INTERNATIONAL SEVEN JOURNAL
OF MULTIDISCIPLINARY
ISSN: 2764-9547

EFFECTIVENESS OF ACTIVE BREAKS IN REDUCING OCCUPATIONAL STRESS THROUGH ERGONOMIC INTERVENTIONS AMONG STAFF AT AN EDUCATIONAL INSTITUTION IN ANDAHUAYLAS, PERU

EFETIVIDADE DAS PAUSAS ATIVAS NO ESTRESSE LABORAL APLICANDO A ERGONOMIA NO PESSOAL DA INSTITUIÇÃO EDUCATIVA, ANDAHUAYLAS (PERU)

EFECTIVIDAD DE PAUSAS ACTIVAS EN EL ESTRÉS LABORAL APLICANDO LA ERGONOMÍA EN EL PERSONAL DE LA INSTITUCIÓN EDUCATIVA, ANDAHUAYLAS (PERÚ)

https://doi.org/10.56238/isevmjv5n2-008

Receipt of originals: 03/10/2026 **Acceptance for publication:** 03/10/2026

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ABSTRACT

This study sought to determine the effectiveness of active breaks in reducing work-related stress by applying ergonomics principles among staff at the Educational Institution in Andahuaylas. An applied deductive method with a pre-experimental design and explanatory scope was used. The population consisted of 24 workers from the Educational Institution; given the small population size, a census sampling approach was employed, resulting in a sample of all 24 workers from the institution located in Andahuaylas. The study was analyzed using STATA statistical software version 15, applying the Wilcoxon signed-rank test. Results showed that moderate stress levels decreased from 11 to 8 cases, severe stress declined from 13 cases to none, and 16 cases of mild stress were observed following the implementation of active breaks, based on pre- and post-intervention stress level measurements. The findings demonstrate that active breaks significantly reduce work-related stress among employees at the Educational Institution.

Keywords: Job Stress. Work Breaks. Educational Sector Workers.

RESUMO

O presente estudo buscou determinar a efetividade das pausas ativas no estresse laboral aplicando a ergonomia no pessoal da Instituição Educativa de Andahuaylas. O método utilizado no estudo foi o dedutivo, de tipo aplicado, com delineamento pré-experimental e alcance explicativo; a população foi composta por 24 trabalhadores da Instituição Educativa; o tipo de amostra foi censitário, por se tratar de uma população pequena, contando com uma amostra de 24 trabalhadores da Instituição Educativa localizada em

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Andahuaylas. O estudo baseou-se no software estatístico STATA versão 15, empregando o teste de sinais de Wilcoxon. O nível moderado de estresse diminuiu de 11 casos para 8, o nível grave diminuiu de 13 casos para nenhum, e houve 16 casos de estresse leve após a aplicação das pausas ativas, conforme os resultados dos níveis de estresse antes e depois da intervenção. Demonstrou-se que as pausas ativas reduzem em grande medida o estresse laboral nos trabalhadores da Instituição Educativa.

Palavras-chave: Estresse Laboral. Pausas Laborais. Trabalhadores do Setor Educacional.

RESUMEN

El presente estudio buscó determinar la efectividad de pausas activas en el estrés laboral aplicando la ergonomía en el personal de la Institución Educativa, Andahuaylas. El método que se utilizó para el estudio es deductivo de tipo aplicada y diseño pre-experimental con un alcance explicativo; la población estuvo conformada por 24 trabajadores de la Institución Educativa; el tipo de muestra es censal, por ser una población pequeña, contó con una muestra de 24 trabajadores de la Institución Educativa ubicada en Andahuaylas. El estudio se basó en el estadístico STATA versión 15 empleando la prueba signos de Wilcoxon. El nivel moderado de estrés disminuyó de 11 casos a 8, el nivel grave disminuyó de 13 casos a ninguno, y hubo 16 casos de estrés leve tras la aplicación de pausas activas, según los resultados de los niveles de estrés antes y después. Se ha demostrado que las pausas activas disminuyen en gran medida el estrés laboral en los empleados de la Institución Educativa.

