |
|                  | SD     | 4.88 | High          | 1.49        | <0.001| 0.098  |
|                  |        |      | Very high     | 1.66        | <0.001| 0.083  |
| Low              | Median | 9   | Inactive−2   | −2.74       | <0.001| 0.255  |
|                  | IQR    | 5   | Insufficient−1| −0.97      | <0.001| 0.085  |
|                  | Mean   | 9.71 | Medium        | 0.43        | <0.001| 0.056  |
|                  | SD     | 4.16 | High          | 0.52        | <0.001| 0.059  |
|                  |        |      | Very high     | 0.71        | <0.001| 0.068  |
| Medium           | Median | 9   | Inactive−2   | −3.17       | <0.001| 0.300  |
|                  | IQR    | 5   | Insufficient−1| −1.40      | <0.001| 0.122  |
|                  | Mean   | 9.28 | Low           | −0.43       | <0.001| 0.056  |
|                  | SD     | 3.89 | High          | 0.09        | 0.670 | 0.010  |
|                  |        |      | Very high     | 0.26        | 0.238 | 0.030  |
| High             | Median | 8   | Inactive−2   | −3.26       | <0.001| 0.275  |
|                  | IQR    | 5   | Insufficient−1| −1.49      | <0.001| 0.098  |
|                  | Mean   | 9.19 | Low           | −0.52       | <0.001| 0.059  |
|                  | SD     | 3.89 | Medium        | −0.09       | 0.670 | 0.010  |
|                  |        |      | Very high     | 0.17        | 0.458 | 0.024  |
| Very high        | Median | 8   | Inactive−2   | −3.43       | <0.001| 0.240  |
|                  | IQR    | 4   | Insufficient−1| −1.66      | <0.001| 0.083  |
|                  | Mean   | 9.02 | Low           | −0.71       | <0.001| 0.047  |
|                  | SD     | 4.06 | Medium        | −0.26       | 0.238 | 0.030  |
|                  |        |      | High          | −0.17       | 0.458 | 0.024  |

IQR: interquartile range; SD: standard deviation; GHQ-12: Goldberg’s General Health Questionnaire, scores between 0 and 36; Medians Diff: mental health medians differences for every physical activity level; Means diff: between mental health means differences for every physical activity level; "p" *: Kruskal–Wallis value: mental health measured by GHQ-12 as response and physical activity level as a factor; PAI: Physical Activity Index, considering only intense and moderate physical activity, scores 0–67.5; Inactive: PAI = 0, reporting not going out for more than 10 min at a time; Insufficient: PAI = 0, reporting to walk more than 10 min; Low: PAI between 1 and 15; Medium: PAI between 16 and 30; High: PAI between 31 and 45; Very high: PAI > 45; ** "p" Mann–Whitney U test: resulting from the mental health median comparison for every physical activity level.

Table 5. Mental health factor I, “Successful coping”, and the physical activity level comparison.

| PAI               | FI | PAI | Medians Diff. | Means Diff. | "p" * | "p" ** | Effect Size |
|------------------|----|-----|---------------|-------------|-------|--------|-------------|
| Inactive         | Median | 6  | Insufficient 0| 0.50        | <0.001| 0.066  |
|                  | IQR    | 1  | Low           | 0.81        | <0.001| 0.168  |
|                  | Mean   | 6.80| Medium        | 0.85        | <0.001| 0.175  |
|                  | SD     | 2.46 | High          | 0.94        | <0.001| 0.197  |
|                  |        |      | Very high     | 1.04        | <0.001| 0.181  |
| Insufficient     | Median | 6  | Inactive 0   | −0.50       | <0.001| 0.066  |
|                  | IQR    | 0  | Low           | 0.31        | <0.001| 0.084  |
|                  | Mean   | 6.30| Medium        | 0.35        | <0.001| 0.091  |
|                  | SD     | 1.71 | High          | 0.44        | <0.001| 0.103  |
|                  |        |      | Very high     | 0.54        | <0.001| 0.087  |
### Table 5. Cont.

| PAI | FII | PAI | Medians Diff. | Means Diff. | \(p^*\) | \(p^{**}\) | Effect Size |
|-----|-----|-----|---------------|-------------|--------|---------|------------|
|     |     |     | Low           |             |        |         |            |
|     |     |     | Median 6 Inactive 0 | −0.81 | <0.001 | 0.168  |
|     |     |     | IQR 0 Insufficient 0 | −0.31 | <0.001 | 0.084  |
|     |     |     | Mean 5.99 Medium 0 | 0.04 | <0.001 | 0.569  |
|     |     |     | SD 1.40 High 0 | 0.13 | 0.007  | 0.043  |
|     |     |     | Very high 0 | 0.23 | 0.005  | 0.050  |
|     |     |     | Medium 6 Inactive 0 | −0.85 | <0.001 | 0.175  |
|     |     |     | IQR 0 Insufficient 0 | −0.35 | <0.001 | 0.091  |
|     |     |     | Mean 5.95 Low 0 | −0.04 | <0.001 | 0.569  |
|     |     |     | SD 1.41 Medium 0 | 0.09 | 0.029  | 0.035  |
|     |     |     | Very high 0 | 0.19 | 0.015  | 0.043  |
|     |     |     | High 6 Inactive 0 | −0.94 | <0.001 | 0.197  |
|     |     |     | IQR 0 Insufficient 0 | −0.44 | <0.001 | 0.103  |
|     |     |     | Mean 5.86 Low 0 | −0.13 | <0.001 | 0.007  |
|     |     |     | SD 1.34 Medium 0 | −0.09 | 0.029  | 0.035  |
|     |     |     | Very high 0 | 0.10 | 0.517  | 0.014  |
|     |     |     | Very high 6 Inactive 0 | −1.04 | <0.001 | 0.181  |
|     |     |     | IQR 0 Insufficient 0 | −0.54 | <0.001 | 0.087  |
|     |     |     | Mean 5.76 Low 0 | −0.23 | <0.001 | 0.005  |
|     |     |     | SD 1.42 Medium 0 | −0.19 | 0.015  | 0.043  |
|     |     |     | High 1 | 0.10 | 0.517  | 0.014  |

