

## PRACTICE OF PHYSICAL EXERCISES IN A HOSPITAL ENVIRONMENT

## PRÁTICA DE EXERCÍCIOS FÍSICOS EM AMBIENTE HOSPITALAR

Lyrian Lorena Freire Lira<sup>1</sup> (Orcid: <https://orcid.org/0000-0002-9108-4662>); Plinio da Cunha Leal<sup>1</sup> (Orcid: <https://orcid.org/0000-0003-1336-8528>); Almir Vieira Dibai-Filho<sup>1</sup> (Orcid: <https://orcid.org/0000-0001-5403-8248>); Alexsandro Ferreira dos Santos<sup>2</sup> (Orcid: <https://orcid.org/0000-0001-7470-4607>); Ravelli Henrique de Souza<sup>3</sup> (Orcid: <https://orcid.org/0000-0001-5706-9373>)

<sup>1</sup>Postgraduate Program in Physical Education, Federal University do Maranhão, São Luís, Maranhão, Brazil.

<sup>2</sup>Postgraduate Program in the Environment, CEUMA University, São Luís, Maranhão, Brazil.

<sup>3</sup>State University of Londrina, Londrina, Paraná, Brazil.

### ABSTRACT

**Introduction:** Among the most commonly practiced physical exercise (PE) in a hospital setting are mobility exercises, usually as part of physical therapy care. However, most patients lose the ability to perform activities of daily living, as this inability has been associated with increased hospital readmissions and mortality. **Objective:** To study evidence on exercise interventions, study the impacts of the practice of exercises on clinical outcomes and discuss the performance of the PE professional in a hospital environment. **Materials and Methods:** This is a bibliographic, descriptive and systematized study based on analyzing scientific articles on physical exercises in the hospital setting in hospitalized patients. Original, indexed articles published between 2008 and 2021 were included. Sixteen articles concerning the central theme addressed the impact of physical exercise practice on hospital outcomes. **Results:** Fourteen articles were evaluated, describing the main recommendations for practicing physical exercises and the evaluation mechanisms. Another 16 articles addressed the impact of the practice of physical exercises on hospital outcomes. Regarding the central theme, 10 publications were observed reporting the performance of Physical Education Professionals, focusing on rehabilitation in surgical patients or as an adjuvant treatment in chronic patients. **Conclusion:** The practice of physical exercises is widely recognized in the literature as an important method for maintaining health. Studies associate earlier exercise with favorable clinical outcomes and a reduction in hospital length of stay, and the results also highlight the importance of the professional for clinical outcomes in hospitalized patients.

**Keywords:** Physical Education. Hospital Care. Health Care.

### RESUMO

**Introdução:** Em ambiente hospitalar, a prática de exercícios físicos mais comum inclui exercícios e mobilidade, geralmente no atendimento fisioterapêutico, porém grande parte dos pacientes apresenta perda da capacidade de realizar atividades da vida diária e essa incapacidade têm sido associadas ao aumento da readmissão e morte. **Objetivo:** Estudar evidências sobre intervenções de exercícios, estudar os impactos da prática de exercícios nos desfechos clínicos

Autor correspondente:  
Lyrian Lorena Freire Lira  
E-mail: [lohyrian.r@gmail.com](mailto:lohyrian.r@gmail.com)  
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e discutir a atuação do profissional de EF em ambiente hospitalar. Materiais e Método: Esta pesquisa se trata de um estudo bibliográfico, descritivo e sistematizado, realizado a partir da análise de artigos científicos relacionados à prática de exercícios físicos em ambiente hospitalar em pacientes hospitalizados. Foram incluídos artigos originais, indexados publicados entre 2008 e 2021. Resultados: Foram avaliados quinze artigos, descrevendo as principais recomendações para a prática de exercícios físicos e os mecanismos de avaliação. Outros 16 artigos abordaram o impacto da prática de exercícios físicos nos desfechos hospitalares. Em relação ao tema central, foram observadas 10 publicações que relatavam a atuação de profissionais de Educação Física, com foco na reabilitação de pacientes cirúrgicos ou como tratamento adjuvante em pacientes crônicos. Conclusão: A prática de exercícios físicos é amplamente reconhecida na literatura como um importante método para a manutenção da saúde. Estudos associam a prática precoce de exercícios a desfechos clínicos favoráveis e à redução do tempo de internação hospitalar, e os resultados também ressaltam a importância do profissional para os desfechos clínicos em pacientes hospitalizados.

Palavras-chave: Educação Física. Assistência Hospitalar. Assistência à Saúde.