Palabras clave: Estrés Laboral. Pausas Laborales. Trabajadores de Sector Educativo.

1 INTRODUCTION

At present, people face increasing pressures in different aspects of their lives, which generates a constant state of tension. The workplace is one of the most affected aspects, due to the continuous changes in the work environment and the incorporation of new technologies that transform the way in which work is carried out. These changes represent new challenges for workers, who, when faced with job demands that exceed their knowledge or skills, may experience work stress (Bada et al., 2020). This problem is especially common among those who maintain direct contact with users, such as personnel in the education sector. Therefore, it is essential to implement strategies that help reduce these negative effects. Among these practices, active breaks stand out, which seek to provide physical, mental and environmental rest in the workplace. These active breaks not only benefit the work environment, but can also have a positive impact on the worker's personal and family life (Tunja et al., 2021).

Likewise, the application of ergonomics refers to the study of the relationship between human beings and their work environment, seeking to optimize working conditions to guarantee the health, safety, and well-being of employees (Aquino, 2019, as cited in Carrasco et al., 2023).

According to Carrasco, López Asqui, & Barreno Gadvay, (2023), its main purpose of its literature review is to analyze how ergonomic risks influence work performance, in order to identify the most relevant ergonomic factors, their effects on workers' health and productivity.

This study aims to evaluate the effectiveness of active breaks in reducing the level of stress by applying ergonomics in the staff of the Educational Institution, Andahuaylas. The central question that guides this research is: What is the effectiveness of active breaks in reducing work stress by applying ergonomics in the staff of the educational institution?

2 MATERIALS AND METHODS

The technique used for the collection of information in this study was the survey, a tool widely used in social and health research. This technique allows data to be obtained efficiently, collecting the perceptions, opinions and experiences of the participants on the study variable such as work stress and active breaks. The use of the survey is justified by its ability to capture a large amount of information in a structured way and in a short

time, which facilitates subsequent statistical analysis. In addition, by including closed-ended and open-ended questions, the survey offers flexibility to explore both specific responses, such as stress level and frequency of active breaks, as well as more detailed perceptions of the effects.

A questionnaire was used to assess stress in workers consisting of 49 questions divided into three dimensions: psychological, physiological and stress-causing factors. The questionnaire remained unchanged and was reviewed by experts to ensure that the questions were clear and relevant. In addition, it has high reliability, which guarantees that it is a suitable and safe instrument to use in this study.

The method used in this study was hypothetical-deductive, since general data on the study variables were first collected and then projected into specific results obtained in the research. This methodology allows hypotheses to be made based on observations and then tested through practical research. In this case, the findings of (Carhuancho et al., 2019, as cited in González Rivera, 2024) were taken as a reference.

Likewise, the type of research was applied, whose main objective is to generate novel, creative and useful answers to urgent problems in various areas such as psychology, engineering, medicine and education. This type of study seeks to produce knowledge that can be used to develop new technologies, improve real conditions, optimize processes, or design better policies, standing out for its relevance and practical usefulness (Aceituno, 2022). On the other hand, the level of study is explanatory, since it is not only limited to describing a phenomenon, but also understanding and explaining how active breaks contribute to the reduction of work stress.

The study is characterized by a pre-experimental design, as it does not include a control group and the treatment is used only as a preliminary test. Therefore, it was considered a group that receives the treatment and is evaluated before and after the intervention to observe its effects (Arias, 2021).

3 RESULTS

3.1 OF THE GENERAL OBJECTIVE

Table 1

Levels of work stress before and after active breaks applying ergonomics in the staff of the Educational Institution, Andahuaylas

Stress	Mild	Moderate	Severe	P- Value
Work stress				
Before	0	11	13	<0.01*
After	16	8	0	

Note: Tests for Wilcoxon signs for related samples; *Significant differences (p<0.01)

Table 1 shows the comparisons of the level of work stress before and after the active breaks applying ergonomics. For the contrast of the difference hypothesis, the Wilcoxon signs test was applied for related samples.

