

Psychosocial and physical activity levels in elementary school education pre-service teachers

Niveles psicosociales y de actividad física en opositores de educación primaria

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Abstract

The selection process for teachers in Spain involves a great deal of academic preparation on the part of the applicant, which can lead to the appearance of negative emotional states together with a high level of sedentary lifestyles. The objectives of the research are to study the levels of physical activity, resilience, stress and burnout syndrome in terms of the calls for primary education competitive examinations and to study the relationship between physical activity, burnout syndrome, resilience and stress. A cross-sectional study was proposed in a sample of 4,117 candidates for the primary education competitive examination. The instruments used were the Perceived Stress Scale, the Maslach Burnout Inventory and the Connor-Davidson Resilience Scale. A higher level of burnout ($p < .05$) and physical activity practice ($p < .05$) is observed for participants who have taken the teacher's competitive examination more than others. Furthermore, negative relationships of resilience with stress ($r = -.522$; $p < .01$) and physical activity ($r = -.166$; $p < .01$) are evident. Finally, it is concluded that the most experienced candidates in the teacher competition process show higher levels of burnout, stress and physical activity time.

Keywords: Pre-service teachers, stress, resilience; physical activity, Burnout, primary education.

Resumen

El proceso selectivo de docentes en España implica una gran preparación académica por parte del aspirante, pudiendo generar la aparición de estados emocionales negativos junto con un mayor nivel de sedentarismo. Los objetivos del estudio son estudiar los niveles de actividad física, resiliencia, estrés y síndrome de burnout en función de las convocatorias presentadas a las oposiciones de educación primaria y estudiar la relación entre práctica de actividad física, síndrome de burnout, resiliencia y estrés. Se ha propuesto un estudio descriptivo, comparativo y transversal en una muestra de 4,117 opositores al cuerpo de educación primaria. Los instrumentos empleados han sido la Escala de Estrés Percibido, el Inventario de Burnout de Maslach y la Escala de Resiliencia Connor-Davidson. Se observa un mayor nivel de burnout ($p < .05$) y práctica de actividad física ($p < .05$) para los participantes que más veces han realizado la prueba de oposición docente. Además, se evidencian relaciones negativas de la resiliencia con el estrés ($r = -.522$; $p < .01$) y la práctica de actividad física ($r = -.166$; $p < .01$). Se concluye que los opositores más experimentados en el proceso de oposición muestran mayores niveles de burnout y estrés junto con un mayor tiempo de actividad física.

Palabras clave: Opositores, estrés, resiliencia, actividad física, burnout, educación primaria.



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Introduction

The process established to become a teacher in the Spanish education system involves passing a series of very demanding tests (Aguilar-Parra et al., 2016). The so-called “*Opositores*” are those candidates destined to obtain one of the different positions offered (Melguizo-Ibáñez et al., 2022). This rigorous entrance examination consists of a series of tests. The first test is designed to demonstrate the specific knowledge required for the teaching speciality for which the candidate is applying (Royal Decree 270/2022, of April 12, amending the Regulations for admission, access and acquisition of new specialties in the teaching staffs referred to in Organic Law 2/2006 (hereinafter RD 270/2022)). This consists of the candidate’s development of a topic from the official syllabus from a number of topics drawn at random by the selection board (RD 270/2022). The second part consists in the preparation, presentation and defence of a learning situation (RD 270/2022). The preparation and oral presentation to the selection board must be related to the field for which the candidate is applying (RD 270/2022).

Obtaining a permanent job in the Spanish civil service generates high levels of uncertainty for candidates. This is due to the large number of applicants and the uncertainty generated in the run-up to the assessment test (de la Fuente & Amate, 2019). The concept of stress is understood as a series of alterations produced in the organism in response to different stimuli (Fernández-Batanero et al., 2021). Similarly, in the present study stress focuses more on mental fatigue caused by the demand for higher-than-normal performance, leading to the development of mental and physical disorders (Wunsch et al., 2021). According to Selye (1975), the onset of stress occurs in three distinct phases. The first is the alarm reaction, which alerts the organism and warns the subject to be alert. If this first phase is prolonged over time, it gives way to the resistance phase, which consists of the subject perceiving that his or her endurance capacity has a limit (Selye, 1975). Finally, the exhaustion phase appears. It is characterised by the onset of fatigue and a decrease in motivation towards the task (Selye, 1975).

