INTRODUCTION

Patients who are admitted to the intensive care unit (ICU) have an increased likelihood of developing numerous complications.\(^{(1,2)}\) These factors lead to more days of mechanical ventilation (MV), longer ICU stays, longer hospital stays and higher mortality rates.\(^{(3-6)}\)

Since 2018, early mobilization has been included as a pillar of in the management of pain, agitation and delirium and the prevention of complications that develop in intensive care.\(^{(7,9)}\) The main benefits are recovering muscle
After the first draft was completed, the final version consisted of 16 multiple-choice or single-response questions. They were grouped into three sections. The first section pertained to the respondents’ personal, professional or work environment data. The second section asked about the participants’ usual actions in terms of limitations or barriers, maximum treatment goals in different scenarios and measurement tools used to assess changes in patients’ physical condition. The third section addressed mobility therapy in the context of the COVID-19 pandemic (Annex 1). The confidentiality of all information obtained was strictly maintained by the researchers; the participants’ data were protected by the Argentine Personal Data Protection Law No. 25,326 (Habeas data law). All data were collected through a virtual platform (Google forms®) and subsequently anonymized, and access was restricted to authorized personnel for the purposes of the study only to ensure the confidentiality of the information.

Physical therapists working in adult ICUs in Argentina were included. A convenience sample was obtained from a database developed by the study authors. Through nonprobabilistic sampling, physical therapists were invited to participate via email and social networks (WhatsApp®, Twitter® and Facebook®). No survey was eliminated later because only complete surveys were accepted. The link was shared by three of the researchers, and in cases where no response was obtained via email, it was re-forwarded every week up to a maximum of three times. The present work was approved by the Teaching and Research Committee of the Sanatorio Anchorena San Martín.

**Statistical analysis**

Categorical variables are presented as absolute numbers and percentages. Continuous variables with a normal distribution are presented as the mean and standard deviation (SD). For the analysis of the data, the statistical program SPSS version 24 (IBM Corp, Armonk, NY, USA) was used.

**RESULTS**

From June 1 to 30, 2020, 351 physical therapists in Argentina answered to the survey. Their median age was 34 (IQR 31-40) years. A total of 45.3% worked in the Autonomous City of Buenos Aires (CABA), 37.6% worked in the province of Buenos Aires, and the remaining proportion was distributed throughout 19 Argentine provinces (Table 1). The public sphere presented the greatest care burden (57.3%). Among the physical therapists, 76.1% reported that patient...
mobility is exclusively their responsibility. A total of 23.6% of the centers had mobilization protocols in place in the ICU.

**Table 1 - Workplace where most hours are worked per week**

| Province/City        | n (%) |
|----------------------|-------|
| CABA                 | 159 (45.3) |
| Buenos Aires         | 132 (37.6) |
| Córdoba              | 8 (2.3) |
| Mendoza              | 8 (2.3) |
| Santa Fe             | 7 (2) |
| Santiago del Estero  | 6 (1.7) |
| Río Negro            | 5 (1.4) |
| Salta                | 4 (1.1) |
| Chubut               | 3 (0.9) |
| Jujuy                | 3 (0.9) |
| Neuquén              | 3 (0.9) |
| Tucumén              | 3 (0.9) |
| San Juan             | 2 (0.6) |
| Chaco                | 1 (0.3) |
| Corrientes           | 1 (0.3) |
| Entre Ríos           | 1 (0.3) |
| Formosa              | 1 (0.3) |
| La Pampa             | 1 (0.3) |
| Misiones             | 1 (0.3) |
| San Luis             | 1 (0.3) |
| Tierra del Fuego     | 1 (0.3) |
| **Total**            | 351 (100) |

CABA - Autonomous City of Buenos Aires.

In the second section, concerning the usual actions of physical therapists in Argentina (Table 2), 36.7% reported experiencing no major limitations when mobilizing a patient. The highest reported mobility goal for patients undergoing invasive MV was optimizing muscle strength, followed by sitting on the edge of the bed. The highest mobility goal for patients who have been successfully weaned from invasive MV was performing activities of daily living (ADLs), followed by walking. The highest mobility goal reported for patients who had never required MV was performing ADLs, followed by walking (Figure 1).