IQR: interquartile range; SD: standard deviation; FI, from the Goldberg’s General Health Questionnaire, scores between 0 and 18, 0 being the best coping, and 18, the worst; Medians Diff: mental health medians differences for every physical activity level; Means diff: between mental health means differences for every physical activity level; \(p^*\) Kruskal–Wallis value: mental health measured by GHQ-12 as response and physical activity level as a factor; PAI: Physical Activity Index, considering only intense and moderate physical activity, scores 0–67.5; Inactive: PAI = 0, reporting not going out for more than 10 min at a time; Insufficient: PAI = 0, reporting to walk more than 10 min; Low: PAI between 1 and 15; Medium: PAI between 16 and 30; High: PAI between 31 and 45; Very high: PAI > 45; \(p^{**}\) Mann–Whitney U test: resulting from the mental health median comparison for every physical activity level.

### Table 6. Mental health factor II, “Self-esteem” and the physical activity level comparison.

| PAI | FII | PAI | Medians Diff. | Means Diff. | \(p^*\) | \(p^{**}\) | Effect Size |
|-----|-----|-----|---------------|-------------|--------|---------|------------|
|     |     |     | Inactive      |             |        |         |            |
|     |     |     | Median 2 Insufficient 0 | −0.83 | <0.001 | 0.129  |
|     |     |     | IQR 3 Low 1 | 1.28 | <0.001 | 0.245  |
|     |     |     | Mean 3.01 Medium 1 | 1.40 | <0.001 | 0.273  |
|     |     |     | SD 2.83 High 1 | 1.58 | <0.001 | 0.296  |
|     |     |     | Very high 1 | 1.69 | <0.001 | 0.282  |
|     |     |     | Insufficient 2 Inactive −1 | −0.83 | <0.001 | 0.129  |
|     |     |     | IQR 4 Low 1 | 0.45 | <0.001 | 0.081  |
|     |     |     | Mean 2.18 Medium 1 | 0.57 | <0.001 | 0.108  |
|     |     |     | SD 2.32 High 1 | 0.75 | <0.001 | 0.116  |
|     |     |     | Very high 1 | 0.86 | <0.001 | 0.108  |
|     |     |     | Low 1 Inactive −1 | −1.28 | <0.001 | 0.245  |
|     |     |     | IQR 3 Insufficient −1 | −0.45 | <0.001 | 0.081  |
|     |     |     | Mean 1.73 Medium 0 | 0.12 | 0.018  | 0.034  |
|     |     |     | SD 2.00 High 0 | 0.30 | <0.001 | 0.065  |
|     |     |     | Very high 0 | 0.41 | <0.001 | 0.086  |
|     |     |     | Medium 1 Inactive −1 | −1.40 | <0.001 | 0.273  |
|     |     |     | IQR 3 Insufficient −1 | −0.57 | <0.001 | 0.108  |
|     |     |     | Mean 1.61 Low 0 | −0.12 | <0.001 | 0.034  |
|     |     |     | SD 2.00 High 0 | 0.18 | 0.051  | 0.031  |
|     |     |     | Very high 0 | 0.29 | 0.002  | 0.055  |
### Table 6. Cont.

| PAI      | FII      | PAI      | Medians Diff. | Means Diff. | p *    | p **   | Effect Size |
|----------|----------|----------|---------------|-------------|--------|--------|-------------|
| IQR      | 2        | Insufficient | −1            | −1.58       | <0.001 | 0.296  |
| Mean     | 1.43     | Low      | 0             | −0.30       | <0.001 | 0.065  |
| SD       | 1.78     | Medium   | 0             | −0.18       | 0.051  | 0.031  |
|          |          | Very high| 0             | 0.11        | 0.125  | 0.033  |
| Very high | Median   | 1        | Inactive      | −1          | −1.69  | <0.001 | 0.282  |
|          | IQR      | 2        | Insufficient | −1          | −0.86  | <0.001 | 0.108  |
| Mean     | 1.32     | Low      | 0             | −0.41       | <0.001 | 0.086  |
| SD       | 1.78     | Medium   | 0             | −0.29       | 0.002  | 0.055  |
|          |          | High     | 0             | −0.11       | 0.125  | 0.033  |

IQR: interquartile range; SD: standard deviation; FII, Self-esteem, from the Goldberg’s General Health Questionnaire, scores between 0 and 9, 0 being for the best self-esteem and 9, the worst; Medians Diff: mental health medians differences for every physical activity level; Means Diff: between mental health means differences for every physical activity level; p * Kruskal–Wallis value: mental health measured by GHQ-12 as response and physical activity level as a factor; PAI: Physical Activity Index, considering only intense and moderate physical activity, scores 0–67.5; Inactive: PAI = 0, reporting not going out for more than 10 min at a time; Insufficient: PAI = 0, reporting not going out for more than 10 min at a time; Insufficient: PAI > 0, reporting to walk more than 10 min; Low: PAI between 1 and 15; Medium: PAI between 16 and 30; High: PAI between 31 and 45; Very high: PAI > 45; ** p Mann–Whitney U test: resulting from the mental health median comparison for every physical activity level.