## INTRODUCTION

Physical activity (PA) is a body movement performed by skeletal muscle that results in energy expenditure. Physical exercise (PE) is a set of planned, structured, and repetitive physical activities to improve or maintain physical fitness<sup>1</sup>. Since mobility is essential to functional independence<sup>2</sup>, the most common PE practice in a hospital environment includes exercises and mobility, usually in physiotherapeutic care<sup>3</sup>. However, many patients have lost the ability to perform daily living activities due to hospitalization, and this inability has been associated with increased rehospitalization and death<sup>4,5</sup>.

To investigate whether there is scientific evidence that PE interventions in hospitalized patients can collaborate with the clinical outcome of this population, this research aims to study current evidence on exercise interventions, study the impacts of the practice of exercises on the clinical outcomes and discuss the performance of the PE professional in a hospital environment.

Thus, it is essential to identify current scientific evidence on the benefits of interventions with PE in a hospital environment, justifying the insertion of the Physical Education Professional (PEP) in the multidisciplinary team, focusing on patient care, and allowing an early outcome of functional restrictions.

This study aimed to study evidence on exercise interventions and the impacts of the practice of exercises on clinical outcomes. It also discussed the performance of the physical exercise professional in a hospital environment.

## MATERIAL AND METHODS

This research is a bibliographic, descriptive and systematized study, carried out from the analysis of scientific articles related to the practice of PE in a hospital environment in hospitalized patients, carried out in electronic databases: VHL (Virtual Health Library); Latin American and Caribbean Literature in Health Sciences (LILACS); Scientific Electronic Library Online (SCIELO); Medical Literature Analysis and Retrieval System Online (MEDLINE).

The descriptors applied in the research were selected according to the theme presented through the Descriptors in Health Sciences (DeCS). Original articles, dissertations and theses indexed in electronic databases, published between 2008 and 2021, whose methodology is a cohort, cross-sectional, prospective or retrospective, clinical trials, randomized or not, case reports and control and case studies and literature reviews, available in whole or in resumes, in English or Portuguese language, public or not, conducted in any country. Using reference management software Rayyan, duplicates were identified and removed.

## RESULTS

A total of 219 articles were identified that address the impact of the practice of PE on hospital outcomes, 14 of which were included because they were the research subjects and were within the inclusion criteria. It was verified that the studies relate the previous practice with positive clinical outcomes and reduced hospitalization time.

Regarding the central theme, 208 studies evaluated the practice of physical exercise in the hospital environment. However, 12 studies report the Professional Physical Education (PEP) performance in this environment, focusing on rehabilitation in surgical patients or adjuvant treatment in chronic patients. A clinical trial protocol with lasting results was also observed. Five official publications were used to clarify the profession's legality in a hospital environment.

## DISCUSSION

Impacts of the practice of physical exercises on clinical outcomes in a hospital environment



According to a study by Carvalho *et al.*,<sup>6</sup> functional declines resulting from hospitalizations are more frequent in older adults due to the illness that determines the condition, previous clinical conditions, and procedures to which they are submitted. This condition is called hospitalization-associated disability (HAD) and can affect 30 to 60% of hospitalized older adults.

Cornejo *et al.*<sup>7</sup> and Guedes, Oliveira and Carvalho<sup>8</sup> state that bed rest time promotes adverse effects that contribute to the development of pneumonia, deep venous thrombosis, pressure injuries and reduction of bone mass and muscle strength.

Faced with this functional decline, Hoyer *et al.*<sup>9</sup> presented the concept of hospital-acquired functional impairment, whose reasons are multifactorial, from sleep disorders to polypharmacy. Usually, reduced mobility and lack of physical conditioning due to the patient's time in bed are related to ADD, causing an increase in medical complications and making it impossible or difficult to recover independence in activities of daily living, both in older adults and patients with chronic diseases.<sup>8</sup>

According to Santos<sup>10</sup> institutionalized patients react better when they perform activities instead of remaining at total rest. Through the qualitative study results with the institution's staff, the author concludes that the Administrative Directors recognize the potential of PEP action, Directors of the Clinical Staff and Public Health Directors as professionals capable of assisting in rehabilitation, health promotion and disease prevention.

#### Practice on functional capacity and clinical factors

For Cops *et al.*,<sup>11</sup> PE established early is relevant during hospitalization, as it counteracts the effects of immobility, improving functional capacity after discharge. The author also concludes that strategies should be carried out that allow the individual to perform PE even in the hospital phase.

The study by Rocca *et al.*<sup>12</sup> verified that low levels of PE in the elderly population, measured by the PASE score in the treatment of mild acute diverticulitis, are significantly associated with the development of post-recovery disability. On the other hand, good physical performance can help to rehabilitate elderly patients after hospitalization.

Salvi *et al.*<sup>13</sup> retrospectively evaluated the benefit of a high-intensity preoperative pulmonary rehabilitation program in 14 patients with impaired preoperative pulmonary function and found that the experimental models reported an increase in the serum level of a brain-derived neurotropic factor after PE, and this might suggest a beneficial role of practice in the process of neurogenesis.

