


ORIGINAL ARTICLE

Therapeutic massage for college students with stress

Masaje terapéutico para estudiantes universitarios con estrés

Massagem terapêutica para estudantes universitários com estresse

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Received: 03-10-2023 Accepted: 30-01-2024 Published: 15-02-2024

ABSTRACT

Introduction: psychological stress in university students studying Bachelor of Tourism can cause negative manifestations in the psychological, physical and social order.

Objective: to present the validity of a therapeutic massage procedure that contributes to reducing psychological stress in Bachelor of Tourism students at the University of Holguín. **Methods:** a quantitative research was carried out; theoretical and empirical methods were used. Mathematical statistics were used to process the data. 17 experts were selected to evaluate the procedure used, with an average experience of 17 years. The research was from September 2019 to July 2022. A sample of 82 students was selected, to whom a pre-test was applied before treatment, with therapeutic massage, and a post-test at the end. **Results:** by observing the students in the different contexts of action and reviewing

the sources of information, results indicative of psychological stress were evident. In a survey administered to teachers, little theoretical and methodological knowledge was demonstrated for the application of therapeutic massage for university students with psychological stress. **Conclusions:** the procedure developed to reduce stress was applied and demonstrate its effectiveness on the health and well-being of the selected sample.

Keywords: psychological stress; massage procedure; mental health



RESUMEN

Introducción: el estrés psíquico en los estudiantes universitarios de Licenciatura en Turismo puede provocar manifestaciones negativas en el orden psíquico, físico y social. **Objetivo:** exponer la validez de un procedimiento de masaje terapéutico que contribuya a disminuir el estrés psíquico en los estudiantes de Licenciatura en Turismo en la Universidad de Holguín. **Métodos:** se realizó una investigación cuantitativa, se utilizaron métodos teóricos y empíricos; para el procesamiento de los datos se utilizó la estadística matemática. Se seleccionaron 17 expertos para la valoración del procedimiento empleado, con una experiencia promedio de 17 años, la investigación fue de septiembre 2019 a julio 2022. Se seleccionó una muestra de 82 estudiantes, a la cual se le aplicó un test antes y después de concluir el tratamiento con masaje terapéutico. **Resultados:** mediante la observación a los estudiantes en los diferentes contextos de actuación y la revisión de las fuentes de información se evidenció resultados indicadores de estrés psíquico. En encuesta aplicada a los profesores, se demostró pocos conocimientos teóricos y metodológicos para la aplicación del masaje terapéutico para estudiantes universitarios con estrés psíquico. **Conclusiones:** el procedimiento elaborado para disminuir el estrés se aplicó y demuestra su efectividad en la salud y el bienestar de la muestra seleccionada.

Palabras clave: estrés psíquico; procedimiento de masaje; salud mental

RESUMO

Introdução: o estresse psicológico em estudantes universitários do Bacharelado em Turismo pode causar manifestações negativas de ordem psicológica, física e social. **Objetivo:** apresentar a validade de um procedimento de massagem terapêutica que contribui para a redução do estresse psicológico em estudantes do Bacharelado em Turismo da Universidade de Holguín. **Métodos:** foi realizada uma pesquisa quantitativa, foram utilizados métodos teóricos e empíricos. Estatística matemática foi usada para processar os dados. Para avaliar o procedimento utilizado foram selecionados 17 especialistas, com experiência média de 17 anos. A pesquisa ocorreu de setembro de 2019 a julho de 2022. Foi selecionada uma amostra de 82 estudantes, aos quais foi aplicado um pré-teste antes do tratamento com massagem terapêutica, e um pós-teste no final. **Resultados:** ao observar os estudantes nos diferentes contextos de atuação e revisar as fontes de informação, ficaram evidentes resultados indicativos de estresse psicológico. Em pesquisa realizada com professores, foi demonstrado pouco conhecimento teórico e metodológico para a aplicação da massagem terapêutica em estudantes universitários com estresse psicológico. **Conclusões:** o procedimento desenvolvido para reduzir o estresse foi aplicado e demonstrou sua eficácia na saúde e no bem-estar da amostra selecionada.