The Stress factor (in mental health factor 3) scored less as the PAL increased. No significant differences were found between the “Medium” and “High” levels, but significant differences were found between the other groups (Table 7).

### Table 7. Mental health factor III, “Stress” and the physical activity level comparison.

| PAI      | FII      | PAI      | Medians Diff. | Means Diff. | p *    | p **   | Effect Size |
|----------|----------|----------|---------------|-------------|--------|--------|-------------|
| IQR      | 3        | Insufficient | 0            | 0.51        | <0.001 | 0.099  |
| Mean     | 3.13     | Low      | 1             | 0.87        | <0.001 | 0.203  |
| SD       | 2.21     | Medium   | 1             | 1.04        | <0.001 | 0.247  |
|          |          | High     | 1             | 1.11        | <0.001 | 0.254  |
|          |          | Very high| 1             | 1.31        | <0.001 | 0.269  |
| Insufficient | Median  | 3        | Inactive      | 0           | −0.51  | <0.001 | 0.099  |
|          | IQR      | 3        | Low           | 1           | 0.36   | <0.001 | 0.071  |
| Mean     | 2.62     | Medium   | 1             | 0.53        | <0.001 | 0.111  |
| SD       | 2.08     | High     | 1             | 0.60        | <0.001 | 0.106  |
|          |          | Very high| 1             | 0.80        | <0.001 | 0.115  |
| Low      | Median   | 2        | Inactive      | −1          | −0.87  | <0.001 | 0.203  |
|          | IQR      | 2        | Insufficient | −1          | −0.36  | <0.001 | 0.071  |
| Mean     | 2.26     | Medium   | 0             | 0.17        | <0.001 | 0.051  |
| SD       | 1.91     | High     | 0             | 0.24        | <0.001 | 0.065  |
|          |          | Very high| 0             | 0.44        | <0.001 | 0.110  |
| Medium   | Median   | 2        | Inactive      | −1          | −1.04  | <0.001 | 0.247  |
|          | IQR      | 3        | Insufficient | −1          | −0.53  | <0.001 | 0.111  |
| Mean     | 2.09     | Low      | 0             | −0.17       | <0.001 | 0.051  |
| SD       | 1.91     | High     | 0             | 0.07        | 0.343  | 0.015  |
|          |          | Very high| 0             | 0.27        | 0.001  | 0.066  |
| High     | Median   | 2        | Inactive      | −1          | −1.11  | <0.001 | 0.254  |
|          | IQR      | 3        | Insufficient | −1          | −0.60  | <0.001 | 0.106  |
| Mean     | 2.02     | Low      | 0             | −0.24       | <0.001 | 0.065  |
| SD       | 1.85     | Medium   | 0             | −0.07       | 0.343  | 0.015  |
|          |          | Very high| 0             | 0.21        | 0.006  | 0.058  |
Table 7. Cont.

| PAI       | FIII | PAI | Medians Diff. | Means Diff. | p * | p ** | Effect Size |
|-----------|------|-----|---------------|-------------|-----|------|-------------|
| Median    | 2    | Inactive | −1           | −0.93       | <0.001 | 0.269 |
| IQR       | 3    | Insufficient | −1          | −0.93       | <0.001 | 0.115 |
| Mean      | 1.82 | Low  | 0             | −0.45       | <0.001 | 0.110 |
| SD        | 1.83 | Medium | 0           | −0.28       | <0.001 | 0.066 |
|           |      | High  | 0            | −0.03       | 0.006  | 0.058 |

IQR: interquartile range; SD: standard deviation; FIII, Stress, from the Goldberg’s General Health Questionnaire, scores between 0 and 9, 0 being for the best self-esteem and 9, the worst; Medians Diff: mental health medians differences for every physical activity level; Means diff: between mental health means differences for every physical activity level; p *: Kruskal–Wallis value: mental health measured by GHQ-12 as response and physical activity level as a factor; PAI: Physical Activity Index, considering only intense and moderate physical activity, scores 0–67.5; Inactive: PAI = 0, reporting not going out for more than 10 min at a time; Insufficient: PAI = 0, reporting to walk more than 10 min; Low: PAI between 1 and 15; Medium: PAI between 16 and 30; High: PAI between 31 and 45; Very high: PAI > 45; ** p Mann–Whitney U test: resulting from the mental health median comparison for every physical activity level.

As shown in Table 8, weak correlations between mental health and PAL were found in the total population as well as in the men and women subgroups. These correlations were inverse, with the GHQ-12 score decreasing as the PAL increased.

Table 8. Associations between Goldberg’s General Health Questionnaire and their subscales and the physical activity level.

| Physical Activity Level | Variables          | Total   |       |       | Men    |       | Women  |       |
|-------------------------|--------------------|---------|-------|-------|--------|-------|--------|-------|
|                         |                    | rho     | p     | rho   | p      | rho   | p      |       |
| Mental health (GHQ-12)  | −0.200             | <0.001  | −0.187| <0.001| −0.194 | <0.001|        |       |
| FI: Successful Coping   | −0.141             | <0.001  | −0.139| <0.001| −0.136 | <0.001|        |       |
| FII: Self-esteem        | −0.192             | <0.001  | −0.179| <0.001| −0.189 | <0.001|        |       |
| FIII: Stress            | −0.175             | <0.001  | −0.159| <0.001| −0.166 | <0.001|        |       |

Rho: Spearman’s correlation coefficient with Bonferroni correction.