A total of 56.4% of the respondents did not use goal-based validated tools to assess the physical condition of their patients in the ICU. Among those who did use them, the Medical Research Council (MRC) and Barthel index were among the most frequently used (Table 3).

Regarding the third section (Table 4), which pertained to early mobility therapy in patients with confirmed or suspected COVID-19, the highest treatment goals were sitting on the edge of the bed and performing activities of daily living, followed by walking and sitting out of bed (Figure 1).

**Table 2 - Results for Section 2, “Your actions”**

| Variables | n (%) |
|-----------|-------|
| Greatest limitation when mobilizing a patient |       |
| None of the above | 132 (37.6) |
| Pain | 89 (25.4) |
| Physical constraints, catheters, probes, and patient-ventilator interfaces | 66 (18.8) |
| Deep sedation | 36 (10.2) |
| Respiratory and/or contact isolation | 26 (7.4) |
| Supplemental oxygen requirement | 2 (0.6) |
| Highest goal for patients under MV |       |
| Optimizing muscle strength | 150 (42.7) |
| Sitting at the edge of the bed | 94 (26.8) |
| Performing activities of daily living | 42 (12) |
| Sitting out of bed | 30 (8.6) |
| Walking | 24 (6.8) |
| Standing | 11 (3.1) |
| Highest goal for patients who have been WEANED from MV |       |
| Performing activities of daily living | 159 (45.3) |
| Walking | 82 (23.4) |
| Sitting at the edge of the bed | 34 (9.6) |
| Sitting out of bed | 28 (8) |
| Optimizing muscle strength | 25 (7.1) |
| Standing | 23 (6.6) |
| Highest goal for patients who NEVER required MV |       |
| Performing activities of daily living | 241 (68.7) |
| Walking | 71 (20.2) |
| Optimizing muscle strength | 20 (5.7) |
| Sitting out of bed | 8 (2.3) |
| Standing | 7 (2) |
| Sitting out of bed | 4 (1.1) |

Do you use goal-based tools to assess physical condition? 
- No | 198 (56.4) 
- Yes | 153 (43.6)

MV - mechanical ventilation.
Another factor that was discussed is the probable relationship between the lack of mobilization protocols and the proposed treatment goals. Hanekom and Elliott described the benefits and outcome improvements in centers that use mobilization and analogous sedation protocols compared to those that do not. We believe that combining work protocols, the current open ICU concept family empowerment and reviews of the goals for each treatment session could improve the outcomes of critically ill patients.

Regarding barriers or limitations, although the response options provided in the survey reflected the barriers and limitations most frequently reported in the literature, our respondents most often selected “none of the above.” A possible explanation for this finding is an error in the wording or interpretation of the question; the respondents may have interpreted this option as indicating the absence of any limitations. It should be clarified that this option was added after the expert review and pilot test.

Table 3 - Response to item 11

| Variable          | n (%)  |
|-------------------|--------|
| MRC               | 129 (71.6) |
| Other             | 29 (16.1)  |
| Barthel index     | 22 (12.3)  |
| Total             | 180 (100)   |

MRC - Medical Research Council. For question 11, respondents could select more than one answer.

Table 4 - Results for Section 3, “Impact of the COVID-19 pandemic”