A confidence level of 95% and a significance level α=0.05 were established for hypothesis testing. The decision rule established was to reject the null hypothesis (Ho) when the value of p<0.05, and the alternate hypothesis (H1) would be supported; otherwise the Ho is not rejected.

Based on the research hypothesis: The study of the effectiveness of active breaks applying ergonomic principles has proven to be an effective tool to improve stress levels in the staff of the Educational Institution, the statistical hypotheses were raised:

H1: The study of the effectiveness of active breaks applying the ergonomic principle is effective in reducing work stress in staff, Educational Institution, Andahuaylas.

H0: The study of the effectiveness of active breaks applying the ergonomic principle is not effective in reducing work stress among staff, Educational Institution, Andahuaylas.

The comparison analysis yielded values of p<0.01, which led to the decision to reject Ho, concluding that there are significant differences for work stress, as well as in its psychological, physiological and stressor dimensions; before and after the application of active breaks applying ergonomic principles, and in all cases there was a decrease in stress levels after application.

3.2 SPECIFIC OBJECTIVE 1

Table 2

Levels of psychological stress before and after active breaks applying ergonomics in the staff of the Educational Institution, Andahuaylas.

Stress	Mild	Moderate	Severe	P- Value
Psychological				
Before	0	12	12	<0.01*
After	13	11	0	

Note: Tests for Wilcoxon signs for related samples; *Significant differences (p<0.01)

Table 2 shows the comparison of the levels of psychological stress before and after active breaks applying ergonomics in the Educational Institution, Andahuaylas. The implementation of the active breaks under ergonomic principles consisted of 3 weekly sessions of 5 minutes each, these sessions included specific breathing, stretching and relaxation exercises, strategically designed to reduce work stress.

To assess the differences, the Wilcoxon sign test was used for related samples, with a confidence level of 95% and a significance threshold of α=0.05. The decision was to reject the null hypothesis (H0) if the p-value was less than 0.05, in favor of the alternative hypothesis (H1); otherwise, H0 is not rejected.

According to the hypothesis proposed: The study of the effectiveness of active breaks applying ergonomic principles is effective for the reduction of psychological stress at work in personnel, the following statistical hypotheses were established:

H1: The application of active breaks is effective in reducing the psychological stress of the staff in the Educational Institution, Andahuaylas.

H0: The application of active breaks is not effective in reducing the psychological stress of the staff in the Educational Institution, Andahuaylas.

The analysis of the data shows a value of $p < 0.01$, which allows the null hypothesis to be rejected. It is concluded that there are significant differences in the levels of psychological stress before and after the application of active breaks, with a notable decrease in the levels of psychological stress after the intervention.

3.3 SPECIFIC OBJECTIVE 2

Table 3

Physiological stress levels before and after active breaks in the staff of the Educational Institution, Andahuaylas.

Stress	Mild	Moderate	Severe	P- Value
Physiological				
Before	0	15	9	<0.01*
After	16	8	0	

Note: Tests for Wilcoxon signs for related samples; *Significant differences (p<0.01)

Table 3 presents the comparison of physiological stress levels before and after the implementation of active breaks in the Institution, Andahuaylas. The intervention included specific techniques for muscle relaxation and improved circulation, applied 3 times a week for 5 minutes each. The Wilcoxon sign test for related samples was used to assess differences, with a confidence level of 95% and a significance level α=0.05. The decision rule was to reject the null hypothesis (H0) when the p-value < 0.05, supporting the alternative hypothesis (H1); otherwise, H0 is not rejected.

Based on the research hypothesis: The application of active breaks is effective in reducing the physiological work stress of the staff, the following statistical hypotheses were formulated:

H1: The application of active breaks is effective in reducing the physiological stress of the staff in the Educational Institution, Andahuaylas.