4. Discussion

4.1. Main Findings and Theoretical Applications

The main findings of this research are the associations between mental health and PAL in the Spanish population during the last pre-pandemic period analysed by the ENSE17 [41,42]. Thus, PAL seems to be linked with better mental health, coping, self-esteem, and stress levels. In addition, moderate and intense PAL showed stronger correlations with higher GHQ-12 scores. Although it is not the best option, in case of not being able to perform intense or moderate PA, walking seems to be a better alternative to physical inactivity for mental health care.

According to the data extracted from the ENSE 2017 and subsequent analysis, the Spanish population’s mental health appeared to be at a relatively good level. A median score of 9 was found, with significant differences between men (9) and women (10). Values in the Spanish population were below 12, a threshold that may imply emotional disorders [48,49]. However, significant differences were found in the GHQ-12 median values according to the PAL. Inactive people showed 11 points median on the GHQ-12. The median for people who at least walked was 10, 9 for people with a “Low” PAL, and 8 for the other levels, with medians decreasing by as much as 3.53 points when comparing inactive people and those with a “Very high” PAL. In this case, significant differences were found between the GHQ-12 medians of the groups with a different PAL. Our results recommend at least a “Medium” PAL to protect mental health. Similar findings were found in other studies, in which PA was associated with less psychological distress and improved mental health [50], and sedentary behaviours were associated with poorer mental health [51]. In the same
sense, people who performed low PA, such as walking, also improved successful coping, stress, or self-esteem, although lower than those who performed moderate and intense PA. The groups with higher PAL presented better values in the three mental health dimensions and significant differences between sedentary people and those who only walked. Therefore, moderate and intense PA is recommended for mental health care according to the GHQ-12 results. Other studies have indicated that higher PAL protects people from depression [36], anxiety and other disorders [22] compared with those with lower PAL.

These associations were also analysed during the COVID-19 pandemic, showing that people who exercised daily had fewer somatisation symptoms, lower stress, and better sleep levels than those who did not [52,53]. In addition, appropriate PA helped people to release psychological tension during confinement [54]. In this regard, symptoms related to anxiety, depression and stress were found in people with a lack of PA and a sedentary lifestyle [55–58]. Furthermore, the pandemic has negatively affected PAL, particularly in outdoor activities, which have been shown to have protective effects on well-being [53].

In the analysis of the dimensions, Self-esteem was the dimension that benefited the most from higher PAL, both in the total population and in the subgroups divided by sex. The “Inactive” PAL group had a 3.01 mean, compared to the 1.32 in the “Very high” group, a 56.1% reduction in the FII score. Increased self-confidence could be one of the main ways PA helped with mental health care in the Spanish population. However, the Stress dimension mean decreased from 3.13 in the “Inactive” to 1.82, representing a 41.8% decrease. The Successful Coping dimension was the least benefited by higher PAL: the mean decreased from 6.80 in the “Inactive” to 5.76 in the “Very high” group, a 15.3% decrease. Thus, better mental health due to increased PA could be due to increased self-esteem and reduced stress, with minor improvement in successful coping. In this line, several studies suggest that PA improves self-efficacy and coping with new challenges that build confidence and self-esteem [59,60]. Walking ≥105 min/week compared to <105 min/week was significantly and inversely associated with stress and anxiety [61]. In addition, self-reported PA was associated with lower subjective stress levels; even low/moderate daily PA was associated with significantly lower stress levels [62]. In this sense, PA could have a stress-reducing effect [63].

During the COVID-19 pandemic, stress levels and sleep quality improved in people who exercised regularly, showing decreased risk of depressive and anxiety symptoms in participants who reported ≥30 min of moderate–vigorous PA/day [52]. In contrast, participants who spent ≥10 h per day in sedentary activities were more likely to develop depressive symptoms [23]. Therefore, PA and emotional well-being associations keep before and during the COVID-19 pandemic. Concerning the sex subgroups, inactive women obtained a GHQ-12 median score of 12, the threshold for emotional distress, while this value decreased to 8 in women who performed higher PA. Also, in women, the PAL and self-esteem were related: higher self-esteem was reported at moderate and high PAL [64]. Inactive men had a self-esteem score of 10, which decreased to 8 in those who performed greater PA. According to our data, PA duration and intensity had a more significant influence on mental health in women than in men. Although there were differences between inactive women and those who performed light-intensity PA, those who performed <1 h, 1–2 h, or ≥3 h/week were more likely to develop anxiety. No inverse associations were observed between men and women [65].

4.2. Practical Applications and Future Lines

This study provides a baseline to analyse potential changes in the PA–mental health associations in the Spanish population once the future ENSE is published. As these surveys are conducted every 5 years, the next is expected to be published in 2023, with data from 2022, favouring future research on the impact of the pandemic on these associations.

Although the study design does not allow for cause–effect relations, longitudinal studies will provide the necessary information for the development of PA interventions and guidelines as a tool for mental health disease prevention and treatment.
4.3. Strengths and Limitations

The use of the ENSE 2017 is an excellent example of a nationally representative survey, and the sample size is the study’s main strength.