When a human being is exposed to high levels of stress, there is a loss of motivation towards the different tasks to be performed (González-Valero et al., 2023). Performing tasks with low levels of motivation can lead to a condition known as burnout syndrome (Trigueros et al., 2020). It is defined by González-Valero et al. (2022) as a phenomenon characterised by low levels of tolerance, low commitment to the task at hand, emotional exhaustion together with the appearance of physical and psychological fatigue. Other studies also state that burnout syndrome can be characterised by depersonalisation, emotional exhaustion and low self-fulfilment (González-Valero et al., 2022), affecting other areas such as self-concept (Méndez et al., 2020). Prolonged exposure to a high level of burnout can be detrimental to physical and mental health. It can lead

a state of exhaustion, physical and psychological fatigue and the development of psychological disorders (Ozamiz-Etxebarria et al., 2021). Resilience plays a key role in preventing all of the above (Méndez et al., 2020).

Resilience acts to prevent the onset of Burnout Syndrome (Zadok-Gurman et al., 2018). It has been defined as an intrinsic capacity that is used to overcome adverse and stressful situations in order to achieve different objectives (Martínez-Ramón et al., 2021). In the academic context, resilience has been widely studied (Romano et al., 2021). It plays a fundamental role in the achievement of different academic goals (Yun et al., 2020). Resilience has been observed that this ability acts beneficially in the face of negative stimuli in the academic environment (González-Valero et al., 2022). Chmitorz et al. (2018) state that students who show higher levels of resilience obtain greater academic satisfaction when facing an evaluative test.

Physical activity has been shown to increase resilience levels (Romero-Barquero, 2020) as well as to alleviate the negative effects of burnout syndrome (Melguizo-Ibáñez et al., 2022) and stress (Cortés-Denia et al., 2022). Extrapolating the practice of physical activity to the academic context, it has been shown that young people who perform better in academic tasks are those who are physically active (Álvarez-Bueno et al., 2017).

The importance and benefits of an active lifestyle in the academic and psychosocial spheres are evident. Likewise, there is a need to investigate these variables within the competitive examination community, as there is very little research focused on the study of psychosocial factors in this population (Melguizo-Ibáñez et al., 2022; Aguilar-Parra et al., 2016; Suárez-Riveiro et al., 2013).

The present research aims to study the levels of physical activity, resilience, stress and burnout syndrome as a function of the calls for primary school teachers’ examinations and to study the relationship between physical activity, burnout syndrome, resilience and stress.

Material and Method

Design

The recommendations of Ato et al. (2013) and Montero and León (2007) were followed for the research design. The study design is descriptive, comparative and cross-sectional.

Participants

A total of 4,140 responses were obtained, however 10 participants were eliminated for not completing the questionnaire satisfactorily and 13 for not meeting the inclusion criteria. To participate two inclusion criteria were established. The first was to have a university degree in primary education and the second was to be a candidate for the Spanish public teaching profession. The sampling techniques used were non-probability and convenience sampling.

Sample

The final sample for this research consisted of a total of 4,117 candidates. Considering the sampling error, for a confidence interval of 95%, an error of less than 2% has been obtained, therefore the sample obtained is representative of the population analyzed. According to the

distribution by sex, 1,363 belong to the male sex (33.1%) and 2,754 to the female sex (66.9%). The subjects ranged in age from 23 to 54 years ($M = 31.03$; $SD = 6.800$). Table 1 shows the distribution of the participants according to their autonomous community of origin.

Table 1. Distribution of the sample according to sex and autonomous community

| Autonomous Community | Gender | | Total | % |
|----------------------|--------|--------|-------|--------|
| | Male | Female | | |
| Andalucía | 378 | 544 | 922 | 22.4% |
| Cataluña | 54 | 104 | 158 | 3.8% |
| Madrid | 178 | 451 | 629 | 15.3% |
| Valencia | 162 | 414 | 576 | 14.0% |
| Galicia | 105 | 296 | 401 | 9.7% |
| Castilla y León | 69 | 185 | 254 | 6.2% |
| País Vasco | 6 | 24 | 30 | 0.7% |
| Canarias | 54 | 72 | 126 | 3.1% |
| Castila La Mancha | 168 | 191 | 359 | 8.7% |
| Murcia | 87 | 126 | 213 | 5.2% |
| Aragón | 27 | 46 | 73 | 1.8% |
| Baleares | 9 | 22 | 31 | 0.8% |
| Extremadura | 21 | 89 | 110 | 2.7% |
| Asturias | 18 | 95 | 113 | 2.7% |
| Navarra | 9 | 30 | 39 | 0.9% |
| Cantabria | 18 | 51 | 69 | 1.7% |
| La Rioja | 0 | 14 | 14 | 0.3% |
| Total | 1363 | 2754 | 4117 | 100.0% |