Fossat *et al.*<sup>14</sup> proved to be a safe and feasible method to mobilize patients in an intensive care unit (ICU) and bedridden patients. Exercise intervention with bedside cycling can be an alternative and effective method to move patients, improve lower extremity endurance and muscle performance, and promote the ability to get out of bed and walk. As the patient's physical abilities improve, the endurance, pace, and duration of exercise increase to provide a continuous training stimulus.

The study by Costa *et al.*<sup>15</sup> compared the effectiveness of functional, neuromuscular, and physiotherapy exercises in reducing hospitalization time and controlling the blood pressure (BP) of hospitalized individuals, concluding that these exercises are more effective in reducing the length of stay and controlling BP than routine hospital physiotherapy.

#### Practice in critical patients

Yen *et al.*<sup>16</sup> performed neuromuscular electrostimulation in lower limbs in conjunction with early rehabilitation. In two weeks, this showed that the association of these two techniques improved postural stability and gait in patients with acute stroke.

The study by Knaut<sup>17</sup> evaluated the influence of short-term, aerobic physical exercise during hospitalization on inflammatory markers, quality of life and physical capacity, readmission and mortality rates six months after hospital discharge with COPD (Chronic Obstructive Pulmonary Disease). Compared to the group with usual care, these patients showed significantly improved quality of life one month after hospital discharge without worsening the inflammatory condition.

It is also observed that it is recommended to continue the exercises after discharge, as mentioned by Vincent *et al.*<sup>18</sup> aimed to evaluate the experience of discharge patients after hospitalization for acute exacerbation of COPD and showed the benefits of rehabilitation, with the intervention group submitted to the same exercises as the patients who were instructed to continue the walks at home, stimulated and evaluated by telephone calls, being less active and having a worse quality of life.

Forestieri *et al.*<sup>19</sup> recommend that a physical training program should be interrupted during hospitalization under the supervision of PEP for signs of intolerance, such as low cardiac output manifested by cyanosis, pallor, nausea, bradycardia, a drop in systolic blood pressure of more than 15 mmHg, rise in systolic blood pressure of more than 200 mmHg, rise in diastolic blood pressure during the exercise of more than 110 mmHg), chest pain, rated fatigue  $\geq 6/10$  on perceived exertion, Borg syndrome, or electrocardiographic signs of cardiac ischemia or arrhythmias.

## Performance of the physical education professional in a hospital environment

The participation and interventions of the PEP in the hospital environment corroborate the principle of comprehensive care as one of the guidelines that guide the structure of the Brazilian Unified Health System, as an "articulated and continuous set of preventive and curative actions and services, individual and collective, required for each case at all levels of complexity of the health system".<sup>20</sup>

The National Health Council recently recognized the PEP in its Resolution nº 218/1997<sup>21</sup> as health professionals and Resolution nº 287/1998,<sup>22</sup> having related Physical Education among the professional categories of top-level healthcare. It is confirmed that Physical Education is an area of knowledge and academic-professional intervention involved with promoting, preventing and recovering health, which requires its performance in multidisciplinary teams.<sup>23</sup>

More recently, the Federal Council of Physical Education,<sup>24</sup> through Resolution nº 391, still recognizes that the PEP is trained to intervene in hospital contexts at primary, secondary or tertiary levels of healthcare.

According to the Resolution, article 3 reaffirms that it is the prerogative of the Physical Education Professional in the context of the hospital area to coordinate, plan, program, supervise, streamline, direct, organize, evaluate and execute works, programs, plan and projects, in the areas of physical activities and physical exercise, intended for the promotion, prevention, protection, education, intervention, recovery, rehabilitation, treatment and palliative care of physical and mental health, in the specific area or in a multidisciplinary and interdisciplinary way.<sup>24</sup>

Considering the PEP as a health professional, several studies have reported its insertion in different healthcare contexts, especially in primary care services.<sup>25,26</sup>

This performance scenario in physical education is justified by changes in thinking, establishing a different view of getting sick, which contributes to the construction of treatment models based on the ideas of humanization, focusing on the individual's attention.<sup>27</sup>

According to Chaves,<sup>28</sup> in his study of PEP-driven interventions in a hospital environment, the practices developed are physical activities such as strength training, sports, recreational and recreational activities, and the formation of interdisciplinary study groups and informative classes aimed at patients.

According to Dias, Antunes and Arantes,<sup>29</sup> the hospital recommends medium and high-complexity care. It involves direct treatment with the disease state of the people, having ample space for performance and insertion of the PEP. This derives from the need for tertiary care for hospitalized patients

since physical exercise can prevent the effects of loss of physical conditioning during rest and prepare the patient to face the demands of daily physical activities after discharge.