However, some limitations must be mentioned: (1) as this is a cross-sectional study, it is not possible to establish cause–effect associations; (2) the GHQ-12 questionnaire is a screening instrument that may lead to an overestimation of mental health problems; moreover, some of the limitations of self-report questionnaires include social desirability and response bias, or item clarity, which may affect the validity and reliability of the tool [56]; (3) a 24 h compositional analysis, including objective PA parameters, was not included, so the PAI was determined using the parameters indicated in the ENSE 2017; (4) the survey did not collect PA data from people over 69 years of age, which could have affected the analysis; (5) changes in the future ENSE methodology could prevent comparisons with data obtained in this study.

5. Conclusions

This research found that PAL was positively related to mental health in the Spanish population before the COVID-19 pandemic. In addition, moderate and intense PAL showed stronger correlations with higher GHQ-12 scores.

These results need to be confirmed with longitudinal studies to recommend PA programs as a valid alternative to promote mental health.

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References

1. Vos, T.; Allen, C.; Arora, M.; Barber, R.M.; Bhutta, Z.A.; Brown, A.; Carter, A.; Casey, D.C.; Charlson, F.J.; Chen, A.Z. Global, Regional, and National Incidence, Prevalence, and Years Lived with Disability for 310 Diseases and Injuries, 1990–2015: A Systematic Analysis for the Global Burden of Disease Study 2015. Lancet 2016, 388, 1545–1602. [CrossRef]

2. Kessler, R.C.; Aguilar-Gaxiola, S.; Alonso, J.; Chatterji, S.; Lee, S.; Ormel, J.; Üstün, T.B.; Wang, P.S. The Global Burden of Mental Disorders: An Update from the WHO World Mental Health (WMH) Surveys. Epidemiol. Psychiatr. Sci. 2009, 18, 23–33. [CrossRef]

3. Wilmot, E.G.; Edwardson, C.L.; Achana, F.A.; Davies, M.J.; Gorely, T.; Gray, L.J.; Khunti, K.; Yates, T.; Biddle, S.J. Sedentary Time in Adults and the Association with Diabetes, Cardiovascular Disease and Death: Systematic Review and Meta-Analysis. Diabetologia 2012, 55, 2895–2905. [CrossRef] [PubMed]

4. Ekman, M.; Granström, O.; Omérov, S.; Jacob, J.; Landén, M. The Societal Cost of Depression: Evidence from 10,000 Swedish Patients in Psychiatric Care. J. Affect. Disord. 2013, 150, 790–797. [CrossRef] [PubMed]

5. Horton, R.; Prince, M.; Patel, V.; Saxena, S.; Maj, M.; Maselko, J. Global Mental Health 1: No Health without Mental Health. Commentary. Lancet Br. Ed. 2007, 370, 859–877.
6. Whiteford, H.A.; Degenhardt, L.; Rehm, J.; Baxter, A.J.; Ferrari, A.J.; Erskine, H.E.; Charlson, F.J.; Norman, R.E.; Flaxman, A.D.; Johns, N. Global Burden of Disease Attributable to Mental and Substance Use Disorders: Findings from the Global Burden of Disease Study 2010. *Lancet* 2013, 382, 1575–1586. [CrossRef]

7. Vancampfort, D.; Correll, C.U.; Galling, B.; Probst, M.; De Hert, M.; Ward, P.B.; Rosenbaum, S.; Gaughran, F.; Lally, J.; Stubbs, B. Diabetes Mellitus in People with Schizophrenia, Bipolar Disorder and Major Depressive Disorder: A Systematic Review and Large Scale Meta-analysis. *World Psychiatry* 2016, 15, 166–174. [CrossRef]

8. Walker, E.R.; McGee, R.E.; Druss, B.G. Mortality in Mental Disorders and Global Disease Burden Implications: A Systematic Review and Meta-analysis. *JAMA Psychiatry* 2017, 72, 334–341. [CrossRef]

9. Gustavsson, A.; Svensson, M.; Jacobi, F.; Allgulander, C.; Alonso, J.; Beghi, E.; Dodel, R.; Ekman, M.; Faravelli, C.; Fratiglioni, L. Cost of Disorders of the Brain in Europe 2010. *Eur. Neuropsychopharmacol.* 2011, 21, 718–779. [CrossRef]

10. Kessler, R.C.; Petukhova, M.; Sampson, N.A.; Zaslavsky, A.M.; Wittchen, H.U. Twelve-month and Lifetime Prevalence and Lifetime Morbid Risk of Anxiety and Mood Disorders in the United States. *Int. J. Methods Psychiatr. Res.* 2012, 21, 169–184. [CrossRef]

11. Chisholm, D.; Sweeney, K.; Sheehan, P.; Rasmussen, B.; Smit, F.; Cuijpers, P.; Saxena, S. Scaling-up Treatment of Depression and Anxiety: A Global Return on Investment Analysis. *Lancet Psychiatry* 2016, 3, 415–424. [CrossRef]

12. Bloom, D.E.; Cañiero, E.; Jane-Llopis, E.; Abrahams-Gessel, S.; Bloom, L.R.; Fathima, S.; Feigl, A.B.; Gazzano, T.; Hamandi, A.; Mowafi, M. The Global Economic Burden of Noncommunicable Diseases; Program on the Global Demography of Aging. 2012. Available online: https://econpapers.repec.org/paper/gdmwpaper/8712.htm (accessed on 27 July 2022).