| Variables                                          | n (%)  |
|----------------------------------------------------|--------|
| Motor-based intervention for COVID-19/suspected patients |        |
| Decreased                                          | 201 (57.3) |
| Unchanged                                          | 132 (37.6) |
| Intensified                                        | 18 (5.1)  |
| Feelings about COVID-19/suspected patients          |        |
| Cautious; I am selective about my timing and interventions | 232 (66.1) |
| Calm; I have protective gear                       | 103 (29.3) |
| Scared; if I could. I would avoid caring for them   | 16 (4.6)  |
| Greater ICU-acquired weakness in COVID-19/suspected patients? |   |
| I don’t know                                       | 174 (49.6) |
| Yes                                                | 127 (36.2) |
| No                                                 | 50 (14.2)  |
| Limitations when mobilizing a COVID-19/suspected patient |        |
| Respiratory and/or contact isolation                | 109 (31.1) |
| Lack of personal protective gear                    | 108 (30.8) |
| I don’t feel there are any limitations              | 81 (23.1)  |
| Deep sedation                                      | 22 (6.1)   |
| Physical constraints, catheters, probes and patient-ventilator interfaces | 19 (5.4)   |
| Pain                                               | 9 (2.6)    |
| Supplemental oxygen requirement                     | 3 (0.9)    |
| Highest goal for COVID-19/suspected patients on MV  |        |
| Optimizing muscle strength                          | 174 (49.6) |
| Performing activities of daily living               | 65 (18.5)  |
| Sitting at the edge of the bed                      | 61 (17.3)  |
| Walking                                            | 22 (6.3)   |
| Sitting out of bed                                  | 21 (6)     |
| Standing                                           | 8 (2.3)    |

MV - mechanical ventilation.
On the other hand, the participants indicated that the limitations for treating patients with confirmed or suspected COVID-19 were respiratory and/or contact isolation, followed by a lack of personal protective gear, results similar to those reported by Valenzuela et al.\(^{(14)}\) It is likely that health personnel in general have become more aware of the importance of personal care, and this awareness forces them to choose the optimal moment for intervention and rely on available material in developing their activities. We believe that in this sense, the pandemic has forced healthcare providers to review how they perform their “usual” and will likely generate changes in work attitudes going forward.

Finally, the MRC and Barthel index scales were the tools most frequently used for assessing the physical condition of patients, consistent with the findings of other local studies,\(^{(12,25)}\) Castro-Avila et al.,\(^{(26)}\) in their systematic review and meta-analysis, reported that the 6-minute walk test and timed up-and-go test were the most commonly used tools for assessing physical condition upon ICU discharge. These findings suggest that the tools selected by our respondents may not necessarily represent the physical condition of critical patients upon ICU discharge.

The present survey recorded the responses of physical therapists working in Argentina regarding mobility therapy in ICUs. These practices were previously unknown; they have been minimally studied, and the related terminology and results are heterogeneous and nonspecific. In this sense, we believe that the results of our study are valuable for laying the foundations for future research and can deepen and generalize findings in such areas as goal-driven assessment strategies, which in turn will allow possible preventive and/or treatment approaches to be proposed.

As limitations, we can highlight that the multiple-choice response format could have restricted the respondents’ responses. In turn, the recruitment of participants through social networks could have generated selection bias. We believe that with a longer dissemination time, our results could have had greater reach and thus reflected the reality at the national level, rather than mainly focusing on the Autonomous City of Buenos Aires and in the Province of Buenos Aires. Finally, is necessary to develop prospective studies to compare the functional outcomes of COVID-19-positive patients and patients without COVID-19 at discharge from intensive therapy and in the long term.

**CONCLUSION**

The physical therapists surveyed in Argentina reported being responsible for the mobility of patients in the intensive care unit. The highest goal for patients under mechanical ventilation was to optimize muscle strength and make progress towards performing activities of daily living without limitations.

Regarding patients with COVID-19, the greatest limitation for mobilization was respiratory/contact isolation, while the highest goal for patients under mechanical ventilation was optimizing muscle strength.

---

**RESUMEN**

**Objetivo:** Describir la práctica habitual de asistencia kinésica motora en la unidad de cuidados intensivos de adultos, tanto en pacientes con y sin COVID-19.

**Métodos:** Estudio observacional transversal de tipo encuesta online. Se incluyeron kinesiólogos que trabajaban en unidades de cuidados intensivos de adultos en Argentina. Se realizaron 16 preguntas de respuesta múltiple o simple agrupadas en 3 apartados. El primero caracterizado por datos personales, profesionales o del ámbito laboral. El segundo, destinado a conocer el accionar habitual y un tercero enfocado en las prácticas bajo la pandemia COVID-19.

