An explanatory model of academic psychosocial variables and physical activity during the educational selection process
Un modelo explicativo de las variables psicosociales, académicas y la actividad física durante el proceso de oposición educativo

Authors

Rubén Fernández-García [1]
Georgian Badicu [2]
Félix Zurita-Ortega [3]
Eduardo Melguizo-Ibáñez [4]
Luca Paolo Ardigò [5]
José Luis Ubago-Jiménez [3]

[1] University of Almería (Spain)
[2] University of Brasov (Romania)
[3] University of Granada (Spain)
[4] University of La Laguna (Spain)
[5] NLA University College (Norway)

Corresponding author:
Georgian Badicu
georgian.badicu@unitbv.ro

Abstract

Introduction: The current system for becoming a state sector teacher in Spain is very different to the situation in Europe. The process involves having to pass a very demanding exam that has a negative impact on the emotional well-being of the applicants.
Objective: This study aims (a) to develop and refine a multigroup equation model for the variables of physical activity, resilience, stress and burnout syndrome and (b) to study the effects of physical activity, resilience, stress and burnout syndrome variables using a multigroup structural equation model.
Methodology: The study used a cross-sectional research design and was conducted on a sample of 4117 applicants. Scientifically validated instruments were used, such as the Perceived Stress Scale, the Connor Davidson Resilience Scale, the Maslach Burnout Inventory and the International Physical Activity Questionnaire.
Results: The candidates who have taken the test more than once have increased levels of stress and burnout syndrome.
Discussion: These results are consistent with others research. In spite of this, the effect of resilience stands out as a fundamental element to face the selective process.
Conclusions: developing resilience and doing physical activity could have a beneficial effect on the candidates during this assessment process.

Keywords

Physical activity; Preservice teacher education; Resilience; Stress; Teacher burnout.

Resumen

Introducción: La realidad educativa para acceder a la función pública docente en España es muy diferente a la europea. Este proceso se caracteriza por la superación de una prueba de evaluación muy exigente que repercute negativamente en el área emocional de los aspirantes
Objetivo: Esta investigación presenta los objetivos de (a) desarrollar y ajustar un modelo de ecuaciones multigrupo de las variables actividad física, resiliencia, estrés y síndrome de burnout y (b) estudiar los efectos de las variables actividad física, resiliencia, estrés y síndrome de burnout a través de un modelo de ecuaciones estructurales multigrupo.
Metodología: Se llevó a cabo un diseño de investigación transversal sobre una muestra de 4117 candidatos. Se utilizaron instrumentos validados por la comunidad científica, como la Escala de Estrés Percibido, la Escala de Resiliencia de Connor Davidson, el Inventario de Burnout de Maslach y el Cuestionario Internacional de Actividad Física.
Resultados: Los candidatos que han realizado esta prueba más de una vez han aumentado sus niveles de estrés y síndrome de burnout.
Discusión: Estos resultados son coincidentes con otras investigaciones. A pesar de esto, el efecto de la resiliencia se destaca como un elemento fundamental para afrontar el proceso selectivo.
Conclusiones: Se destaca el efecto beneficioso de la resiliencia y la práctica de actividad física durante este proceso de acceso.

Palabras clave

Actividad física; Burnout docente; Estrés; Formación del profesorado; Resiliencia.

Introduction

Currently, the Spanish educational reality is quite different from the rest of European educational realities (Moreno-López et al., 2020). As far as the recruitment of public teachers is concerned, the Spanish context relies on a rather complex selection process (Suárez-Riveiro et al., 2013). To become a public teacher in Spain, the applicant must pass a two-part test (Real Decreto 270/2022). The first part of the test consists of the application of a series of theoretical knowledge to the classroom of the speciality for which the candidate is applying (Real Decreto 270/2022). This part is carried out by means of a theoretical examination which is chosen at random by the members of the selection board (Real Decreto 270/2022). Then, those candidates who manage to pass this first test take the second test of the process. It consists of an oral defence of a didactic unit in front of the members of the examining board (Real Decreto 270/2022). Aguilar-Parra et al. (2016) empirically point out that in this process there are also a number of factors related to randomness and subjectivity during the assessment process. Felgueroso et al. (2007) also showed that panel members are more severe in those specialities in which their knowledge is greater. As a consequence, this leads to lower marks when the members of the examining board are experts in the subject (Aguilar-Parra et al., 2016).

The start of the preparation for this process begins with high self-imposed expectations on the part of the applicants (Aguilar-Parra et al., 2016). Permanent subjection to such high self-imposed demands leads to increased levels of disruptive states as well as stress (de la Fuente & Amate, 2019). This can have a direct impact on the motivation developed towards the teaching competition process have a negative effect on the preparation for the test (de la Fuente & Amate, 2019). This process has been observed to cause psychological burnout as the number of calls submitted increases (Melguizo-Ibáñez et al., 2023).

One of the most common conditions faced by educational applicants in Spain is Burnout Syndrome (Melguizo-Ibáñez et al., 2023). Although this state has been widely studied, it does not have an established definition, but Freudenberger (1989) together with González-Valero et al. (2021) define it as a state of mental, emotional and physical tiredness or exhaustion that causes a decline in interest in a task or profession. It has been observed that throughout the process of preparing for an evaluative test there is an increase in emotional and mental exhaustion (Moreno-Lucas et al., 2023). It is also found that the presence of other negative emotional states such as anxiety and stress act as catalysts for burnout syndrome (Shen, 2022).