13. Genova-Maleras, R.; Alvarez-Martín, E.; Morant-Ginestar, C.; de Larrea-Baz, N.F.; Catalá-López, F. Measuring the Burden of Disease and Injury in Spain Using Disability-Adjusted Life Years: An Updated and Policy-Oriented Overview. *Public Health* 2012, 126, 1024–1031. [CrossRef] [PubMed]

14. Batty, G.D.; Russ, T.C.; Stamatakis, E.; Kivimäki, M. Psychological Distress in Relation to Site Specific Cancer Mortality: Pooling Available unpublished Data from 16 Prospective Cohort Studies. *BMJ* 2017, 356, i108. [CrossRef] [PubMed]

15. Henares Montiel, J.; Ruiz-Pérez, I.; Sordo, L. Mental health in Spain and differences by sex, and by autonomous communities. *Gac. Sanit.* 2020, 34, 114–119. [CrossRef] [PubMed]

16. Rocha, K.B.; Perez, K.; Rodríguez-Sanz, M.; Borrell, C.; Obiols, J.E. Psychometric Properties and Normative Values of General Health Questionnaire (GHQ-12) in Spanish Population. *Int. J. Clin. Health Psychol.* 2011, 11, 125–139.

17. Graetz, B. Multidimensional Properties of the General Health Questionnaire. *Soc. Psychiatry Psychiatr. Epidemiol.* 1991, 26, 132–138. [CrossRef]

18. Campbell, A.; Knowles, S. A Confirmatory Factor Analysis of the GHQ12 Using a Large Australian Sample. *Eur. J. Psychol. Assess.* 2007, 23, 2. [CrossRef]

19. del Pilar Sánchez-López, M.; Dresch, V. The 12-Item General Health Questionnaire (GHQ-12): Reliability, External Validity and Factor Structure in the Spanish Population. *Psicothema* 2008, 20, 839–843.

20. Cabrera-León, A.; Ferri-Activity, R.; Navarro, S.; Saez, M.; Daponte Codina, A. Comparabilidad de las Ediciones 2006/07 y 2011/12 de La Encuesta Nacional de Salud de España. *Rev. Esp. Salud Pública* 2017, 91, 17.

21. Harris, M.A. The Relationship between Physical Inactivity and Mental Wellbeing: Findings from a Gamification-Based Community-Wide Physical Activity Intervention. *Health Psychol. Open* 2018, 5, 2053102917753853. [CrossRef]

22. McDowell, C.P.; Dishman, R.K.; Gordon, B.R.; Herring, M.P. Physical Activity and Incident Depression: A Meta-Analyses of Prospective Cohort Studies. *Am. J. Prev. Med.* 2019, 57, 545–556. [CrossRef] [PubMed]

23. Schuch, F.B.; Bulzing, R.A.; Meyer, J.; Vancampfort, D.; Firth, J.; Stubbs, B.; Grabovac, I.; Willeit, P.; Tavares, V.D.O.; Calegaro, V.C.; 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, 113339. [CrossRef] [PubMed]

24. Schuch, F.B.; Vancampfort, D.; Firth, J.; Rosenbaum, S.; Ward, P.B.; Silva, E.S.; Hallgren, M.; De Leon, A.P.; Dunn, A.L.; Deslandes, A.C.; et al. Physical Activity and Incident Depression: A Meta-Analyses of Prospective Cohort Studies. *Am. J. Psychiatry* 2018, 175, 631–648. [CrossRef] [PubMed]

25. Wolf, S.; Seiffer, B.; Zeibig, J.M.; Welkerling, J.; Brokmeier, L.; Atrott, B.; Ehring, T.; Schuch, F.B. Is Physical Activity Associated with Less Depression and Anxiety During the COVID-19 Pandemic? A Rapid Systematic Review. *Sports Med.* 2021, 51, 1771–1783. [CrossRef]

26. Alam, N.; Rufo, N. Fitness as a Component of Mental Health Intervention. *Health Soc. Work* 2019, 44, 129–132. [CrossRef]

27. Duclos, M.; Gounarce, C.; Bonnemaison, D. Acute and Chronic Effects of Exercise on Tissue Sensitivity to Glucocorticoids. *J. Appl. Physiol.* 2003, 94, 869–875. [CrossRef]

28. Clark, A.; Mach, N. Exercise-Induced Stress Behavior, Gut-Microbiota-Brain Axis and Diet: A Systematic Review for Athletes. *J. Int. Soc. Foods Nutr.* 2016, 13, 43. [CrossRef]

29. Sun, L.; Sun, Q.; Qi, J. Adult Hippocampal Neurogenesis: An Important Target Associated with Antidepressant Effects of Exercise. *Rev. Neurosci.* 2017, 28, 693–703. [CrossRef]

30. Geirsdóttir, O.G.; Arnarson, B.; Briem, K.; Ramel, A.; Tomassson, K.; Jonsson, P.V.; Thordsdottir, I. Physical Function Predicts Improvement in Quality of Life in Elderly Icelanders after 12 Weeks of Resistance Exercise. *J. Nutr. Health Aging* 2012, 16, 62–66. [CrossRef]
31. Ruiz-Montero, P.J.; Ramiro, M.T.; Sánchez, T.R.; Marmol, E.G. Efectos de Un Programa de Ejercicio Físico Pilates-Aerobic Sobre El Nivel de Capacidad Funcional y La Calidad de Vida Relacionada Con La Salud Física y Mental En Mujeres Mayores. *Psychol. Soc. Educ.* 2020, 12, 91–105. [CrossRef]