Palavras-chave: estresse psicológico; procedimento de massagem; saúde mental

How to cite this article:

Torres Forjans JA, Avila Solis MA, Medrano Montero J, Ortiz Fernández Y, Pérez Hechavarría R. **Therapeutic massage for college students with stress.** RevInfCient [Internet]. 2024 [cited Access date]; 103:e4432. Available in: <http://www.revinfcientifica.sld.cu/index.php/ric/article/view/4432>



INTRODUCTION

The fulfillment of academic tasks by university students in a demanding context can generate psychic stress (PS). It is necessary to carry out a study from Therapeutic Physical Culture, Physical Education (PE) and Therapeutic Massage (TM) to provide them with body relaxation techniques, both theoretical and practical. These techniques can help students develop skills other than those targeted in their academic training, and in turn, decrease symptoms that can lead to illness.

PE is an evident reality in college students, especially during the first two years of undergraduate studies. This is due to various stressors, such as the rigor of the Investigative Work Practice, exams, exposures in front of the group for the first time, the elaboration of extra-class work and the student's commitment to their organization, curriculum and the fulfillment of the study plan.

It is important to consider the definition of stress provided by authors such as Çetinkaya,⁽¹⁾ Pascoe⁽²⁾ and Deng.⁽³⁾ According to them, stress is a process that occurs when a person cannot manage his or her internal and external feelings, which generates a systemic imbalance. If stress becomes chronic, it can have a negative impact on an individual's mental and physical health, and potentially lead to disorders such as depression, anxiety and irritability.

The World Health Organization (WHO), referenced by Alejos R,⁽⁴⁾ has identified stress as a common problem in students, which can put their health at risk. Students often experience physical symptoms such as headaches and abdominal pain, as well as psychological reactions due to SP. La Real Academia de la Lengua Española,⁽⁵⁾ defines stress as the tension caused by overwhelming situations that originate psychosomatic reactions or psychological disorders, sometimes severe.

Selye, referenced by Quintero,⁽⁶⁾ called the term 'General Adaptation Syndrome' (GAS) to describe the response of a human organism when it is mobilized to face a stressor, where three phases are distinguished: that of Alarm, in which physiological hyperactivation occurs as an initial response to the stressor, that of Resistance, in which the organism maintains a high physiological response in order to adapt and cope with the ongoing stress, and that of Exhaustion, characterized by physical and mental fatigue due to chronic stress.

According to Barraza,⁽⁷⁾ stress is an essentially psychological process that occurs in the following circumstances: when the student is subjected in school contexts to a series of demands that under the student's own assessment are considered stressors, which cause a systemic imbalance that manifests itself in a series of symptoms, forcing the student to perform coping actions to restore the systemic balance. Similarly, Córdova,⁽⁸⁾ refers that stressors are situations that are found in a large part of the academic population. They are presented as threats in the individual; this happens due to the lack of adaptation to a new academic environment, being observed in high levels of stress.



It is considered that stress may increase during the first years of the career due to situations such as research work practice, exams and expositions in front of the group, elaborating extra-class work, commitment with the group, work practice, maintaining a good curriculum, the study plan, dragging, student-student competition. These elements can be triggers for SP. It is important to emphasize that second year students of the Bachelor's Degree in Tourism at the University of Holguin are affected by these situations. Therefore, it is considered necessary to implement therapies that help their care, stability and health recovery.

The authors of this research consider necessary the physical-therapeutic attention of students of Bachelor's Degree in Tourism affected by PS, from the PE class, with the application of body relaxation tools such as therapeutic massage, which can be valuable to treat PS and originate well-being in students. On the other hand, the curriculum program plays a fundamental role by contributing in an organized way to the development of physical capacities, as well as the promotion of healthy lifestyles, through the practice of alternatives such as yoga, aerobics and therapeutic massage.

METHOD

A quantitative research was conducted to test the efficacy of therapeutic massage in the treatment of stress in second year undergraduate students of tourism at the University of Holguin in the period from September 2019 to July 2022.

A sample was selected intentionally, which coincided with the size of the population, which was constituted by 82 students, of which 59 students belonged to the female sex and 23 to the male sex. Informed consent was obtained in writing from all participants.

Theoretical methods, such as systemic-structural-functional and empirical methods, such as observation, expert judgment and questionnaire, were applied. A test was applied before treatment with therapeutic massage, and another after 6 months of treatment, for the same group, based on the SISCO Inventory, to measure SP levels.

To determine the existence of significant differences between the results obtained before (pre-test) and after (post-test) treatment, the Wilcoxon test was used, with a significance level of 0.05.

The statistical analysis was performed using the SPSS statistical package, version 11.5 for Windows, and R-Studio, a complement belonging to the statistical programming software R. The variables defined were PS level as the dependent variable, and therapeutic massage treatment as the independent variable.