Stress can be defined as a negative state that causes the onset of fatigue and mental exhaustion resulting from an effort caused by an overexertion that exceeds the level of competence of the subject (Zheng et al., 2022). Likewise, stress is not characterised by the fact that it appears at a specific moment in time, but originates when the subject is exposed over a period of time to a stressor (Moreno-Lucas et al., 2023). Selye (1975) considers that the onset of stress occurs in four clearly differentiated phases: the onset phase, the reaction phase, the resistance phase and the exhaustion phase. Specifically, the study by Hinwood et al. (2023) states that the choice of stress coping strategies will depend on internal factors related to self-regulation and self-efficacy. As a self-regulating mechanism for stress, being physically active has been shown to help reduce stress levels (Silva et al., 2020).

Other researchers have found that resilience plays a positive role in stress management (Melguizo-Ibáñez et al., 2023). Furthermore, the study by Melguizo-Ibáñez et al. (2023) found that resilient control plays a positive role in the perception and reduction of stressors. Specifically, this research found that during the competitive teaching process, resilience is a differential element in obtaining positive results (Melguizo-Ibáñez et al., 2023).

Resilience has been defined as a capacity to cope with adverse situations (Guo & Liang, 2023). Specifically, within the field of education, Yang and Wang (2022) define resilience as an aptitude that is used to foster the development of competitiveness within the educational context despite negative effects. The study conducted by Díaz-Sánchez & Barra-Almagia (2017) affirms that resilience is a key factor in fostering the development of adequate motivation towards an academic task. Specifically, in the Spanish educational field, González-Valero et al. (2021) highlight the need to incorporate resilience-based programmes into teacher training. Another key element for emotional management has also been found to be the regular practice of physical activity (Fernández-García et al., 2024; González-Valero et al., 2023).

The term physical activity is defined as any bodily movement performed by skeletal muscles that involves a significant expenditure of energy (Galeano-Rojas et al., 2023). Regular physical activity over a long period of time has been shown to help improve people's health (González-Valero et al., 2023). Focusing on the benefits at the emotional level, it is observed that physical activity helps to reduce anxiety and stress level (Zhao et al., 2022). It has also been shown that those who practice sport show higher levels of resilience (Antonini-Philippe et al., 2021), which is very useful in the academic environment (Fernández-García et al., 2024).

In the light of the above, the following research questions are proposed: Is there a negative effect of burnout syndrome and stress on resilience? Does the practice of physical activity have a beneficial effect on the reduction of burnout syndrome and stress levels? Are there variations in the effects of the variables on each other with respect to the number of times applicants have taken the exam?

Finally, the objectives of this research are: (a) to develop and fit a multigroup equation model of the variables physical activity, resilience, stress and burnout syndrome and (b) to study the effects of the variables physical activity, resilience, stress and burnout syndrome through a multigroup structural equation model.

Method

Participants

The research has a descriptive, cross-sectional and ex post facto (non-experimental) design, with collection being carried out in a single group. The data were also collected between January and February 2022. The sample consisted of 4117 applicants to the Spanish public teaching staff. Participants ranged in age from 24 to 58 years (M=31.03; SD= 6.80).

To be able to participate in this research, two inclusion criteria were established, which are defined below: 1) The first of these consisted of holding a university degree that qualified them to apply for a post in these teaching corps, 2) Preparing for the entrance exam to the Spanish public teaching staff.

A total of 4289 responses were obtained, but a total of 172 had to be eliminated because they did not meet the inclusion criteria or because they had not responded correctly to the data collection instruments. A representative sample of the Spanish context was obtained, as the sampling error was less than 5.0%, establishing the degree of confidence at 95.0%.

Procedure

Before starting data collection, a literature review process was carried out in the Web of Science and Scopus. This review was carried out with the aim of using the instruments that best adapted to the population and showed the best internal consistency. Once this had been done, an informative letter was sent from the Department of Didactics of Musical, Plastic and Corporal Expression, looking for people who met the previously established inclusion criteria. This letter was sent to different universities throughout the country, where participants came to fill in the questionnaire developed by the research team. It should be noted that all participants were asked for their informed consent before starting to fill in the questionnaire. They were also assured that the data would be processed for scientific purposes and anonymously. These two principles are included in the Declaration of Helsinki. Finally, the ethics committee of the University of Granada with code 2966/CEIH/2022 approved and supervised this research.

Instrument

Socio-demographic questionnaire: This instrument was used to collect the variables such as age and the number of times the applicant has taken part in the selection process (none, between one and two times, between three and five, more than five).

Perceived Stress Scale (Cohen et al., 1983): Although the version of Cohen et al. (1983) was not used, the version of Remor (2006) was used. It shows a high degree of internal reliability and is also adapted to Spanish (Remor, 2006). This scale is made up of a total of 14 questions that are answered using a Likert scale. Regarding the reliability analysis, Cronbach's alpha obtained a value of α=0.914.

Connor Davidson Resilience Scale (Connor & Davidson, 2003): For this research the version of Crespo et al. (2014) was used. This scale shows a total of 25 items, through which resilience is assessed under five dimensions: persistence/tenacity/self-efficacy (PER), control under pressure (CUP), adaptability and support networks (ADP), control and purpose (CP), and spirituality (SPR). Regarding the degree of reliability, Cronbach's alpha obtained the following values for each dimension: PER α=0.905; CUP α=0.895; ADP α=863; CP α=0.915; SPR α=0.935.