**Resultados:** Sobre 351 kinesiólogos, el 76.1% reportó que la movilización de los pacientes estaba a cargo exclusivamente de ellos. El objetivo máximo a alcanzar desde el aspecto motor fue variable según cuatro escenarios: Pacientes en ventilación mecánica, desvinculados de la ventilación mecánica, los que nunca estuvieron asociados a la ventilación mecánica y con COVID-19 en ventilación mecánica. En el primer y último escenario el objetivo máximo fue optimizar valores de fuerza muscular. En los restantes fue realizar actividades de la vida diaria. Por último, la mayor limitante en el abordaje de pacientes con COVID-19 fue el aislamiento respiratorio y/o de contacto.

**Conclusión:** Los kinesiólogos en Argentina reportaron encargarse de la movilización de los pacientes en la unidad de cuidados intensivos. Los objetivos máximos desde el aspecto motor para cuatro escenarios clásicos en el área cerrada podrían estar determinado por la asociación con la ventilación mecánica. La mayor limitación a la hora de movilizar a pacientes con COVID-19 fue el aislamiento respiratorio y de contacto.

**Descriptores:** Ambulación precoz; Cuidados críticos; Modalidades de fisioterapia; Rehabilitación; Encuestas y cuestionarios; Respiración artificial
REFERENCES

1. Pattanshetty RB, Gaude GS. Critical illness myopathy and polyneuropathy - A challenge for physiotherapists in the intensive care units. Indian J Crit Care Med. 2011;15(2):78-81.

2. Inoue S, Hatakeyama J, Kondo Y, Hifumi T, Sakuramoto H, Kawasaki T, et al. Post-intensive care syndrome: its pathophysiology, prevention, and future directions. Acute Med Surg. 2019;6(3):233-46.

3. Shanely RA, Andrew Shanely R, Zergeroglu MA, Lennon SL, Sugiyura T, Yimlaiam T, et al. Mechanical ventilation-induced diaphragmatic atrophy is associated with oxidative injury and increased proteolytic activity. Am J Respir Crit Care Med. 2002;166(10):1369-74.

4. De Jonghe B, Sharshar T, Lefaucheur JP, Authier FJ, Durand-Zaleski I, Boussarsar M, Cerf C, Renaud E, Mesrati F, Carlet J, Raphaël JC, Outin H, Bastuji-Garin S. Groupe de Réflexion et d’Etude des Neuromyopathies en Réanimation. Paresis acquired in the intensive care unit: a prospective multicenter study. JAMA. 2002;288(22):2859-67.

5. Stevens RD, Dowdy DW, Michaels RK, Mendez-Tellez PA, Pronovost PJ, Needham DM. Neuromuscular dysfunction acquired in critical illness: a systematic review. Intensive Care Med. 2007;33(11):1876-91.

6. Ali NA, O’Brien JM Jr, Hoffmann SP, Phillips G, Garland A, Finley JC, Almoosa K, Heijal R, Wolf KM, Lemeshow S, Connors AF Jr, Marsh CB. Midwest Critical Care Consortium. Am J Respir Crit Care Med. 2008;178(3):261-8.

7. Marra A, Ely EW, Pandharipande PP, Patel MB. The ABCDEF bundle in critical care. Crit Care Clin. 2017;33(2):225-43.

8. Hsieh SJ, Otusanya O, Gershengorn HB, Hope AA, Dayton C, Levi D, et al. Staged Implementation of awakening and breathing, coordination, delirium monitoring and management, and early mobilization bundle improves patient outcomes and reduces hospital costs. Crit Care Med. 2019;47(7):858-93.

9. Devlin JW, Skrobik Y, Gelinas C, Needham DM, Slooter AJ, Pandharipande PP, et al. Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU. Crit Care Med. 2018;46(9):e825-73.

10. Morris PE, Goad A, Thompson C, Taylor K, Harry B, Passmore L, et al. Early intensive care unit mobility therapy in the treatment of acute respiratory failure. Crit Care Med. 2019;47(7):858-93.