RESULTS

The theoretical component of the established procedure was submitted to expert criteria, where the criteria of a group of competent professionals in the area of knowledge of PE were considered. Delphi method procedures were used, considered as one of the most reliable subjective methods, and which constitutes a procedure for drawing up a picture of the evolution of complex situations through statistical elaboration.

The application of the method implied the implementation of the following actions: selection of professionals considered as possible experts, application of a questionnaire to determine the competence coefficient, determination of the experts to be consulted, application of the questionnaire, where the components of the massage procedure were submitted to the consideration of the experts, processing and evaluation of the information gathered through the statistical mathematical procedure that is part of the Delphi method.

A preliminary study was conducted with 10 professionals from Higher Education, the National Institute of Sports, Physical Education and Recreation and Public Health. These professionals were selected because they were within the scope of the researcher and had knowledge about the dynamics of the teaching-learning process of PE for university students affected by PS.

Seventeen experts were selected from an initial population of 22. These experts were chosen because they achieved a high competence coefficient, with values between 0.8 and 1 ($0.8 < K < 1$). This selection demonstrates that the experts possess a significant level of competence and are qualified to evaluate and validate the variables of the procedure, as well as to contribute to the data collection process.

Six PhDs and full professors were found among the selected experts, which highlighted their level of specialization and knowledge in their respective areas. In addition, five of them have master's degrees, with three of them occupying the rank of Assistant and two Assistants, which indicated their dedication and commitment to research and teaching.

The experts have a 17-year track record of working in the field of PE, which brought valuable practical experience to the study. Two physiotherapists are also involved, who will provide a specialized perspective on the management of aspects related to health and physical well-being.

Once the experts were selected, they were sent a scale containing five categories for the evaluation of the different aspects of the procedure. Very Relevant (VR), Fairly Relevant (FR), Relevant (R), Not Very Relevant (NVR), Not Relevant (NR), as well as a document with the procedure for its evaluation with the five variables under analysis: V1 Objective, V2 Methodological order of the proposal, V3 Necessity of the proposal, V4 Components and elements of the proposal, V5 Applicability of the proposal.



The experts' evaluations of the procedure for the five variables yielded the following results: 58.72% considered it to be very adequate, 17.76% considered it to be quite adequate, 12.88% adequate, 6.76% not very adequate and only 3.88% considered it to be inadequate. It is generally considered that the form of instrumentation is pertinent, considering that 89.36% of the variables evaluated are in the first three categories.

To evaluate the alternative hypothesis, after applying the TM procedure and performing the post-test, the Wilcoxon test was used with a significance level of 0.05, to determine if there are significant differences in the results obtained. If the p-value (Sig.) obtained is less than 0.05, the null hypothesis is rejected and the alternative hypothesis is accepted, indicating the existence of significant differences in the results before and after applying the TM. This proved to be valid, as shown in the results in Table 1.

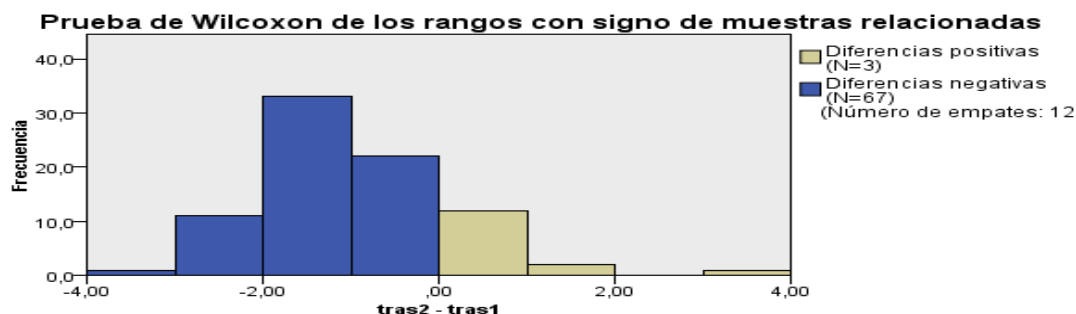
Quantitative results obtained in the statistical test

Table 1 Alternative hypothesis according to psychic tests with Wilcoxon signs

Null hypothesis	Test	Sig.	Decision
The median of the differences between "Before" and "After" treatment is equal to 0.	Wilcoxon signed-rank test for related samples	0,000	Reject the null hypothesis

The asymptotic significances are shown. The significance level is 0.05.