Maslach Burnout Inventory (Maslach & Jackson, 1981): The version of Seisdedos (1997) has been used. This allows us to assess burnout syndrome from a three-dimensional perspective: emotional exhaustion (EE), degree of depersonalisation (CUP) and level of personal fulfilment (PF). Regarding the degree of reliability, Cronbach's alpha obtained the following values for each dimension: EE α=0.873; CUP α=0.911; PF α=0.856.

International Physical Activity Questionnaire (Craig et al., 2003): For this research we used the version validated in Spanish by Mantilla and Gómez-Conesa (2007). This instrument assesses the level of physical activity carried out in the last seven days. The scale is made up of seven questions that are answered using a Likert scale with five response options. In this case, Cronbach's alpha obtained a value of α=0.850.

Data analysis

The IBM Statistical Package for Social Sciences Amos 26.0 (IBM Corp, Armonk, NY, United States of America) was used to analyse the effects of the variables in the structural models.

Once the theoretical model was proposed (Figure 1), a multi-group equation model was carried out according to the rank of the participants in the entrance examination to the public teaching corps. With regard to the type of variables that make up the theoretical model, it is made up of a total of 22 variables, of which 12 are exogenous and 10 are endogenous. For the latter type of variables, causal explanations were carried out on the basis of observed associations between measurement reliability and indicators. This is why the errors of the different measurements have been included, as they allow for a direct control of these errors. In addition, the arrows symbolise the direction of the effect and are interpreted as regression coefficients. Statistically significant differences were studied using Pearson's Chi-Square test.

Figure 1. Theoretical model proposed
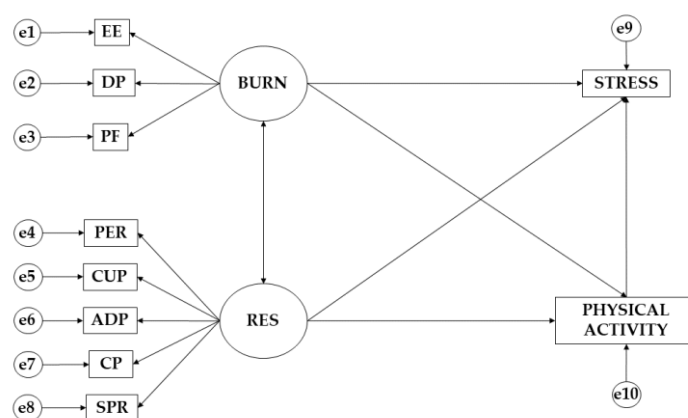
Note: Emotional Exhaustion (EE); Stress (STR); Personal Realization (PR); Depersonalization (DP); Control and Purpose (CP); Persistence/Tenacity/Self-Efficacy (PER); Spirituality (SPR); Physical Activity (PA); Control Under Pressure (CUP); Adaptability and Support Networks (ADP).

The significance level was set at $p \leq 0.05$. The maximum likelihood method was used to estimate the relationships between the different variables that make up the models. This method was chosen because it is unbiased, invariant and consistent with the types of scales available. In addition, the fit of the models was examined according to the criteria established by Kyriazos (2018) and Maydeu-Olivares (2017). Non-significant Chi-Square values indicate a good model fit (Maydeu-Olivares, 2017). Regarding the

Comparative Fit Index (CFI), Incremental Fit Index (IFI) and Normalised Fit Index (NFI), values above 0.90 evidence a good fit (Kyriazos, 2018; Maydeu-Olivares, 2017). Values below 0.08 for the root mean square error of approximation (RMSEA) indicate an acceptable fit (Kyriazos, 2018). Following Tenenbaum and Eklund (2007) due to the sample size and susceptibility of the sample, we will also proceed to assess the fit of the Tucker Lewis Index (TLI), where values above 0.900 indicate a good fit. Table 1 presents the fit values of the theoretical model.

Table 1. Values of the fit indices

χ^2/gl	RMSEA	CFI	IFI	NFI
2.648	0.052	0.928	0.946	0.966

Results

Based on the results obtained, Table 2 shows the results of the effects of the variables according to the established classification groups. Furthermore, two levels of significance can be observed, the first for $p \leq 0.05$ and the second for $p \leq 0.001$.