Variables and instruments

Self-prepared questionnaire: It was used to collect sociodemographic variables such as gender (male/female), age and number of calls submitted. The latter variable was categorized as none, between one and two times, between three and five times and more than six times.

Perceived Stress Scale (PSS): It was originated by Cohen et al. (1983). The Spanish version by Remor (2006) has been used. It is made up of 14 items that are answered on a Likert scale (0 = Never and 4 = Very frequently). Cronbach's alpha for this research obtained a value of $\alpha = .869$.

Maslach Burnout Inventory: Developed by Maslach and Jackson (1981). For this study the Spanish version by Seisdedos (1997) has been used. It is composed of a total of 22 items that are evaluated through a Likert scale (0 = Never and 6 = Daily). It allows the evaluation of burnout syndrome from a three-dimensional perspective through Emotional Exhaustion, Depersonalization and Personal Accomplishment. It also allows the assessment of Burnout from a unidimensional perspective (de la Fuente et al., 2015). Cronbach's alpha had a value of $\alpha = .809$.

Connor-Davidson Resilience Scale (CD-RISC): It was built by Connor and Davidson (2003). The Spanish version by Crespo et al. (2014) has been used. It is formed by 25 items answered through a Likert scale (0 = Strongly disagree and 4 = Strongly agree). The questionnaire evaluates resilience from Personal Competence, High Levels and Tenacity, Confidence in one's own instincts, Tolerance to Negative Affects and Reinforcement of Stress Effects, Acceptance of Positive Change and Secure Relationships composed of Control and Purpose and Spiritual Influences. Cronbach's alpha evidenced a value of $\alpha = .854$.

International Physical Activity Questionnaire Reduced Version (IPAQ-SF): It is designed to collect the time (in minutes) and frequency (in days) spent in activities of different intensities (Mantilla-Tolosa & Gómez-Conesa, 2007). Cronbach's alpha obtained a value of $\alpha = .701$.

Procedure

Research team proceeded to create a Google Form with the instruments described above. It was also added the objectives of the research. Once this was done, the questionnaire was sent through the different social networks. To make sure the questions were not answered

randomly, four questions were duplicated. A total of 23 incorrectly completed questionnaires were detected. Before participants were given access to the questionnaire. They were asked for their informed consent. This study conformed to the ethical principles for research involving human subjects established in the Declaration of Helsinki. In addition, it was under the supervision of an Ethics Committee (2966/CEIH/2022).

Data Analysis

First, the sample normality was studied using the Kolmogorov-Smirnov test. A significance value of less than .05 was obtained, so nonparametric tests were used to test hypotheses.

The Kruskal Wallis test was used to compare more than two groups. When statistically significant differences were found ($p < .05$), the Bonferroni test was used as a post hoc test to indicate the differences between groups. For the relational analysis, this was carried out using Spearman's test, establishing the significance level at $p < .01$. Regarding the classification of the correlations, they were interpreted as follows: null correlation ($< .10$), weak correlation ($0.10-0.29$), moderate correlation ($.30-.50$) and strong correlation ($.50-1$) (Cohen, 1988).

To estimate the degree of reliability of the instruments used for data collection, the Cronbach's alpha test was used. This test allows us to express internal consistency considering the covariation of the questionnaire items (Rodríguez-Rodríguez & Reguant-Álvarez, 2020).

Finally, the statistical program IBM SPSS Statistics 25.0 (IBM Corp, Armonk, NY, USA) was used to run all of the above.

