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# Adequability of a Simplified Guide to the Discent Practice of Physiotherapy in an Intensive Care Unit - Pilot Study

**Luiz Euclides Coelho de Souza Filho[1], Katiane da Costa Cunha[2], Márcio Clementino de Souza Santos[3], Luiz Fábio Magno Falcão[4], Valéria Marques Ferreira Normando[5]**

[1]Master Graduated from State University of Pará

[2]Doctor Graduated from Federal University of Pará

[3]Doctor Graduated from State University of Pará,

[4]Doctor Graduated from State University of Pará

[5]Doctor Graduated from State University of Pará

**Abstract:** ***Introduction: Despite the evolution of early mobilization in Intensive Care Units, this procedure is still underused or underutilized worldwide. Research on the subject is carried out only in the context of trained professionals, with no mention of the subject in the academic environment. Objective: To assess whether the inclusion of an assessment guide for early mobilization can positively interfere in bedside student practice. Methods: Before and after study carried out with Physiotherapy students from August to November 2018. Results: There was significance in neurological assessments, heart rate, blood pressure, use of vasoactive drugs, ventilatory parameters, pulse saturation and pulmonary auscultation. Discussion: The present study shows significant responses in several aspects, but leaves gaps to be answered in the use of this tool in the practice scenario. Conclusion: The simplified guide can be a tool of the active methodology for low cost practice scenarios.***

**Keywords:** Intensive Care Unit. Early Mobilization, Student, Guide.

## 1. Introduction

Early Mobilization (MP) is the early application of physiotherapy through passive, free, assisted and resisted exercises with or without the aid of technical equipment (HODGSON et al., 2013; LI et al., 2013; STILLER, 2013). In the Intensive Care Unit (ICU) it is considered PM when it starts within 2 to 5 days of clinical stabilization of the critical illness and physiological stability of the patient (BAILEY et al., 2007; KRESS, 2009; HODGSON et al., 2013).

PM is considered viable and safe, but its adoption is slow in ICUs due to characteristics such as knowledge deficits, institutional beliefs, concern about adverse events, prepared staff, among others (ZOMORODI; TOPLEY; MCANAW, 2012; HONIDEN; CONNORS, 2015 ). The provision of mobility in the ICU is variable among the various professionals who use it, and also among the sectors of the same hospital, being seen as a justification for this fact, the lack of a uniform and protocolized approach in these centers, which raises the need for discussion on future guidelines regarding the conduct of MP (STILLER, 2000; MORRIS; HERRIDGE, 2007; GOSSELINK et al., 2008).

Physiotherapy is considered one of the most recent health professions worldwide. Nationally, it started at the beginning of the 20th century, when the first technical course was created at the Santa Casa de Misericórdia of São Paulo, and in this almost a century of existence it has been undergoing curricular transformations that serve as the basis for its historical evolution within the national scenario . Among these changes, Decree-Law 938/69 stands out, recognizing the profession as a higher education, Opinion 388/63 considered the basis of the first curricular proposal and Resolution 4/83 in which the Federal Education Council established the curricula minimums. Still in the historical context appears the National Council of Education (CNE) / Higher Education Chamber (CES) No. 4, of February 19, 2002, which establishes the National Curricular Guidelines (DCN) of the Physiotherapy course, being seen as an advance in the academic education of these future professionals and an educational milestone for the formation of a graduate prepared for the market in which he will be inserted (MARQUES; SANCHES, 1994; HADDAD, 2006; BISPO JÚNIOR, 2009; MOTTER et al., 2014; BERTONCELLO; PIVETTA, 2015).