Table 2. Effects of the variables depending on the calls submitted

	Variable effects	Regression Weights				Standardised Regression Weights
		Estimates	S.E.	C.R.	*p*	Estimates
None	PA ←RES	0.05	0.039	0.119	0.905	0.006
	PA←BURN	0.042	0.013	3.289	≤ 0.05	0.204
	PER ←RES	1.000				0.875
	CUP ←RES	−0.515	0.041	−12.575	≤ 0.001	−0.423
	ADP ←RES	0.919	0.026	35.493	≤ 0.001	0.919
	CP ←RES	0.854	0.029	29.920	≤ 0.001	0.803
	SPR ←RES	0.169	0.046	3.665	≤ 0.001	0.130
	DP ←SB	1.000				0.372
	PF ←SB	−2.055	0.217	−9.468	≤ 0.001	−0.686
	EE ←SB	2.655	0.277	9.567	≤ 0.001	0.719
	STR ←RES	−1.676	0.543	−3.089	≤ 0.05	−0.139
	STR←BURN	2.345	0.282	8.328	≤ 0.001	0.697
	STR ←PA	−0.163	0.455	−0.358	0.720	−0.010
	BURN ← →RES	−1.025	0.126	−8.154	≤ 0.001	−0.622
Between 1 and 2 times	PA ←RES	−0.107	0.024	−4.434	≤ 0.001	−0.147
	PA←BURN	0.010	0.005	1.827	0.068	0.067
	PER ←RES	1.000				0.870
	CUP ←RES	−0.602	0.029	−20.611	≤ 0.001	−0.467
	ADP ←RES	0.846	0.017	48.519	≤ 0.001	0.886
	CP ←RES	0.883	0.020	43.982	≤ 0.001	0.825
	SPR ←RES	0.289	0.030	9.498	≤ 0.001	0.228
	DP ←SB	1.000				0.528
	PF ←SB	−1.552	0.082	−18.913	≤ 0.001	−0.649
	EE ←SB	2.083	0.102	20.406	≤ 0.001	0.775
	STR ←RES	−2.500	0.341	−7.341	≤ 0.001	−0.194
	STR←BURN	1.678	0.101	16.650	≤ 0.001	0.649
	STR ←PA	1.155	0.308	3.748	≤ 0.001	0.065
	BURN ← →RES	−1.397	0.095	−14.715	≤ 0.001	−0.592
Between 3 and 5 times	PA ←RES	−0.124	0.037	−3.352	≤ 0.001	−0.158
	PA←BURN	0.018	0.008	2.296	≤ 0.05	0.117
	PER ←RES	1.000				0.850
	CUP ←RES	−0.726	0.040	−17.949	≤ 0.001	−0.517
	ADP ←RES	0.903	0.025	35.655	≤ 0.001	0.866
	CP ←RES	1.012	0.029	35.360	≤ 0.001	0.861
	SPR ←RES	0.346	0.041	8.498	≤ 0.001	0.260
	DP ←SB	1.000				0.511
	PF ←SB	−1.828	0.119	−15.388	≤ 0.001	−0.723
	EE ←SB	2.205	0.140	15.760	≤ 0.001	0.769
	STR ←RES	−3.029	0.511	−5.923	≤ 0.001	−0.217
	STR←BURN	1.795	0.146	12.267	≤ 0.001	0.643
	STR ←PA	0.037	0.390	0.095	0.925	0.002
	BURN ← →RES	−1.352	0.113	−11.996	≤ 0.001	−0.666
More than 6 times	PA ←RES	0.094	0.088	1.067	0.286	0.126
	PA←BURN	0.061	0.023	2.688	≤ 0.05	0.359
	PER ←RES	1.000				0.827
	CUP ←RES	−0.709	0.078	−9.094	≤ 0.001	−0.539
	ADP ←RES	0.865	0.051	17.088	≤ 0.001	0.895

CP ←RES	0.879	0.060	14.589	≤ 0.001	0.785
SPR ←RES	0.475	0.079	6.022	≤ 0.001	0.371
DP ←SB	1.000				0.461
PF ←SB	−2.122	0.304	−6.982	≤ 0.001	−0.715
EE ←SB	2.466	0.343	7.185	≤ 0.001	0.775
STR ←RES	−1.046	1.324	−0.790	0.429	−0.074
STR←BURN	2.406	0.447	5.382	≤ 0.001	0.756
STR ←PA	1.950	0.874	2.232	≤ 0.05	0.104
BURN ← →RES	−1.448	0.251	−5.762	≤ 0.001	−0.741

Note: Emotional Exhaustion (EE); Stress (STR); Personal Realization (PR); Depersonalization (DP); Control and Purpose (CP); Persistence/Tenacity/Self-Efficacy (PER); Spirituality (SPR); Physical Activity (PA); Control Under Pressure (CUP); Adaptability and Support Networks (ADP).

It has been shown in Table 2 the effects for participants who have not been exposed to physical activity at all. For resilience, a positive effect on physical activity practice is observed (β=0.006). On the contrary, a negative reciprocal effect between resilience and burnout syndrome is observed ($p ≤ 0.001$; β=−0.622). There is also a negative effect of resilience on stress ($p ≤ 0.05$; β=−0.139). With regard to burnout syndrome, a positive effect on the practice of physical activity is observed ($p ≤ 0.05$; β=0.204) and stress ($p ≤ 0.001$; β=0.697). With regard to physical activity, a negative effect of physical activity on stress is observed (β=−0.010).

Table 2 presents the effects of the variables for participants who have presented between once and twice. For resilience, a negative effect is observed with the physical activity variables ($p ≤ 0.001$; β=−0.147), stress ($p ≤ 0.001$; β=−0.194) and burnout syndrome ($p ≤ 0.001$; β=−0.592). For the burnout syndrome variable, a positive effect on the physical activity variable is observed (β=0.067) and stress ($p ≤ 0.001$; β=0.649). Finally, a positive effect of physical activity on stress is observed. ($p ≤ 0.001$; β=0.065).

Continuing with the proposed model for participants who have taken this test between three and five times, a good fit is obtained for this test ($X^2 = 11.980$; df= 31; pl=0.000). For the Comparative Fit Index (CFI), Incremental Fit Index (IFI), Normalised Fit Index (NFI) and Tucker Lewis Index (TLI), values of 0.895, 0.960, 0.900 and 0.915 were obtained respectively. For the root mean square error of approximation (RMSEA) the value was 0.073.