For more information, we turned to Graph 1, which shows that negative differences predominate; from this result we infer the influence of the TM applied in the PE classes on the decrease in PS, because there is strong significance between the measurements before and after, corroborated with the significance value in the table, which is the same as that given in the summary 0.000 asymptotic significance, bilateral test 0.005.



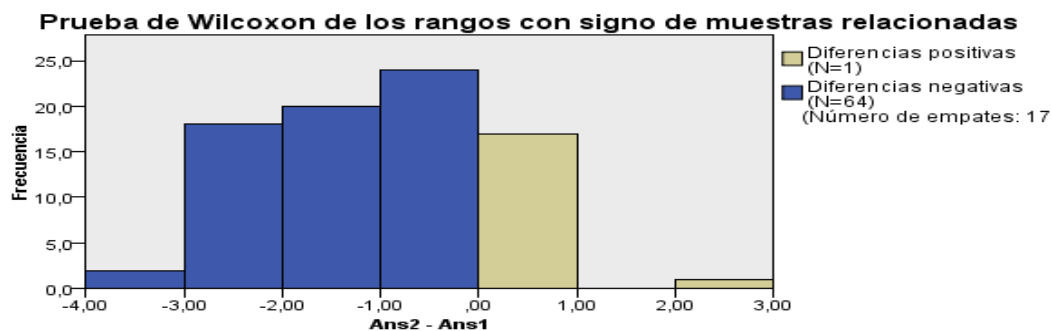
Graph 1 Alternative hypothesis according to psychic tests with Wilcoxon signs



Table 2 Alternative hypothesis according to physical tests with Wilcoxon signs

Null hypothesis	Test	Sig.	Decision
The median of the differences between "Before" and "After" treatment is equal to 0.	Wilcoxon signed-rank test for related samples	0,000	Reject the null hypothesis

The asymptotic significances are shown. The significance level is 0.05.

**Graph 2** Alternative hypotheses according to physical tests with Wilcoxon signs.

In general, the effects caused by the TM on the PE of the students subjected to the study are positive.

In relation to the Wilcoxon signed-rank test, each of the indicators was contrasted as Before-After pairs. The non-existence of negative ranges (average negative ranges equal to 0.00) is observed, while the positive ranges are in all cases considerably higher, without ties, which corroborates that the values of the scores obtained in each of the indicators in the post-test (general index 0.8) are higher than those of the pre-test (general index 0.2). In all cases with highly significant differences ($p=0.001$). For the above, R-Studio was applied, a complement belonging to the statistical programming software, R, and SPSS.

At the researcher's discretion, the most determinant items in the behavior of the variable are ascertained from the results obtained, where it is possible to assure the occurrence of significant changes in the hierarchy of the influence of the indicators in each of the interventions, in dimension one, more significantly in indicator one, the items:

One: the conception of the psycho-pedagogical and physical condition diagnosis of the students.

Two: mastery of the content and determination of learning tasks.

Three: control of comprehension in the execution of learning tasks through the design of levels and types of assistance.

From indicator two, the items:



One: use of teaching means in correspondence with students' characteristics

Two: use of the existential environment as a resource for learning and knowledge transmission.

Of indicator three, the items:

One: application of evaluation with actions of experiential practice.

Two: use of individual assessment for differentiated attention.

Therefore, it can be stated that the implementation of the TM procedure in the physical-therapeutic care demonstrates the possibilities of achieving an important improvement in the teaching-learning process in the PE classes and its conditioned therapeutic area at the University.

The validation process of the main research results and the quantitative data described allowed the present research to summarize the main transformations achieved in this process:

Results of the methodological triangulation that reaffirm the hypothesis

The application in the physical-therapeutic care in the PE classes and its conditioned therapeutic area as an inclusive concept of a methodology with output in a TM procedure of the students of the Bachelor's degree course in Tourism of the university, affected with PS, which are expressed in three results:

1. Facilitated, by decreasing students' PS levels with the use of the TM procedure: research, self-evaluation and control, the use of didactic resources present in the existential environment, as well as the use of teaching aids and socio-affective relationships. It improved the assimilation of content and the student's capacity for cognitive solutions, which is a flexible resource for the application of the didactic technique to be used in the realization of learning tasks, from the explanation of TM techniques, manipulations, procedures and performing various problematic situations according to each PD symptom. It also facilitated the use of novel didactic techniques of long duration such as: self-learning, self-preparation strategy, concept map related to the affectation, professional profile and planned physical activity. It increased the use of methodological didactic resources such as digital technology, in which the cell phone and digital self-preparation programs were useful.