32. Karsssemeijer, E.G.A.E.; Aaronson, J.A.J.; Bossers, W.J.W.; Smits, T.T.; Kessels, R.P.C.R. Positive Effects of Combined Cognitive and Physical Exercise Training on Cognitive Function in Older Adults with Mild Cognitive Impairment or Dementia: A Meta-Analysis. *Ageing Res. Rev.* 2017, 40, 75–83. [CrossRef]

33. Eyre, H.A.; Papps, E.; Baune, B.T. Treating Depression and Depression-like Behavior with Physical Activity: An Immune Perspective. *Front. Psychiatry* 2013, 4, 3. [CrossRef] [PubMed]

34. Cooney, G.M.; Dwam, K.; Greig, C.A.; Lawlor, D.A.; Rimer, J.; Waugh, F.R.; McMurdo, M.; Mead, G.E. Exercise for Depression. *Cochrane Database Syst. Rev.* 2013, CD004366. [CrossRef]

35. Kvam, S.; Kleppe, C.L.; Nordhus, I.H.; Hovland, A. Exercise as a Treatment for Depression: A Meta-Analysis. *J. Affect. Disord.* 2016, 202, 67–86. [CrossRef]

36. Schuch, F.B.; Vancampfort, D.; Rosenbaum, S.; Richards, J.; Ward, P.B.; Veronese, N.; Solmi, M.; Cadore, E.L.; Stubbs, B. Exercise for Depression in Older Adults: A Meta-Analysis of Randomized Controlled Trials Adjusting for Publication Bias. *Braz. J. Psychiatry* 2016, 38, 247–254. [CrossRef] [PubMed]

37. DeBoer, L.B.; Powers, M.B.; Utschig, A.C.; Otto, M.W.; Smits, J.A.J. Exploring Exercise as an Avenue for the Treatment of Anxiety Disorders. *Expert Rev. Neurother.* 2012, 12, 1011–1022. [CrossRef]

38. Middelkamp, J.; van Rooijen, M.; Wolfhagen, P.; Steenbergen, B. The Effects of a Self-Efficacy Intervention on Exercise Behavior of Fitness Club Members in 52 Weeks and Long-Term Relationships of Transtheoretical Model Constructs. *J. Sports Sci. Med.* 2017, 16, 163–171.

39. Bull, F.C.; Al-Ansari, S.S.; Biddle, S.; Borodulin, K.; Buman, M.P.; Cardon, G.; Carty, C.; Chaput, J.-P.; Chastin, S.; Chou, R.; et al. World Health Organization 2020 Guidelines on Physical Activity and Sedentary Behaviour. *Br. J. Sports Med.* 2020, 54, 1451–1462. [CrossRef] [PubMed]

40. O’Neill, A.; O’Sullivan, K.; McCreesh, K. Lower Levels of Physical Activity Are Associated with Pain Progression in Older Adults, a Longitudinal Study. *Eur. J. Pain* 2021, 25, 1462–1471. [CrossRef]

41. Ministerio de Sanidad, Consumo y Bienestar Social. Encuesta Nacional de Salud de España 2017—Portal Estadístico Del SNS 2017; Gobierno de España: Madrid, Spain, 2017.

42. Ministerio de Sanidad. Consumo y Bienestar Social Cuestionario de Adultos. In Encuesta Nacional de Salud de España 2017; Gobierno de España: Madrid, Spain, 2019.

43. European Parliament and of the Council. (Regulation (EU) 2016/679 of the 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation)); Official Journal of the European Union: Luxembourg, 2016.

44. Brabete, A.C. El Cuestionario de Salud General de 12 items (GHQ-12): Estudio de traducción y adaptación de la versión rumana. *Rev. Iberoam. Diagnóstico Eval. E Aval. Psicol.* 2014, 1, 11–29.

45. Goldberg, D.P.; Williams, P. A User’s Guide to the General Health Questionnaire; NFER-NELSON: Glasgow, UK, 1988.

46. Craig, C.L.; Marshall, A.L.; Sjöström, M.; Bauman, A.E.; Booth, M.L.; Ainsworth, B.E.; Pratt, M.; Ekelund, U.; Yngve, A.; Sallis, J.F.; et al. International Physical Activity Questionnaire: 12-Country Reliability and Validity. *Med. Sci. Sports Exerc.* 2003, 35, 1381–1395. [CrossRef] [PubMed]

47. Fritz, C.O.; Morris, P.E.; Richler, J.J. Effect Size Estimates: Current Use, Calculations, and Interpretation. *J. Exp. Psychol. Gen.* 2012, 141, 2–18. [CrossRef] [PubMed]

48. Muñoz-Bermejo, L.; Adsuar, J.C.; Postigo-Mota, S.; Casado-Verdejo, I.; de Meo-Tavares, C.M.; García-Gordillo, M.; Pérez-Gómez, J.; Carlos-Vivas, J. Relationship of Perceived Social Support with Mental Health in Older Caregivers. *Int. J. Environ. Res. Public Health* 2020, 17, 3886. [CrossRef]

49. Reig-Ferrer, A.; Cabrero-Garcia, J.; Tudela, L. Assessment of Functional Capacity, Psychological Well-Being and Mental Health in Primary Care. *Aten. Primaria* 2009, 41, 515–519. [CrossRef]