Regarding the effects of the variables for participants who have been between once and twice, Table 2 shows these effects. For resilience, a negative effect of this variable on physical activity practice is observed ($p ≤ 0.001$; β=−0.158), stress ($p ≤ 0.001$; β=−0.217) and burnout syndrome ($p ≤ 0.001$; β=−0.666). A positive effect of burnout syndrome on physical activity is observed ($p ≤ 0.05$; β=0.117) and stress ($p ≤ 0.001$; β=0.643). Finally, a positive effect of regular physical activity on stress is observed (β=0.002).

Continuing with the proposed model for participants who have taken this test more than six times, a good fit is obtained for this test ($X^2 = 12.347$; df= 31; pl=0.000). For the Comparative Fit Index (CFI), Incremental Fit Index (IFI), Normalised Fit Index (NFI) and Tucker Lewis Index (TLI), values of 0.954, 0.964, 0.871 and 0.987 were obtained respectively. For the root mean square error of approximation (RMSEA) the value was 0.054.

Finally, regarding the effects of the variables for participants who have presented between one and two times, Table 2 shows the results. For resilience, a positive effect of resilience on physical activity is observed (β=0.126). On the contrary, a negative effect of resilience on stress is observed. (β=−0.074) and on burnout syndrome ($p ≤ 0.001$; β=−0.741). Regarding burnout syndrome, there is a positive effect on the practice of physical activity ($p ≤ 0.05$; β=0.359) and stress ($p ≤ 0.001$; β=0.756). With reference to the practice of physical activity, a positive effect on stress is observed ($p ≤ 0.05$; β=0.104).

Discussion

Having answered the research questions and objectives, this section aims to compare the results obtained with those of others similar research.

Regarding the effect of resilience on physical activity practice, a positive effect is observed when participants have participated more than six times and when they have not participated once. On the contrary, when they have occurred between one and two times and between three and five times, a negative effect of resilience on physical activity is observed. Given these findings, research by Shah et al. (2020) states

that there are different ways to foster resilience. The study by Felver et al. (2020) states that Yoga promotes resilience levels. Despite this, it has been observed that when faced with adverse situations, regular physical activity helps to alleviate negative emotional states, mainly due to the secretion of neurotransmitters, such as adrenaline, noradrenaline, dopamine, and serotonin (Paolucci et al., 2018). Another reason why these results are consistent with the research conducted by Paolucci et al. (2018). This found that the regular practice of physical exercise helps to reduce the levels of different emotional states, however the intensity at which it is performed can help the decrease of these states to be faster or more gradual.

Focusing on the reciprocal effect of resilience and burnout, a negative effect is observed. A greater negative effect is observed the more times the applicants have applied. It has been observed that the higher the levels of burnout syndrome, the greater the need for greater emotional competencies, with resilience standing out (Moreno-Lucas et al., 2023). The research carried out by Jackson and Szombathelyi (2023) states that evaluative tests that require a long period of preparation increase the levels of negative emotional states that increase the levels of burnout syndrome. It is for this reason that these negative emotional states require high levels of emotional competences that help to alleviate the negative effects caused by these negative emotional states (González-Valero et al., 2023).

Regarding the effect of burnout syndrome on physical activity, a positive effect is observed between the two variables. In this case, the effect is greater the more times the candidates have taken the assessment test. It has been shown that regular physical exercise helps to reduce the emotional states that lead to burnout syndrome (Naczenski et al., 2018). When the emotional exhaustion generated by the academic or work environment exerts a state of mental and physical fatigue, the practice of physical activity helps to diminish or alleviate this effect (de Vries and Bakker, 2022). Conversely, it has been found that there are also different techniques based on mental control that help to alleviate the emotional effects generated by burnout syndrome (Latino et al., 2021). Similarly, it has been shown that when an academic result is not achieved, burnout syndrome increases due to a low state of competence towards the task (Hosseini et al., 2023).

Continuing with the burnout syndrome with respect to stress, a similar effect is observed regardless of the number of times participants have taken the entrance test. In this case, the effect is greater when participants have taken the test more than six times. Research by Goel et al. (2016) states that burnout syndrome is generated by high levels of stress. Furthermore, Zhu et al. (2021) state that low perceived competence towards a task increases stress levels. Similarly, Silva et al. (2020) state that when the date of an assessment test approaches, stress levels increase, encouraging a higher level of burnout syndrome. It has also been observed that burnout syndrome plays a negative role in the performance towards an academic task (de la Fuente and Amate, 2019).

Looking at the effect between resilience and stress, it is observed that it is negative. Moreover, a greater effect is observed when a person has taken the test three to five times. Given these results, Konaszewski et al. (2021) state that when a student shows a low degree of competence when taking an assessment test, stress levels increase. In contrast, it has been observed that resilience can act beneficially in coping with an exam. The study conducted by Yang and Wang (2022) found that students who show higher levels of resilience show higher levels of competence, as well as higher academic performance.

Focusing on the effect of physical activity on stress, a negative relationship is observed between these variables when the test has not been taken at all. In contrast, the effect is positive and greater when applicants have taken the test more than six times. In view of these findings, Fromel et al. (2020) argues that when a test is taken for the first time, stress levels remain stable. In contrast, when the test is repeated over time and is not passed, a low degree of competence is perceived towards the test, which leads to uncontrolled stress levels (Hosseinkhani et al., 2020). Similarly, when stress levels are very high, physical activity has been shown to help alleviate some of the stress (Fromel et al., 2020).