H0: The application of active breaks is not effective in reducing the physiological stress of the staff in the Educational Institution, Andahuaylas.

The analysis of the results yielded a value of p < 0.01, allowing the null hypothesis to be rejected. This indicates that significant differences occurred in physiological stress levels before and after the application of active breaks, evidencing a significant reduction in physiological stress levels.

3.4 SPECIFIC OBJECTIVE 3

Table 4

Levels of work stressors before and after active breaks in the staff of the Educational Institution, Andahuaylas.

Stress	Mild	Moderate	Severe	P- Value
Work Stressors				
Before	0	10	14	<0.01*
After	14	10	0	

Note: Tests for Wilcoxon signs for related samples; *Significant differences (p<0.01)

Table 4 shows the comparison of the levels of work stressors before and after the application of active breaks at the Andahuaylas Educational Institution. This application included exercises designed to reduce exposure to environmental stressors by improving the work environment, among others. To determine the differences, the Wilcoxon sign test was applied for related samples, with a confidence level of 95% and a significance level α=0.05. The decision was based on rejecting the null hypothesis (H0) if the p-value < 0.05, in favor of the alternative hypothesis (H1); otherwise, H0 is not rejected.

According to the research hypothesis: The implementation of active breaks is effective in reducing work stressors in staff, the following statistical hypotheses were established:

H1: The application of active breaks is effective in reducing the work stressors of the staff in the Educational Institution, Andahuaylas.

H0: The application of active breaks is not effective in reducing the work stressors of the staff at the Educational Institution, Andahuaylas.

The analysis showed a value of p < 0.01, which allowed the null hypothesis to be rejected. It is concluded that there are significant differences in the levels of work stressors before and after the active breaks, with a notable decrease in work stressors after the intervention.

4 DISCUSSION

The objective of this study is to evaluate the effectiveness of active breaks in reducing work stress in the staff of the Educational Institution, Andahuaylas. According to

the results obtained, they showed that the program had a positive impact on the improvement of various stressful situations. Likewise, significant changes in stress levels were observed before and after the intervention applying ergonomics, considering physiological and psychological aspects and factors that cause stress.

Consistent and coherent support of the proposal

The results of this study represent an important advance in our understanding of the benefits of active breaks in reducing stress levels in the work environment of school workers. In addition, they provide new perspectives on the effects of work stress on workers and highlight the value of implementing active breaks as an effective strategy to face this problem, especially when ergonomic principles are applied that ensure the correct execution of the exercises and adaptation of the work environment. The methodology of this study, which integrates data analysis, offers a more complete picture of the relationship between work stress and the effectiveness of active breaks by applying ergonomics in the staff of the Andahuaylas Educational Institution.

Support and description of the most relevant findings

In addition, it is consistent with the study by Zegarra (2021) who states that the results showed that 100% of workers indicated that active breaks allowed them to reduce high levels of work tension and ergonomic risks. In conclusion, the active break is effective for stress reduction since both studies agreed that to reduce work stress and improve employee well-being, active breaks are crucial. According to (Silvio, 2025), these active breaks in the workplace serve to increase productivity and improve work performance, as well as reduce the stress and burnout associated with work.

On the other hand, for Moyano, L. (2021), he found strong evidence that active break programs implemented in companies in conjunction with other ergonomic tools increase the physical, social, and mental well-being of workers.

In conclusion, active breaks reduce work stress in workers. Both studies agree that active breaks also help employees regain strength, avoid musculoskeletal ailments, improve concentration, encourage creativity, relax their eyes and reduce the harmful health effects of a sedentary lifestyle. From the perspective of ergonomics, the implementation of active breaks is essential to adapt the environment and working conditions to the capabilities and needs of the staff, preventing and improving well-being.

In summary, the implementation of active breaks based on ergonomic principles is an effective strategy to prevent diseases, reduce stress, improve mood and productivity and as well as encourage employees to adopt healthy behaviors.