2. Improved the design and conception of the teacher's own work in the planning and direction of the teaching-learning process based on: The structuring and conformation of the methodology in a hierarchical way in objectives, contents, method, procedures, teaching means and evaluation according to the subject and from the discipline's collective, so that one tributes to the other and with a developing dynamic in the didactic links as a resource for the development of PE attention in students. The design of the PE subjects allowed demonstrating its potential as a discipline by articulating prophylactic and therapeutic physical culture with PE: I, II, III, IV, which dialectically are linked in an inclusive concept of the therapeutic area in the university PE class. The didactic-methodological procedure was strengthened from the discipline's collective in the design and conception of learning tasks, in function of the development of PE attention through TM in students.
3. Decreased PS and improved the health status of students from the practice of TM independently in the PE class, in the therapeutic area organized for this purpose, for this reason: This last aspect is important and is considered novel in the research, since the controls in the follow-up to the diagnosis made by the teacher, the student in the final self-learning exhibition, the self-preparation strategy related to SP, the professional profile and the planned physical activity, give to know about the increase of their improvement through the independent physical activity, organized and planned in a systematic way in 14 weeks and 28 meetings during the period.

The analysis of these results allows affirming that the proposal is satisfactory, since the indicators are evaluated in the high category, as they demonstrate in the instruments applied the level of preparation reached by the teachers in the development of attention in PE students.

DISCUSSION

Barraza and Sileiro, cited by Luna Santos,⁽⁹⁾ found different stressors suffered by academic students, such as: competitiveness among classmates or groups, overload of tasks, excess of responsibility, unpleasant physical environment, lack of incentives, limited time to do the work or tasks, problems or conflicts with teachers or fellow students, and type of work they are asked to do. Similar aspects were found in this study, which were addressed through better planning, both in the subject and in the educational work of the students, in their interpersonal relationships and complemented with the TM.

The researchers Pardo and González⁽¹⁰⁾ conclude that the findings of their study coincide with previous research, which reports a change in coping towards problem-focused coping, by finding the effectiveness of the Mindfulness meditation program focused on solving the problem.

Chaabane S, et al.⁽¹¹⁾ determined that, based on the total number of primary studies, clinical training-related stressors are most frequently reported among nursing students, followed by academic stressors. Aspects related to professional and academic training were some of the stress triggers among tourism students.



In a study by Rodríguez-Martínez,⁽¹²⁾ they found that in the formation of external professional practice, as a coping strategy, can help students to improve their stress management in any new or challenging situation.

It was possible to appreciate the similarity between the studies carried out by the aforementioned authors and those reached in this research regarding stressors in university students of different careers, fundamentally associated with workload, tests, professors' personality and competition with peers for the achievement of academic grades and recognition, among other factors.

When analyzing the coping strategies^(13,14) provided by the systematized studies, they are diverse: problem-centered, religious, positive effort, professional practice; all of them effective in stress management, but different from the present study carried out in the tourism career, which used different types of massage as a coping strategy for stressful symptoms with very good results; 90% of the selected sample in their psychological and physical health after the procedure was applied.

Among the limitations of this research is that the sample was adjusted only to Bachelor's degree students in Tourism, without considering the diversity of careers existing at the University of Holguín. In addition, it only focused on university education, therefore, in future studies; it is recommended to include students from other careers and types of education, such as high school, in order to obtain more representative and complete results.

CONCLUSIONS

The feasibility and validity of the therapeutic massage procedure proposed by the author for the reduction of psychic stress in university students of the Bachelor's Degree in Tourism is demonstrated, both by the method of expert criteria and the statistical method followed for the comparison of the results before and after the massage treatment was applied, by means of the Wilcoxon signed-rank test.

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Conflicts of interest:

The authors declare that there are no conflicts of interest.

Author contributions:

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Miguel Angel Avila Solis: data curation, formal analysis, methodology, supervision, validation, drafting-revision and editing.

Jacqueline Medrano Montero: formal analysis, supervision, visualization, writing-revision and editing.

Yoel Ortiz Fernández: data curation, original drafting, drafting-revising and editing.

Rubier Pérez Hechavarría: original drafting-drafting, drafting-revising and editing.

Financing:

No funding was received for the development of this article.

Complementary file (Open Data):

[Inventario SISCO aplicado en los estudiantes de Licenciatura en Turismo de la Universidad de Holguín](#)