In the ICUs, there are reports of Physiotherapy working since the 70s, with a greater consolidation of these professionals in the period from 1980 to 1990. The insertion of these professionals within the scope of intensive care was effectively in 1998 through Ministry of Health Ordinance No. 3432 / GM, in which, in the document, the presence of 01 physiotherapist was reported for every 10 beds in the morning and afternoon only in the ICUs type II. In 2009, the Brazilian Association of Cardiorespiratory Physiotherapy and Physiotherapy in Intensive Care (ASSOBRAFIR) together with the Federal Council of Physiotherapy and Occupational Therapy (COFFITO) participated in the elaboration, together with the National Health Surveillance Agency (ANVISA), of the Board Resolution Collegiate (RDC) No 07/10. The latter deal with the minimum

requirements for the functioning of the ICU, showing the need for a physiotherapist for 18h in adult ICUs and 24h in neonatal ICUs. Aiming at these changes in the area, in 2011 COFFITO regulated the specialty Physiotherapy in Intensive Care through the resolution of COFFITO No 402 (GHISLENI, 2009; DOS SANTOS, 2012).

In the context of professional training, the DCN of the Physiotherapy Course stipulates in its article 7 the minimum workload of 20% of the total workload for the supervised internship. In the Political-Pedagogical Project (PPP) of the Physiotherapy Course at the University of the State of Pará (UEPA), which had a workload (CH) of 4,128 hours, it is observed that 848 hours are fulfilled, and in this period a CH of 424h supervised outpatient practice in Physiotherapy and CH 424h supervised hospital practice in Physiotherapy. This is subdivided into four service areas - General Hospital I, General Hospital II, Specialized Clinic I and Specialized Clinic II - in which, although 50% of the practical HC is destined to the hospital environment, there is a considerable number in the PPP of the course of clinics to be held such as pediatric, oncological, surgical, cardiovascular, neonatology, traumatology, neurology, infectious-parasitic and pneumological and a CH of 106h for each area, totaling 12.5% of the total CH of the course and 2.56 % of total course CH. Although the old PPP does not make clear the exclusive time of supervised practice in the ICU, the general figures show that there is little time in it (BRASIL, 2002; UEPA, 2016).

The ES provides the practical experience and the theoretical-practical junction that academics seek. The proximity that students have to the reality of the profession brings a new environment for the application of knowledge acquired in the classroom, as well as the incorporation of new knowledge and the opportunity for the development of new skills. It is worth mentioning the different feelings - satisfaction, anguish, insecurity, shame - experienced by the students, causing many of them to seek internships outside the curriculum proposal. ASSOBRAFIR released a report on the teaching of Respiratory Physiotherapy and Intensive Care in Brazil, in which it concludes that there is a deficiency in the theoretical-practical teaching of the syllabus, as well as an incompatibility between the teachers and the teaching places. The effectiveness of ES depends on the application of the acquired knowledge, as well as the stimulus to multiprofessional interaction. However, there are gaps for an adequate pedagogical structure that can be supplied through Active Methodologies (MA) of teaching (FINAL REPORT OF THE COMMISSION OF TEACHING / ASSOBRAFIR; AGUILAR-DA-SILVA; ROCHA JUNIOR, 2010; VIANA et al., 2012; MOTTER et al., 2014). AMs arouse the curiosity of students inserted in theorizing and focus on the process of learning in real and / or simulated environments (BERBEL, 2012). The elaboration and use of a simplified guide can serve as initial training for students to generate their own systematization, stimulating the assessment for learning, instead of the assessment of learning (KAHWAGE, 2017).

Based on the evolution of PM in the country and its wide range of applicability across the country in ICUs, the present study aims to implement in practice supervised by students the inclusion of a simplified guide about early mobilization therapy in order to verify whether it can positively interfere in the assessment practice for early mobilization performed by students of physiotherapy in an ICU?

## 2. Methodology

Exploratory, descriptive and comparative study of the before-and-after type that was carried out between August 2018 and November 2018 in the municipality of Belém in the state of Pará.

Participated in the study the physiotherapy students of the fourth year of UEPA, 8th semester, who were regularly developing their academic activities of supervised internship in the Intensive Care Unit (ICU) of Hospital Ophir Loyola (HOL), in the discipline Preliminary Stage VII - Physiotherapy in ICU, and who agreed to participate in the research, requiring the signing of the Free and Informed Consent Form (ICF). As an exclusion criterion in the research, it was the students who were taking the discipline in a situation of dependency or other situation that was not their first contact with it.