Dias, Antunes and Arantes<sup>29</sup> also state that the performance of PEP-driven interventions in the hospital environment collaborates with the treatment of problems related to rehabilitation, physical conditioning, sports, recreation, education, postural re-education, labor gymnastics and promotion of health.

Silva<sup>30</sup> also states that PEP can act in post-traumatic and postoperative rehabilitation with actions that improve neuromuscular functions, which will help recovery. The author's findings demonstrate the effectiveness of PEP-driven interventions.

Corrêa *et al.*<sup>31</sup> suggest actions within the hospital to the PEP. According to the author, the professional must work with a multidisciplinary team, which allows for care in its entirety, and not just for a reason for hospitalization, providing comprehensive healthcare, since the patient's rehabilitation is not always linked to healing, but also to seeking mental, physical and social independence. In this way, the professional must understand the functioning of the work environment, functioning clinics, hospitals and health centers since these spaces are different from the spaces of other fields of activity of the physical educator.

Thus, in the study by Ryrø *et al.*<sup>32</sup> published a protocol for a randomized clinical trial evaluating the effect of supervised physical training, with PEP-driven interventions, during hospitalization of patients with community-acquired pneumonia compared with standard treatment on length of stay, risk of readmission, risk of death, physical capacity, muscle mass, fat mass, muscle strength, metabolic function, systemic inflammation, health-related quality of life and physical activity level. Therefore, patients are divided into three groups: Standard treatment, usual routine treatment combined with cycling in bed (25 minutes) or standard treatment combined with exercises from a booklet (5 minutes), monitored and guided by PEP. The authors realize that physical training decreases the impact of critical illness and hospitalization on clinical outcome, mobility and health-related quality of life and may lead to new therapeutic approaches in the treatment of hospitalized patients.

The study by Costa *et al.*<sup>15</sup> compared individuals who received treatment such as functional and neuromuscular exercises and physiotherapy with those who did not perform any stimulus. The research can conclude that the practices seemed more effective in reducing the length of stay and blood pressure control in individuals than regular physiotherapy in hospitals.

Santos<sup>10</sup> considers that patients from the oncology service enter the role of PEP, where aerobic exercises defined concerning the intensity, duration and frequency can help patients in the first cycles of

chemotherapy, as well as work with patients in hemodialysis, where physical rehabilitation programs are beneficial for the improvement of the general condition, quality of life and reintegration of these patients. Proper exercise with pregnant women promotes improved circulation and weight control, reduction of muscle pain, preparation for childbirth and postpartum, and the prevention of diseases such as hypertension and gestational diabetes, which can be done with breathing techniques, stretching, relaxation, body awareness and muscular endurance.

Ferreira, Ariki and Zanachi<sup>33</sup> also analyzed the importance of the role of PEP-driven interventions in the hospital environment, and evidence suggests that it is the responsibility of the PEP to program routines of aerobic and weight training exercises to contribute to the recovery of patients hospitalized patients, or even create a habit of physical activities for adults, children or seniors in hospitals. It promotes healing and improvement in health for hospitalized patients, with due medical prescription or guidance regarding the type of activity, adapted to the kind of effort that the patient can perform and the population in general, and can allow improvement during hospitalization, guaranteeing moments of distraction and playfulness.

## CONCLUSION

The results show that the physical education teacher has several opportunities to work in a hospital setting and work with age groups to prevent the deterioration of the clinical condition and promote mobilization and physical rehabilitation. Based on the literature, it can be concluded that there is not only one field of action but more specialized coverage in terms of physical exercise in the hospital setting. That is essential to improving symptoms and quality of life in patients who have exercised because of strengthening respiratory, cardiac, and skeletal muscles promoted by exercise, which allows for greater functional independence.

It is still concluded that little has been explored and studied in the literature, even though legislative support and federal councils have been in action in recent years. Thus, it is proposed that cross-sectional studies and clinical trials be developed where the participation of physical education professionals in the field of health care can be evaluated, which is vital for the definition of protocols and consensus on what the recommendation for each hospitalized population is., whether elderly, children or critically ill patients.

Better dialogue between educational and government institutions is essential to increase curriculum changes and incentives for internships, multi-professional residencies and disciplines in the curriculum aimed at the performance of physical education professionals in the hospital context.

This study has the limitation of not being an integrative review with a single guiding question. This fact occurred due to different study designs used as inclusion criteria due to the scarcity of publications, which prevents the standardization of descriptive results and statistics. Heterogeneity in the designs of the included studies, such as the presence of observational studies (cohorts) and randomized clinical trials (RCTs), may impact the generalizability of the results.

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**Conflito de interesse**

Os autores declaram não possuir conflito de interesse.