Although this research has responded to the research questions and objectives initially set, it shows a number of limitations. The first of these is related to the instruments used. Although these have been validated and show a high degree of internal consistency, they show an intrinsic error in data collection. Similarly, the nature of the study is another limitation. By using a cross-sectional design, it is only possible to establish the effects of the variables at that point in time.

Finally, with regard to future perspectives, a meta-analysis is being carried out to study the different intervention programmes carried out with these variables. Likewise, it would be interesting to use an experimental design in future research that uses the manipulation of the variables. It would also be advisable to carry out this research over a longitudinal period of time.

The practical applications of this research relate to the mental health of Spanish pre-service teachers. Through the practice of physical exercise, benefits are observed in the different psychosocial areas of the applicants. As a practical suggestion during the preparation for this test, time for regular physical activity should be included. Active breaks are a new modality to avoid sedentary lifestyles. Through these, the sedentary period is interrupted by physical activity for a specific period of time.

With regard to anxiety and stress management, it is observed that regular physical activity is effective in helping the student. Based on these results, it would be advisable to design different types of physical-sports proposals to help students to combat sedentary lifestyles, stress and anxiety during the preparation for the test.

This study also highlights the importance of appropriate emotional management. It has been observed that resilience plays a key role in the preparation of any test. It would be advisable to train future teachers in emotional management techniques during the university stage.

Conclusions

It is observed that participants who have taken the selection process more than 6 times show a greater reciprocal negative effect between resilience and burnout syndrome. These participants also show a greater effect of burnout syndrome on stress. It is also shown for participants who have gone through the process more than 6 times that burnout syndrome has a greater effect on physical activity. It has been shown that participants who have undergone the selection process more than 6 times show a greater effect of resilience on stress.

As a final assessment, it is stated that the process established to work as a teacher in the Spanish public education system generates the appearance of negative emotional states such as stress and burnout syndrome. In view of this, the emotional competence of candidates should be fostered through a style that increases resilience.

References

Aguilar-Parra, J. M., Álvarez, J., & Lorenzo, J. J. (2016). Estudio sobre las pruebas de la oposición de acceso a la función pública docente. Variables influyentes en cada fase de oposición. *Educación XX1, 19*(1), 357–379. https://doi.org/10.5944/educXX1.14477

Antonini-Philippe, R., Schwab, L., & Biasutti, M. (2021). Effects of Physical Activity and Mindfulness on Resilience and Depression During the First Wave of COVID-19 Pandemic. *Frontiers in Psychology, 12,* 700742. https://doi.org/10.3389/fpsyg.2021.700742

Cohen S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. http://dx.doi.org/10.2307/2136404

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18*(2), 76–82. https://doi.org/10.1002/da.10113

Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., Pratt, M., Ekelund, U. L. F., Yngve, A., Sallis, J., & Oja, P. (2003). International physical activity questionnaire: 12-country reliability and validity. *Medicine & Science in Sport & Exercise, 35*(8), 1381–1395. https://doi.org/10.1249/01.MSS.0000078924.61453.FB

Crespo, M., Fernández-Lansac, V., & Soberón, C. (2014). Spanish version of the Connor-Davidson Resilience Scale (CD-RISC) for chronic stress situations. *Behavioral Psychology, 22*(2), 219–238. https://www.behavioralpsycho.com/wp-content/uploads/2019/08/03.Crespo_22-2.pdf

De la Fuente, J., & Amate, J. (2019). La experiencia desagradable como determinante de las respuestas cognitivas, conductuales y fisiológicas de estrés académico en universitarios opositores. *Anales de Psicología, 35*(3), 472–483. https://doi.org/10.6018/analesps.35.3.323101

de Vries, J. D., & Bakker, A. B. (2021). The physical activity paradox: a longitudinal study of the implications for burnout. *International Archives of Occupational and Environmental Health, 95*(5), 965–979. http://dx.doi.org/10.1007/s00420-021-01759-y

Díaz-Sánchez, C., & Barra-Almaiga, E. (2017). Resiliencia y satisfacción laboral en profesores de colegios municipales y particulares subvencionados de la comuna de Machalí. *Estudios Pedagógicos, 43*(1), 75–86. http://dx.doi.org/10.4067/S0718-07052017000100005

Fernández-García, R., Zurita-Ortega, F., Melguizo-Ibáñez, E., & Ubago-Jiménez, J.L. (2024). Physical activity as a mediator of stress, anxiety and depression on well-being in physical education teachers. *Journal of Human Sport and Exercise, 19*(1), 117–129. https://doi.org/10.14198/jhse.2024.191.10

Felgueroso, F., Pérez, M. J., & Bagües, M. F. (2007). Sobre la composición óptima de los tribunales evaluadores: el caso de las oposiciones a Jueces y Fiscales. *Cuadernos Económicos de ICE, 74*, 147–166. https://www.revistasice.com/index.php/CICE/article/view/5921/5921

Felver, J. C., Razza, R., Morton, M. L., Clawson, A. J., & Mannion, R. S. (2020). School-based yoga intervention increases adolescent resilience: a pilot trial. *Journal of Child and Adolescent Mental Health, 32*(1), 1–10. http://dx.doi.org/10.2989/17280583.2019.1698429

Freudenberger, H. J. (1989). Burnout: Past, present, and future concerns. *Loss, Grief & Care*, *3*(1-2), 1–10. https://doi.org/10.1300/J132v03n01_01