The study was carried out at the HOL ICU, which aims to offer humanized medical care, in addition to carrying out teaching, research and extension work to qualify professionals and establish support and incentive for research and scientific production in the hospital. The choice of this service as a research location was due to the fact that the hospital's strategic vision is the pursuit of excellence in teaching, research and extension, in addition to the researcher's place of work (HOL, 2017).

The first contact with students and teacher was made on the first day of practice at the unit. In this contact, the research was explained initially for the teacher of the internship and a posteriori for the students. This approach was carried out by the responsible researcher.

The instruments used in the research were the Practical Evaluation Check-list, the Evolution Sheet and the Simplified Evaluation Guide for Early Mobilization. The Simplified Assessment Guide for Early Mobilization and Practical Assessment Check-list documents were prepared based on the Recommendations of the Physiotherapy Department of the Brazilian Association of Intensive Care Medicine (AMIB) of 2012 (FRANCE et al., 2012), on the recommendations of the European Respiratory Society and Society of Intensive Care Medicine (GOSSELINK, et al., 2008), in the article Expert consensus and recommendations on safety criteria for active mobilization of mechanically ventilated critically ill adults (HODGSON, 2014) and in the systematic review Early Mobilization in the Intensive Care Unit: A Systematic Review (ZOMORODI; TOPLEY ,; MCANAW, 2012).

The Evolution Sheet aims to record information about the patient based on the student's evaluation. It was delivered by the independent appraiser, being simple to be completed by the student who had to write his assessment, similar to what is done in institutional records. The Practical Assessment Check-list, built by the researcher, aimed to evaluate the

bedside student practice regarding the aspects considered for the indication of early mobilization therapy. It contains 32 items, which are scored using a scale with 3 possible answers: complete, incomplete and absent, which can be complemented by consulting the Evolution Sheet.

Finally, the Simplified Evaluation Guide for Early Mobilization, also developed by the researcher, aimed to facilitate the patient evaluation process carried out by the Physiotherapy student regarding aspects related to the indication of early mobilization. In this sense, the guide is constructed by the following aspects: assessment of the level of consciousness, cardiovascular and hemodynamic assessment, assessment of ventilatory parameters and assessment of laboratory tests and was presented to students in this order. The reading was performed by the researcher for simple understanding of the respondents, with an estimated duration of 15 minutes.

The documents prepared by the researcher were sent for evaluation and opinion by the class entity AMIB, regarding the technical content of these documents.

This research was submitted to the Ethics and Research Committee with human beings at the State University of Pará (UEPA) and the Hospital Ophir Loyola (HOL), depending on these approvals for the execution of data collection. After a favorable opinion, participation was conditioned to the signing of the informed consent form by the participating student. Those responsible for the patients admitted to the ICU were also asked to sign the informed consent form, specific to this population, since these patients were evaluated by the research students.

Only patients who met the following criteria were considered for the evaluation of students: length of stay between 24 and 72 hours, age between 18 and 64 years, using invasive ventilatory assistance and no curative therapeutic restriction. The patients who fulfill these requirements were duly numbered and drawn by the participating students.

A pilot study was carried out to test the research method. For that, eight students were invited. These students were informed about the proposal and will be able to participate in it after agreement and signature of the informed consent form.

The students who agreed to participate in the study were evaluated regarding their practice of evaluating the critical patient on the first and last day of the internship. This evaluation was carried out by an independent evaluator, who was instructed by the researcher on which points should be observed, based on the Practical Evaluation Check-list for such a process. The invited evaluator has experience in the research area. In addition to the Check-list, the Evolution Sheet provided by the researcher was used to be filled in by the students. This evolution sheet checked for possible points not observed at the time of the practical assessment.

Between the first and the last evaluation carried out by the evaluators, the students were introduced to the Simplified Evaluation Guide for Early Mobilization. This presentation was given by the researcher on the first day, through reading the document, right after the evaluation was carried out, and on the following days, the reading was performed by the students until the penultimate day of the ES student, making a total of two weeks training.