11. Schweickert WD, Pohlman MC, Pohlman AS, Nigos C, Pawlik AJ, Esbrook CL, et al. Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial. Lancet. 2009;373(9678):1874-82.

12. Thomsen GE, Snow GL, Rodriguez L, Hopkins RO. Patients with respiratory failure increase ambulation after transfer to an intensive care unit where early activity is a priority. Crit Care Med. 2008;36(4):1119-24.

13. Bailey P, Thomsen GE, Spuhler VJ, Blair R, Jewkes J, Berdjian L, et al. Early activity is feasible and safe in respiratory failure patients. Crit Care Med. 2007;35(1):139-45.

14. Valenzuela PL, Joyner M, Lucia A. Early mobilization in hospitalized patients with COVID-19. Ann Phys Rehabil Med. 2020;63(4):384-5.

15. Plotnikov GA, Mateas A, Nadur JM, Alonso M, Nuñez I, Vergara G, Alfageme MJ, Vitale A, Gil M, Kinkler V, Mella M, Publiese E, Donniani M, Pochettino J, Brozzi I, Scapellato JL. Grupo Argentino Telegram nCoV19. Characteristics and outcomes of patients infected with nCoV19 requiring invasive mechanical ventilation in Argentina. Rev Bras Ter Intensiva. 2020;32(3):348-53.

16. Setten M, Plotnikov GA, Acocce M. Decúbito prono en pacientes con síndrome de distrés respiratorio agudo. Rev Bras Ter Intensiva. 2016;28(4):452-62.

17. Rochester CL. Rehabilitation in the intensive care unit. Semin Respir Crit Care Med. 2009;30(6):656-69.

18. Pires-Neto RC, Lima NP, Corder G, Park M, Denney L. Early mobilization practice in a single Brazilian intensive care unit. J Crit Care. 2015;30(5):896-900.

19. Hanekom S, Louw QA, Coetzee AR. Implementation of a protocol facilitates evidence-based physiotherapy practice in intensive care units. Physiotherapy. 2013;99(2):139-45.

20. Elliott R, McKinley S, Aitken LM, Hendrikz J. The effect of an algorithm-based sedation guideline on the duration of mechanical ventilation in an Australian intensive care unit. Intensive Care Med. 2006;32(10):1506-14.

21. Vincent JL, Shehabi Y, Walsh TS, Pandharipande PP, Ball JA, Spronk P, et al. Comfort and patient-centred care without excessive sedation: the eCASH concept. Intensive Care Med. 2016;42(6):962-71.

22. Fontela PC, Lisboa TC, Forgianni-Júnior LA, Friedman G. Early mobilization practices of mechanically ventilated patients: a 1-day point-prevalence study in southern Brazil. Clinics (Sao Paulo). 2018;73:e241.

23. Bahkru RN, Wiebe DJ, McWilliams DJ, Spuhler VJ, Schweickert WD. An environmental scan for early mobilization practices in U.S. ICUs. Crit Care Med. 2015;43(11):2360-9.

24. Busico M, Intile D, Iarastorza N, Leoz A, Plotnikov G, D’Annunzio P, et al. Calidad de vida y estatus funcional en pacientes que requirieron ventilación mecánica: seguimiento al año del alta de terapia intensiva. Rev Am Med Respir. 2014;14(3):244-51.

25. Das Neves AV, Vasquez DN, Loudet CI, Intile D, Sáenz MG, Marchena C, et al. Symptom burden and health-related quality of life among intensive care unit survivors in Argentina: a prospective cohort study. J Crit Care. 2015;30(5):1049-54.