Fromel, K., Safar, M., Jakubec, L., Groffik, D., & Aatka, R. (2020). Academic Stress and Physical Activity in Adolescents. *Biomed Research International, 2020*, 4696592. http://dx.doi.org/10.1155/2020/4696592

Galeano-Rojas, D., Montero-Ordóñez, L. F., León-Reyes, C. F., León-Reyes, B. L., Ribeiro-Almeida, N., & Farias-Valenzuela, C. (2023). Frequency of Physical Activity in Primary Education. Influence of the family and type of activity. *ESHPA - Education, Sport, Health and Physical Activity, 7*(2), 217-226. http://doi.org/10.5281/zenodo.8189239

Goel, A. D., Akarte, S. V., Agrawal, S. P., & Yadav, V. (2016). Longitudinal assessment of depression, stress, and burnout in medical students. *Journal of Neurosciences in Rural Practice, 7*(4), 493–498. http://dx.doi.org/10.4103/0976-3147.188625

González-Valero, G., Gómez-Carmona, C. D., Bastida-Castillo, A., Corral-Pernía, J. A., Zurita-Ortega, F., & Melguizo-Ibáñez, E. (2023). Could the complying with WHO physical activity recommendations improve stress, burnout syndrome, and resilience? A cross-sectional study with physical education teachers. *Sport Sciences for Health*, 1–10. https://doi.org/10.1007/s11332-022-00981-6

González-Valero, G., Zurita-Ortega, F., San Román-Mata, S., & Puertas-Molero, P. (2021). Relación de efecto del Síndrome de Burnout y resiliencia con factores implícitos en la profesión docente. Una revisión sistemática. *Revista De Educación,* (394), 271–296. https://doi.org/10.4438/1988-592X-RE-2021-394-508

Guo, L., & Liang, L. (2023). Physical activity as a causal variable for adolescent resilience levels: A cross-lagged analysis. *Frontiers in Psychology 14,* 1095999. https://doi.org/10.3389/fpsyg.2023.1095999

Hinwood, M., Ilicic, M., Gyawali, P., Coupland, K., Kluge, M. G., Smith, A., Bowden, S., Nilsson, M., & Walker, F. R. (2023). Psychological Stress Management and Stress Reduction Strategies for Stroke Survivors: A Scoping Review. *Annals of Behavioral Medicine, 57*(2), 111–130. https://doi.org/10.1093/abm/kaac002

Hosseini, S. M., Pourafzali, S. M., Shahraki, H. R., Kabiri, M., & Rostami, N. (2023). Investigation of academic motivation in medical students and its association with clinical education quality, academic achievement, and academic burnout. *Journal of Education and Health Promotion, 11*(1), 376. http://dx.doi.org/10.4103/jehp.jehp_1605_21

Hosseinkhani, Z., Hassanabadi, H.R., Parsaeian, M., Nedjat, S., & Foroozanfar, Z. (2020). The role of mental health, academic stress, academic achievement, and physical activity on self-rated health among adolescents in Iran: A multilevel analysis. *Journal of Education and Health Promotion, 9*(1), 182. http://dx.doi.org/10.4103/jehp.jehp_161_20

Jackson, K. M., & Szombathelyi, M. K. (2023). Student Burnout in Higher Education: From Lockdowns to Classrooms. *Education Sciences, 12*(12), 842. http://dx.doi.org/10.3390/educsci12120842

Konaszewski, K., Kolemba, M., & Niesiobedzka, M. (2021). Resilience, sense of coherence and self-efficacy as predictors of stress coping style among university students. *Current Psychology, 40*(8), 4052–4062. http://dx.doi.org/10.1007/s12144-019-00363-1

Latino, F., Cataldi, S., & Fischetti, F. (2021). Effects of an 8-Week Yoga-Based Physical Exercise Intervention on Teachers' Burnout. *Sustainability, 13*(4), 2104. http://dx.doi.org/10.3390/su13042104

Mantilla, S., & Gómez-Conesa, A. (2007). International physical activity questionnaire. An adequate instrument in population physical activity monitoring. *Revista Iberoamericana de Fisioterapia y Kinesiologia 10*, 48–52. http://dx.doi.org/10.1016/S1138-6045(07)73665-1

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior, 2*(2), 99–13. https://doi.org/10.1002/job.4030020205

Maydeu-Olivares, A. (2017) Maximum Likelihood Estimation of Structural Equation Models for Continuous Data: Standard Errors and Goodness of Fit. *Structural Equation Modeling: A Multidisciplinary Journal, 24*(3), 383–394. http://dx.doi.org/10.1080/10705511.2016.1269606

Kyriazos, T. A. (2018). Applied Psychometrics: Sample Size and Sample Power Considerations in Factor Analysis (EFA, CFA) and SEM in General. *Psychology, 9*(8), 86856. http://dx.doi.org/10.4236/psych.2018.98126

Melguizo-Ibáñez, E., González-Valero, G., Zurita-Ortega, F., & Ortega-Martín, J. L. (2023). Burnout, estrés y resiliencia en el proceso de oposición a cuerpos educativos. *Revista de Educación, 402*, 31–53. https://doi.org/10.4438/1988-592X-RE-2023-402-594

Moreno-López, R., Esteban-Ramiro, B., & Barranco-Barroso, R. (2020). Young people's uncertainty about the future: Education system, training, and transition to employment in Spain. *Tuning Journal for Higher Education, 7*(2), 67–89. https://doi.org/10.18543/tjhe-7(2)-2020pp67-89