The research took place in 7 steps: (step 1) the researcher selected the patients to be evaluated; (step 2) drawing of patients carried out by each of the students; (step 3) delivery of the Evolution Sheet to the student and delivery and guidance on how to complete the Practical Assessment Check-list to the independent appraiser on the first day of the supervised internship; (step 4) reading by the students of the Simplified Guide for the Evaluation of Early Mobilization, (step 5) the researcher selects the patients to be evaluated, (step 6) patient draw carried out by each of the students and (step 7) handing in the Worksheet Evolution to the student and the Practical Evaluation Check-list on the last day of the supervised internship to the independent evaluator.

Initially, in step 1, the researcher selected the patients to be evaluated by the students, numbering them according to the bed occupied by the patient. Then, in step 2, the students drew the patient that each one should evaluate. In step 3, the students received the Evolution Sheet and the independent evaluator will receive the Practical Assessment Check-list and guidelines on the use of the Check-list, and referred the students to the patient's bed drawn by them. It is worth mentioning that the Practical Assessment Check-list was used by the examiner, and could be complemented by the Evolution Sheet that will be written by the student.

Later, in step 4, the students were introduced to the Simplified Evaluation Guide for Early Mobilization by the researcher. This presentation and training process was carried out during two weeks of ES, and the intervention with this instrument was carried out for a maximum period of 15 minutes, until the penultimate day of ES, right after the practical class that will normally be carried out by the responsible teacher. .

In step 5, there was a new selection, by the researcher, of patients to be evaluated by the students, just as it happened in step

1) In step 6, the students carried out a new draw and were again sent to evaluate their respective patients, as described in step
2) Finally, in step 7, the independent evaluators again filled out the Practical Evaluation Check-list and the students the Evolution Sheet.

Regarding the information about the evaluation findings, the variables were categorical, with three possibilities: complete, partial and absent. Thus, each of this information was treated as dichotomous variables.

The evaluation of the effectiveness of the educational intervention for improving the quality of filling in aspects of clinical evaluation of patients, by undergraduate students, was made by comparing two sets of data obtained before and after the intervention, for each evaluation item. . For dichotomous variables, analyzes were made through the

calculation of odds ratios (odds ratios). The difference between the two moments of the observation was considered statistically significant, when the probability of a false positive result is less than 5% ($p < 0.05$), which is calculated by the McNemar statistical test, for paired samples. Global yields (continuous variables) were also compared, through the difference in means between the pre- and post-training periods, using the Mann Whitney statistical test, for paired samples. Differences in overall income between men and women were compared, using the Student's t-test, for independent samples.

## 3. Results

The table below shows the data from the student assessment before and after using the simplified guide, and only the data from the neurological assessments, heart rate, blood pressure, use of vasoactive drugs, ventilatory parameters, pulse saturation and pulmonary auscultation can be analyzed.

It was not possible to make a comparison between the pre and post of the oxygenation index and the MRC because this analysis was absent in both tests.

For analysis criteria, the missing and incomplete evaluations were characterized in the same group, as the researchers understand that an incomplete evaluation ends up having the same weight as the absence of this evaluation, since there is a very wide gap in the incomplete.

| Assessments | Before | % | Later | % | p-value |
|---|---|---|---|---|---|
| Neurological | | | | | 0.0086* |
| Incomplete | 4 | 50,0% | 0 | 0,0% | |
| Complete | 4 | 50,0% | 8 | 100,0% | |
| Heart rate | | | | | 0,0803 |
| Absent | 2 | 25,0% | 0 | 0,0% | |
| Complete | 6 | 75,0% | 8 | 100,0% | |
| Blood pressure | | | | | 0.0086* |
| Incomplete | 8 | 100,0% | 4 | 50,0% | |
| Complete | 0 | 0,0% | 4 | 50,0% | |
| Vasoactive drugs | | | | | 0.0005* |
| Absent | 6 | 75,0% | 0 | 0,0% | |
| Complete | 2 | 25,0% | 8 | 100,0% | |
| Ventilatory parameters | | | | | 0.0086* |
| Absent | 4 | 50,0% | 0 | 0,0% | |
| Complete | 4 | 50,0% | 8 | 100,0% | |
| Pulse saturation | | | | | < 0.0001* |
| Absent | 8 | 100,0% | 0 | 0,0% | |
| Incomplete | 0 | 0,0% | 2 | 25,0% | |
| Complete | 0 | 0,0% | 6 | 75,0% | |
| Pulmonary auscultation | | | | | 0,0690 |
| Incomplete | 4 | 50,0% | 1 | 12,5% | |
| Complete | 4 | 50,0% | 7 | 87,5% | |