Results

Table 2 shows the results obtained in the comparative analysis. With respect to burnout syndrome, it is observed that participants who have not presented themselves any time ($3.502 \pm .556$) show lower levels than those who have presented themselves between one and two times ($3.577 \pm .579$), between 3 and 5 times ($3.664 \pm .544$) and more than 6 times ($3.678 \pm .573$). For resilience, it is observed that participants who have gone through the opposition process more than six times ($2.450 \pm .601$) evidence a lower level than those who have gone through the process between three and five times ($2.560 \pm .591$), between one and two times ($2.607 \pm .589$) and not at all ($2.611 \pm .588$). With regard to stress, it is observed that participants who have presented themselves more than six times (36.937 ± 9.374) show a higher level of stress than those who have undergone the process between three and five times (35.639 ± 8.902), between one and two times (35.483 ± 8.874) and those who have not presented themselves at all (35.845 ± 8.179). Finally, for the practice of physical activity, it was observed that the participants who were most physically active were those who had participated more than six times (1.547 ± 0.498) compared to those who had undergone the selective process between three and five times ($1.528 \pm .499$), between one and two times ($1.519 \pm .669$) and not at all ($1.493 \pm .500$).

Table 2. Comparative study of the variables according to the calls for proposals submitted

| | | N | M ± SD | p |
|-------------------|-----------------------|------|-------------------|------------------------|
| Burnout Syndrome | None | 857 | 3.5023 ± 0.55695 | ≤ .05 ^{a b c} |
| | Between 1 and 2 times | 1856 | 3.5772 ± 0.57901 | |
| | Between 3 and 5 times | 1130 | 3.6642 ± 0.54409 | |
| | More than 6 times | 274 | 3.678 ± 0.57383 | |
| Resilience | None | 857 | 2.6112 ± 0.58831 | ≤ .05 ^c |
| | Between 1 and 2 times | 1856 | 2.6072 ± 0.58950 | |
| | Between 3 and 5 times | 1130 | 2.5607 ± 0.59160 | |
| | More than 6 times | 274 | 2.4550 ± 0.60122 | |
| Stress | None | 857 | 35.8425 ± 8.17991 | > .05 |
| | Between 1 and 2 times | 1856 | 35.4833 ± 8.87449 | |
| | Between 3 and 5 times | 1130 | 35.6398 ± 8.90270 | |
| | More than 6 times | 274 | 36.9377 ± 9.37494 | |
| Physical Activity | None | 857 | 1.4936 ± 0.50025 | ≤ .05 ^a |
| | Between 1 and 2 times | 1856 | 1.4938 ± 0.50010 | |
| | Between 3 and 5 times | 1130 | 1.5283 ± 0.49942 | |
| | More than 6 times | 274 | 1.5478 ± 0.49863 | |

Note: Number of subjects (N); Mean value (M); Standard Deviation (SD); P value (p). **Note:** ^a Differences between None and more than 6 times; ^b Differences between 1 and 2 times and More than 6 times; ^c Differences between none and between 3 and 5 times.

Regarding the correlational analysis (Table 3), it is observed that stress shows an inverse, strong and significant relationship with resilience ($r = -.522$; $p < .01$). On the contrary, stress shows an inverse, weak and significant relationship with burnout syndrome ($r = .268$; $p < .01$) and

the practice of physical activity ($r = .198$; $p < .01$). Resilience showed a null relationship with burnout syndrome ($r = .006$). Likewise, resilience shows a negative, weak and significant correlation with the practice of physical activity ($r = -.166$; $p < .01$).

Table 3. Correlational study of the variables

| | Stress | Resilience | Burnout | Physical Activity |
|-------------------|--------|------------|---------|-------------------|
| Stress | 1 | -.522** | .268** | .198** |
| Resilience | | 1 | .006 | -.166** |
| Burnout | | | 1 | .070** |
| Physical Activity | | | | 1 |

Note: ** $p \leq .01$

Discussion

The previous section has responded to the objectives of studying the levels of physical activity, resilience, stress and burnout syndrome as a function of the calls submitted to the competitive examinations for primary education teachers and to study the relationship between physical activity, burnout syndrome, resilience and stress. This study shows that the teaching competitive examination process increases burnout and stress levels as the number of calls for applications increases.