26. Castro-Avila AC, Sérón P, Fan E, Gaeta M, Mickan S. Effect of early rehabilitation during intensive care unit stay on functional status: systematic review and meta-analysis. PLoS One. 2015;10(7):e0130722.
## Annex 1 - Complete survey

### Mobility therapy in critical care during the COVID-19 pandemic

#### Section 1 - General data

1. Age (years)

2. The workplace where you work the highest number of weekly hours is in:

| Option          |
|-----------------|
| Buenos Aires    |
| Tierra del Fuego|
| Santa Cruz      |
| Chubut          |
| Río Negro       |
| Neuquín         |
| La Pampa        |
| San Juan        |
| Córdoba         |
| San Luis        |
| Santa Fe        |
| Entre Ríos      |
| Misiones        |
| Chaco           |
| Formosa         |
| Tucumán         |
| Catamarca       |
| Jujuy           |
| Salta           |
| Mendoza         |
| La Rioja        |
| Corrientes      |
| Santiago del Estero |

3. The area with the greatest burden of care is:

| Option |
|--------|
| Public |
| Private |

4. In your field of work, is patient mobility exclusively handled by physiotherapy?

| Option |
|--------|
| Yes    |
| No     |

5. At your center, are there mobilization protocols?

| Option |
|--------|
| Yes    |
| No     |

#### Section 2 - Your actions

6. Which of the following do you consider to be the greatest limitation when mobilizing a patient?

| Option                                                                 |
|------------------------------------------------------------------------|
| Pain                                                                   |
| Physical constraints, catheters, probes and patient-ventilator interfaces |
| Respiratory and/or contact isolation                                   |
| Deep sedation                                                         |
| Supplemental oxygen requirements                                       |
| None of the above                                                     |

7. Which of the following activities do you consider the highest motor-based goal for a patient who is RECEIVING INVASIVE MECHANICAL VENTILATION?

| Activity                                                                 |
|--------------------------------------------------------------------------|
| Optimizing muscle strength                                              |
| Sitting at the edge of the bed                                           |
| Standing                                                                 |
| Sitting out of bed                                                      |
| Walking                                                                  |
| Performing activities of daily living                                   |

Continue...
8. Which of the following activities do you consider the highest motor-based goal for a patient who has been WEANED from INVASIVE MECHANICAL VENTILATION?

| Activity                                      |
|----------------------------------------------|
| Optimizing muscle strength                   |
| Sitting at the edge of the bed               |
| Standing                                      |
| Sitting out of bed                           |
| Walking                                       |
| Performing activities of daily living        |

9. Which of the following activities do you consider the highest motor-based goal for a patient who NEVER required INVASIVE MECHANICAL VENTILATION?

| Activity                                      |
|----------------------------------------------|
| Optimizing muscle strength                   |
| Sitting at the edge of the bed               |
| Standing                                      |
| Sitting out of bed                           |
| Walking                                       |
| Performing activities of daily living        |

10. In your unit, do you use goal-based tools to assess physical condition?

| Answer |
|--------|
| Yes    |
| No     |

11. If you answered yes to the previous question, which one(s) do you use?

12. Regarding patients with confirmed or suspected COVID-19, your level of motor-based intervention has

| Intensity                          |
|-----------------------------------|
| Intensified                       |
| Decreased                         |
| Not changed                       |

13. How do you feel about caring for this group of patients?

| Feeling                          |
|---------------------------------|
| Scared; if I could, I would avoid caring for them |
| Cautious; I am selective about my timing and interventions |
| Calm; I have protective gear     |

14. Do you think that patients with confirmed or suspected COVID-19 develop more ICU-acquired weakness than other patients?

| Answer |
|--------|
| Yes    |
| No     |
| I don’t know |

15. Which of the following do you consider the greatest limitation when mobilizing a patient with confirmed or suspected COVID-19?

| Limitation                                      |
|------------------------------------------------|
| Pain                                           |
| Physical constraints, catheters, probes and patient-ventilator interfaces |
| Respiratory and/or contact isolation           |
| Deep sedation                                  |
| Supplemental oxygen requirements               |
| I don’t feel there are any limitations         |
| Lack of personal protective gear               |

16. What is the highest goal you aim to achieve with a patient with confirmed or suspected COVID-19 who is RECEIVING INVASIVE MECHANICAL VENTILATION?

| Goal                                           |
|------------------------------------------------|
| Optimizing muscle strength                      |
| Sitting at the edge of the bed                   |
| Standing                                        |
| Sitting out of bed                              |
| Walking                                         |
| Performing activities of daily living           |