Critical foundation compared to existing theories

This is how the theory of the demands and resources of work is based, which was proposed in 1979 by Robert Karasek, an American psychologist. This idea focuses on how job expectations are related to an individual's ability to meet them, and how work stress can be affected by it.

This theory can be used in the study to analyze how active break can help reduce work stress for employees at the Educational Institution, Andahuaylas. Second (Silvio, 2025), Employee performance can improve and work stress can be reduced if active breaks provide workers with more autonomy over their time and the ability to choose how to use it. In addition, the provision of a more relaxed environment and social support by active breaks can improve an individual's ability to manage the demands of their job, thereby mitigating work stress.

Propositions of the implications of the study

Strengths and Weaknesses of the Methodology

The methodology of this study has a number of advantages. For example, the pre-experimental approach minimizes bias by allowing a controlled assessment of the effectiveness of active breaks. In addition, the collection and analysis of survey data provides a more complete picture of the relationship between active break effectiveness and work-related stress. But one flaw in the technique is that factors such as the age and gender of the employees were not taken into account, which could have affected the results.

Restrictions and potential biases

An important limitation, we were unable to assess the durability of the long-term effects of the application of active breaks due to the methods used. When analyzing the data, the potential influence of these biases on the results must be taken into account.

In addition, another aspect to consider is the homogeneity of the sample. Although all the staff of the Educational Institution were included, individual differences in terms of age, sex, work experience and personality may have influenced the response of active breaks, which limits the generalization of the results to other contexts or populations. Finally, the results could also be influenced by uncontrolled external factors, such as

stressful events in the participants' personal lives or changes in the work environment that could affect stress levels regardless of the intervention. These factors may have introduced biases into data collection and analysis.

Potential impact

The findings of this study could have a great impact on the social, professional and academic spheres. In the academic context, the results add to the body of research on the effectiveness of active breaks by applying ergonomic principles to reduce work stress levels among employees of educational institutions. In the professional field, the results can be applied to the creation and execution of ergonomically designed active breaks in various work environments, thus improving the mental health and general well-being of workers. In the social sphere, the results can be used to encourage the adoption of ergonomically focused active break programmes in various educational settings, which can improve both the level of instruction and the well-being of students.

5 CONCLUSIONS

- Active breaks based on ergonomic principles have been shown to be highly effective in reducing work stress among employees of the Institution, Andahuaylas. Regular implementation of relaxation and exercise practices during work breaks has resulted in a noticeable decrease in overall stress levels.
- Active breaks applied with ergonomic principles have had a positive impact on the reduction of psychological stress. Ergonomics seeks to adapt the capabilities and limitations of the worker in the work environment, and the relaxation and stress management techniques used during active breaks have contributed to significantly reducing the levels of anxiety, irritability and difficulties in concentration, which are common in stressful work environments.
- Active breaks, applying ergonomics have been shown to be effective in mitigating physiological stress and evidence shows a clear decrease in levels of muscle tension and other physical indicators associated with stress, confirming that it helps to relieve the body's responses to stress.
- Active breaks applied with ergonomic principles have proven to be a very effective tool in reducing work stressors. The data indicate a decrease in the perception of stressors in the work environment, such as work overload, lack of support, and pressure to meet deadlines

REFERENCES

Carrasco, J., López Asqui, A. I., & Barreno Gadvay, A. D. (2023, julio). Riesgos ergonómicos y su influencia en el desempeño. Dialnet. https://dialnet.unirioja.es/servlet/articulo?codigo=9586076

Tunja Castro, D. T. (2021). Pausas activas para la disminución del estrés laboral [Tesis de grado, Universidad Técnica de Ambato]. https://repositorio.uta.edu.ec/server/api/core/bitstreams/bad8230f-cdad-4249-b47e-fb56d35fca90/content