Burnout syndrome increases as the number of calls presented increases. Madigan and Curran (2020) affirmed that when facing an academic task, if it is prolonged over time, emotional exhaustion increases, increasing burnout levels. Likewise, it has been observed that the work and educational environments are two contexts where burnout levels increase the most due to the emotions experienced and the burnout process they cause (González-Valero et al., 2022). The research carried out by Saavedra et al. (2021) found that repeating an exam to apply for a job generates emotional exhaustion the more times it is taken. This generates the emergence of negative emotions such as anxiety and stress (Saavedra et al., 2021).

It is evident that as the number of calls increases, the levels of resilience decrease. Similar results were obtained by Yang and Wang (2022). When faced with an evaluative test, resilience levels decrease due to emotional exhaustion, as well as the anxiety generated by the completion of the activity (Yang & Wang, 2022). Likewise, Oktay et al. (2021) add that resilience is a key factor in achieving higher performance before evaluative tests. The study by Zaw et al. (2022) found that people with higher levels of resilience show higher academic achievement than those who are not. Similarly, the research carried out by Melguizo-Ibáñez et al. (2022) in a population of primary education examiners found a positive effect of resilience on academic achievement and the hours of preparation for this test.

It is observed that as the number of calls increases, the levels of this state increase. Similar results to those

of this research were obtained by Suárez-Riveiro et al. (2013). Valiente-Barroso et al. (2021) and González-Valero et al. (2021) affirm that evaluative tests increase anxiety levels, as well as stress levels. The study carried out by Gustems-Carnicer et al. (2019) establishes that stress can act negatively on academic performance due to the effects it generates at the somatic and psychological level, acting negatively on elements such as attention. Another reason why stress levels are elevated during the competitive examination process is due to a low competence towards this test due to the performance of this exam several times (Melguizo-Ibáñez et al., 2022; Suárez-Riveiro et al., 2013).

With respect to the practice of physical activity, it was observed that the participants who had taken the competitive examination more than 6 times showed a higher level of physical activity than those who had not taken the examination at all. These results may be due to the fact that the more experienced participants use physical-sports exercise as a means of resting from the study process (Melguizo-Ibáñez et al., 2022). Likewise, research conducted by Álvarez-Bueno et al. (2017) together with Melguizo-Ibáñez et al. (2021) establish that the practice of physical activity helps to acquire higher academic performance due to the benefits of this in the psychological sphere. Sport practice helps to reduce levels of stress, anxiety and burnout based on the segregation of neurotransmitters (Liu & Nusslock, 2018). Regular exercise helps to promote neurogenesis along with proliferation which results in the hippocampus responding more strongly and effectively after sports practice (Erickson et al., 2015).

For the correlational analysis, a positive relationship was obtained between burnout syndrome and the practice of physical activity. On the contrary, a negative relationship was observed between stress and resilience. Results very similar to those of this study were found by Trigueros et al. (2020). Alsalhe et al. (2021) establish that stress exerts a negative role on resilience, this being due to the emotional exhaustion that is generated. Likewise, it has been shown that a low emotional competence in the

academic population leads to lower levels of resilience (Puertas-Molero et al., 2020). Very distant results were found by Hosseinkhani et al. (2020) stating that the practice of physical activity helps to channel the effect of stress. On the contrary, the research carried out by Huang et al. (2013) affirms that any physical-sports activity performed at a high level of intensity increases stress levels.

This research highlights the importance of resilience when facing a competitive examination process. It also highlights the increase in the levels of burnout and stress as the number of competitive examinations increases. Based on these results, it is possible to interpret the emotional states to which applicants for teaching positions are subjected during the competitive examination process.

This study presents a series of limitations. Since it is a cross-sectional study, this modality only allows us to study the relationships between variables at a single point in time. Despite having obtained a fairly significant sample, these results should be interpreted with caution because this sample is not representative of each autonomous community.

Regarding the future perspectives derived from this research, it is proposed to carry out a longitudinal study to study the effect of these three variables throughout the entire process of preparation for the competitive examination. It would also be interesting to collect a larger study sample to establish a higher level of significance.

Conclusions

It is observed that a greater number of calls to the competitive examination for the Spanish public teaching corps generates an increase in the levels of burnout syndrome, stress and the practice of physical activity. On the other hand, it is observed that levels of resilience are higher for those participants who have never taken part in this process.

It should be noted that the variables stress and resilience act negatively on each other. On the contrary, stress acts positively on the time spent practicing physical activity per week and burnout syndrome. The practice of physical activity is negatively related to resilience and positively related to burnout syndrome.

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