50. Chu, A.H.Y.; Van Dam, R.M.; Biddle, S.J.H.; Tan, C.S.; Koh, D.; Müller-Riemenschneider, F. Self-Reported Domain-Specific and Accelerometer-Based Physical Activity and Sedentary Behaviour in Relation to Psychological Distress among an Urban Asian Population. *Int. J. Behav. Nutr. Phys. Act.* 2018, 35, 36. [CrossRef] [PubMed]

51. Hamer, M.; Stamatakis, E.; Mishra, G.D. Television-and Screen-Based Activity and Mental Well-Being in Adults. *Am. J. Prev. Med.* 2010, 38, 375–380. [CrossRef] [PubMed]

52. Bezerra, A.C.V.; da Silva, C.E.M.; Soares, F.R.G.; Silva, J.A.M. da Factors Associated with People’s Behavior in Social Isolation during the COVID-19 Pandemic. *Cien Saude Colet.* 2020, 25, 2411–2421. [CrossRef]

53. Lesser, I.A.; Nienhuis, C.P. The Impact of COVID-19 on Physical Activity Behavior and Well-Being of Canadians. *Int. J. Environ. Res. Public Health* 2020, 17, 3899. [CrossRef]

54. Wu, K.; Wei, X. Analysis of Psychological and Sleep Status and Exercise Rehabilitation of Front-Line Clinical Staff in the Fight against COVID-19 in China. *Med. Sci. Monit. Basic Res.* 2020, 26, e924085-1. [CrossRef]

55. Huckins, J.F.; Wang, W.; Hedlund, E.; Rogers, C.; Nepal, S.K.; Wu, J.; Obuchi, M.; Murphy, E.I.; Meyer, M.L.; Wagner, D.D. Mental Health and Behavior of College Students during the Early Phases of the COVID-19 Pandemic: Longitudinal Smartphone and Ecological Momentary Assessment Study. *J. Med. Internet Res.* 2020, 22, e20185. [CrossRef]
56. Mattioli, A.V.; Ballerini Puviani, M. Lifestyle at Time of COVID-19: How Could Quarantine Affect Cardiovascular Risk. *Am. J. Lifestyle Med.* 2020, 14, 240–242. [CrossRef]

57. Stanton, R.; To, Q.G.; Khalesi, S.; Williams, S.L.; Alley, S.J.; Thwaite, T.L.; Fenning, A.S.; Vandelanotte, C. Depression, Anxiety and Stress during COVID-19: Associations with Changes in Physical Activity, Sleep, Tobacco and Alcohol Use in Australian Adults. *Int. J. Environ. Res. Public Health* 2020, 17, 4065. [CrossRef] [PubMed]

58. Antunes, R.; Frontini, R.; Amaro, N.; Salvador, R.; Matos, R.; Morouço, P.; Rebelo-Gonçalves, R. Exploring Lifestyle Habits, Physical Activity, Anxiety and Basic Psychological Needs in a Sample of Portuguese Adults during COVID-19. *Int. J. Environ. Res. Public Health* 2020, 17, 4360. [CrossRef]

59. Craft, L.L.; Perna, F.M. The Benefits of Exercise for the Clinically Depressed. *Prim. Care Companion J. Clin. Psychiatry* 2004, 6, 104–111. [CrossRef]

60. Paluska, S.A.; Schwenk, T.L. Physical Activity and Mental Health. *Sports Med.* 2000, 29, 167–180. [CrossRef] [PubMed]

61. Beard, J.R.; Heathcote, K.; Brooks, R.; Earnest, A.; Kelly, B. Predictors of Mental Disorders and Their Outcome in a Community Based Cohort. *Soc. Psychiatry Psychiatr. Epidemiol.* 2007, 42, 623–630. [CrossRef]

62. Schultchen, D.; Reichenberger, J.; Mittl, T.; Web, T.R.M.; Smyth, J.M.; Blechert, J.; Pollatos, O. Bidirectional Relationship of Stress and Affect with Physical Activity and Healthy Eating. *Br. J. Health Psychol.* 2019, 24, 315–333. [CrossRef] [PubMed]

63. Gerber, M.; Brand, S.; Herrmann, C.; Colledge, F.; Holsboer-Trachsler, E.; Pühse, U. Increased Objectively Assessed Vigorous-Intensity Exercise Is Associated with Reduced Stress, Increased Mental Health and Good Objective and Subjective Sleep in Young Adults. *Physiol. Behav.* 2014, 135, 17–24. [CrossRef] [PubMed]

64. Dąbrowska-Galas, M.; Dąbrowska, J. Physical Activity Level and Self-Esteem in Middle-Aged Women. *Int. J. Environ. Res. Public Health* 2021, 18, 7293. [CrossRef] [PubMed]

65. Zainal, N.H.; Newman, M.G. Executive Function and Other Cognitive Deficits Are Distal Risk Factors of Generalized Anxiety Disorder 9 Years Later. *Psychol. Med.* 2018, 48, 2045–2053. [CrossRef] [PubMed]

66. Demetriou, C.; Ozer, B.U.; Essau, C.A. Self-Report Questionnaires. In *The Encyclopedia of Clinical Psychology*, Cautin, R.L., Lilienfeld, S.O., Eds.; John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2015; pp. 1–6. ISBN 978-1-118-62539-2.