Moreno-Lucas, J. L., Martínez-Ramón, J. P., Morales-Rodríguez, F. M., Ruiz-Esteben, C., & Méndez, I. (2023). Stress, Burnout, and Resilience: Are Teachers at Risk? *International Journal of Mental Health Promotion, 25*(2), 207–222. https://doi.org/10.32604/ijmhp.2023.025901

Naczenski, L. M., de Vries, J. D., van Hooff, M. L. M., & Kompier, M. A. J. (2018). Systematic review of the association between physical activity and burnout. *Journal of Occupational Health, 59*(6), 477–494. http://dx.doi.org/10.1539/joh.17-0050-RA

Paolucci, E. M., Loukov, D., Bowdish, D. M. E., & Heisz, J. J. (2018). Exercise reduces depression and inflammation but intensity matters. *Biological Psychology, 133*,79–84. http://dx.doi.org/10.1016/j.biopsycho.2018.01.015

Real Decreto 270/2022, de 12 de abril, por el que se modifica el Reglamento de ingreso, accesos y adquisición de nuevas especialidades en los cuerpos docentes a que se refiere la Ley Orgánica 2/2006, de 3 de mayo, de Educación, y se regula el régimen transitorio de ingreso a que se refiere la disposición transitoria decimoséptima de la citada ley, aprobado por Real Decreto 276/2007, de 23 de febrero. *Boletín Oficial del Estado, 88*, de 13 de abril de 2022. https://www.boe.es/eli/es/rd/2022/04/12/270

Remor, E. (2006). Psychometric Properties of a European Spanish Version of the Perceived Stress Scale (PSS). *The Spanish Journal of Psychology, 9*(1), 86–93. https://doi.org/10.1017/S1138741600006004

Seisdedos, N. (1997). *MBI Inventario Burnout de Maslach: Manual*. TEA

Selye, H. (1975). Stress and distress. *Comprehensive Therapy, 1*(8), 9–13.

Shah, R., Paulson, J., & Couch, D. (2020). The Rise of Resilience in Education in Emergencies. *Journal of Intervention and Statebuilding, 14*(3), 303–326. http://dx.doi.org/10.1080/17502977.2019.1694390

Shen, G. (2022). Anxiety, Boredom, and Burnout Among EFL Teachers: The Mediating Role of Emotion Regulation. *Frontiers in Psychology, 13,* 842920. https://doi.org/10.3389/fpsyg.2022.842920

Silva, L. R, B., Seguro, C. S., de Oliveira, C. G. A., Santos, P. O. S., de Oliveira, J. C. M, de Souza-Filho, L. F. M., de Paula-Júnior, C. A., Gentil, P., & Rebelo, A. C. S. (2020). Physical Inactivity Is Associated with Increased Levels of Anxiety, Depression, and Stress in Brazilians During the COVID-19 Pandemic: A Cross-Sectional Study. *Frontiers in Psychiatry, 11*, 565291. https://doi.org/10.3389/fpsyt.2020.565291

Suárez-Riveiro, J. M., Rubio-Sánchez, V., Antúnez-Horcajo, R., & Fernández-Suárez, A. P. (2013). Metas y Compromiso de los opositores al cuerpo de maestros en la especialidad de Educación Primaria. *Revista de Investigación Educativa, 31*(1), 77–92. http://dx.doi.org/10.6018/rie.31.1.139661

Tenenbaum, G., & Eklund, R. (2007). *Handbook of Sport Psychology*. Wiley & Sons.

Yang, S., & Wang, W. (2022) The Role of Academic Resilience, Motivational Intensity and Their Relationship in EFL Learners' Academic Achievement. *Frontiers in Psychology, 12,* 823537. http://dx.doi.org/10.3389/fpsyg.2021.823537

Zhao, W., Vandelanotte, C., Khalesi, S., Alley, S. J., Williams, S. L., Thwaite, T. L., Fenning, A. S., Stanton, R., & To, Q. G. (2022). Depression, anxiety, stress, and physical activity of Australian adults during COVID-19: A combined longitudinal and repeated cross-sectional study. *Frontiers in Psychology, 13,* 962962. https://doi.org/10.3389/fpsyg.2022.962962

Zheng, S., Liu, H. R., & Yao, M. L. (2022). Linking young teachers/self-efficacy and responsibility with their well-being: the mediating role of teaching emotions. *Current Psychology*. https://doi.org/10.1007/s12144-022-03342-1

Zhu, X. H., Chu, T., Yu, Q., Li, J. M., Zhang, X. Y., Zhang, Y., & Lou, L. Y. (2021). Effectiveness of Mind-Body Exercise on Burnout and Stress in Female Undergraduate Students. *International Journal of Mental Health Promotion, 23*(3), 353–360. http://dx.doi.org/10.32604/IJMHP.2021.016339

Authors' and translators' details:

Ruben Fernández-García	rubenfer@ual.es	Author
Georgian Badicu	georgian.badicu@unitbv.ro	Author
Félix Zurita-Ortega	felixzo@ugr.es	Author
Eduardo Melguizo-Ibáñez	emelguiz@ull.edu.es	Author/Translator
Luca Paolo Ardigò	luca.ardigo@nla.no	Author
José Luis Ubago-Jiménez	jlubago@ugr.es	Author