## 4. Discussion

PM is a reality in physical therapy practice, being considered viable and safe, but the eligibility of patients who should receive such therapy is still the focus of disagreements in the scientific community (HODGSON et al., 2014; STILLER, 2013). Such divergences in the professional scope may also exist in the academic scope and in the construction of this professional, as verified in the pre-guide assessment in the present study, justifying one more factor to be added in the wide variety of eligibility that occurs in Brazilian ICUs.

In 2014, a group of experts in the field met with the objective of developing recommendations about PM through the formulation of a consensus. This meeting resulted in a study that aimed to standardize the safety criteria to be considered before the PM. The study was composed of 23 multidisciplinary specialists with relevant experience and who were recently involved in research on PM. There was a systematic review of the literature which he had researched on safety criteria for therapy within the ICU. The final consensus was defined with 100% agreement by the group (HODGSON et al., 2014). However, even though the consensus was elaborated in 2014, the present study found a gap in the knowledge of the students when it came to the evaluation to indicate the therapy.

For the authors Herridge, 2007 and Mah et al., 2013, the weak knowledge of the practical reality of PM becomes a significant obstacle in the knowledge of therapy, with little research data published in the world literature.

Several studies report inclusion and exclusion criteria that must be taken into account for the implementation of PM protocols, as well as patient eligibility (ZOMORODI; TOPLEY; MCANAW, 2012; MAH et al., 2013; HONIDEN; CONNORS, 2015) . Despite the pre-evaluation showing a gap in the students regarding the evaluation, the use of the simplified guide proved to be a possible tool in the assimilation of the most fundamental basic aspects to decide on the use of therapy.

Active methodologies arouse the curiosity of students who are inserted in theorizing, because they bring elements that have not yet been contextualized within the classroom. In addition, this methodology focuses on the learning process by inserting these students in real or simulated problems. The problematization motivates the student in the search for new paths and discoveries (BERBEL, 2012). Because of this, in real or simulated environments, the presence of new ways of approaching the theme with the student can be a new way to reduce their theoretical-practical gap.

The elaboration, as well as the use of a simplified guide, following a structured sequence of the physical evaluation process, can serve as initial training for medical students, making them manage their own systematization. Many physical examination models exist in the scientific literature, but the diversity of theoretical models, consisting of extensive and complex check-lists, does not go hand in hand with the practice of routine physical examination, in which case a standardized and simplified sequence is missing (KAHWAGE, 2017).

Despite the study using a simplified guide, using the same proposal from the aforementioned author, the study demonstrated that some important items of clinical practice were not significant or remembered even after using the approach through the guide. The authors suggest that even though the intervention is differentiated in the general practical context, it did not attract the students' desired

attention because it is a simple didactic material, of little eye-catching reading and with characteristics not adapted to this new generation.

Kahwage (2017) aimed in his study to assess students' skills in performing the physical exam. The author analyzed residents working in the medical clinic, and their results were not extended to other hospital sectors. He also emphasizes the short training period with the simplified guide, but he emphasizes that he used as an essence in the educational approach the concept of "assessment for learning" redefined at the Third International Assessment Conference for learning. Like the author, the short time of using the tool due to the short time of student practice may have interfered negatively in the response of some analyzes.

As in the Kahwage 2017 study, despite the difficulties in teaching semiology, there was an improvement in the clinical semiotics of its subjects with the tool proposed by the study.

## 5. Conclusion

The present study used a simplified guide to help combine the theoretical knowledge acquired in traditional classes with the practical knowledge to be trained in the practical environment.

This tool obtained significant responses, however it showed that the instrument, being traditional and simple, may have negatively interfered in better research responses.

The authors suggest more studies, with larger publics of students, with diversification of practical areas and with more playful and interesting instruments for the studied public.

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