Tunja Castro, D. T. (2021). El estrés laboral y la necesidad de pausas activas en la Federación Deportiva de Cotopaxi. En Perspectivas para un siglo cambiante en las organizaciones y el turismo del siglo XXI (pp. 49–60). Editorial UISRAEL. https://www.researchgate.net/profile/Antonio-Lara-8/publication/358900096_LIBRO2_Page_49_K-Nearest_Neighbors_in_Psychosocial_Risk_Management/links/621c8b2a2542ea3cacb7159e/LIBRO2-Page-49-K-Nearest-Neighbors-in-Psychosocial-Risk-Management.pdf#page=61

Tunja Castro, D. T., Achote Caisaguano, M. M., & Montero Reyes, Y. (2021). El estrés laboral y la necesidad de pausas activas en la Federación Deportiva de Cotopaxi. Libros de América Latina Actualidad y Perspectiva.

Aceituno Huacani, C. (2022). Trucos y secretos de la praxis cuantitativa. Ediciones Repalain.

Arias, F. (2021). El proyecto de investigación: Introducción a la metodología científica (6.ª ed.). Editorial Episteme.

Bada, H., Lahkim, M., & Belmouden, A. (2020). Contribution of the COVID-19 pandemic to the reduction of greenhouse gas emissions in China. International Journal of Research and Ethics (IJRE).

Carrasco, J., López Asqui, A. I., & Barreno Gadvay, A. D. (2023, junio). Riesgos ergonómicos y su influencia en el desempeño. Dialnet. https://dialnet.unirioja.es/servlet/articulo?codigo=9586076

González Rivera, P. L. (2024, marzo). Criterios actualizados sobre la metodología de la investigación educativa: Una aproximación bibliográfica. Mendive. Revista de Educación, 22. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1815-76962024000100031

Lovón Cueva, M. A., Montenegro García, M. I., & Chegne Cortez, A. D. (2021, diciembre). La COVID-19 y la metáfora bélica: Un análisis cognitivo en los diarios digitales y las redes sociales. Revista de Investigación en Ciencias Sociales y Humanas, 2(2), 155–170. http://www.scielo.org.pe/scielo.php?script=sci_arttext&pid=S2708-26442021000200155

Moyano Salazar, L. M. (2021). Pausas activas: Una herramienta ergonómica revisión. Cuidado y Ocupación Humana, 2. https://ojs.unipamplona.edu.co/index.php/coh/article/view/518

Roa Cubaque, M. A., Rojas Laverde, M., Wilches Wilches, M. R., & Umbacía Salas, F. (2021). Conducta tabáquica en estudiantes universitarios en Tunja (Boyacá). Revista de la Facultad de Ciencias de la Salud, 17(1). https://www.redalyc.org/journal/817/81775229005

Silvio Oraldo, A. A. (2025, febrero). Pausas activas para la mejora del desempeño laboral en el personal. Revista de Investigación en Ciencias.

Silvio Oraldo, A. A. (2025, febrero). Pausas activas para la mejora del desempeño laboral en el personal. Revista de Investigación en Ciencias. https://dialnet.unirioja.es/servlet/articulo?codigo=10055299

Uribe Alvarado, M. V. (2022). Pausas activas en la educación virtual: Una solución económica y de grandes resultados. Ciencia Latina Revista Científica Multidisciplinar, 6(3). https://ciencialatina.org/index.php/cienciala/article/view/3820

Zegarra Cacallaca, S. M. (2021). Nivel de estrés laboral en los trabajadores administrativos de la Municipalidad Distrital de Paucarcolla, 2021 [Tesis de grado, Universidad Nacional de la Amazonía Peruana].

Rojas, D. J. M., Pampañaupa, R. S. V., & Ramírez, L. E. Z. (2025). El envejecimiento poblacional en América Latina: Desafíos para la sostenibilidad del bienestar y la cohesión social (2000–2050): Population aging in Latin America: Challenges for the sustainability of well-being and social cohesion (2000–2050). RCMOS - Revista Científica Multidisciplinar O Saber, 1(2), Article 1887. https://doi.org/10.51473/rcmos.v1i2.2025.1887