Chart I - Results of the search for articles that addressed exercises/mobilization in patients with ECMO

Article	Author	Objective	Types of access/ vessels	Conclusion
Early rehabilitation during extracorporeal membrane oxygenation has minimal impact on physiological parameters A pilot randomized controlled trial	Hayes *et al.* 2020 [10]	To describe the respiratory and hemodynamic effects of early intensive rehabilitation compared to standard care physiotherapy over a 7-day period in patients requiring ECMO.	Veno-venous and Veno-arterial / not informed	Early intensive rehabilitation of ECMO patients had minimal effect on respiratory and hemodynamic parameters, or ECMO settings, when compared between groups. In addition to not observing significant changes in the two groups after the physiotherapy sessions in the period of 24 hours during the 7 days.
Early mobilization of patients receiving extracorporeal membrane oxygenation: a retrospective cohort study	Abrams *et al.* 2014 [11]	Feasibility and impact of active physical therapy in patients with ECMO.	Veno-arterial/subclavian artery and jugular vein veno-venous/double-lumen catheter	Active physiotherapy, including ambulation, can be safely and reliably achieved in ECMO patients when an experienced multidisciplinary team is utilized. More research is needed to define physical therapy barriers and impact on survival and long-term functional neurocognitive outcomes in this population.
Early mobilization during extracorporeal membrane oxygenation for cardiopulmonary failure in adults: factors associates with intensity of treatment	Abrams *et al.* 2021 [12]	To determine if there are factors associated with obtaining out-of-bed versus in-bed physiotherapy in ECMO-supported patients, and whether mobilization with femoral cannulation is safe and feasible.	Veno-venous / femoro-jugular Veno-arterial/right atrium and ascending aorta	In this large retrospective cohort study, factors such as ECMO indication, configuration, and reliance on invasive mechanical ventilation during physiotherapy were significantly associated with the intensity of early mobilization during ECMO support. In addition, the safety and feasibility of femoral cannulation were observed, due to the ease of placement.
Feasibility and safety of early	Ko *et al.* 2015	The aim of this study was to	Veno-venous / femoro-jugular	It is feasible and safe to perform passive

physical therapy and active mobilization for patients on extracorporeal membrane oxygenation	[13]	review the terms of safety and feasibility of early passive physical therapy for ECMO patients.	veno-arterial/right atrium-ascending aorta.	physiotherapy and mobilization for patients on ECMO. However, its survival benefit should be investigated in a larger prospective study in the future.
Intensive care physiotherapy during extracorporeal membrane oxygenation for acute respiratory distress syndrome	Munshi *et al.* 2017 [14]	The aim of the study was to evaluate the association between physical therapy and mortality in patients with ARDS on ECMO in the intensive care unit.	Veno-venous / jugular vein with double lumen bicaval catheter / jugular-femoral vein	Physiotherapy during ECMO is feasible and safe when performed by an experienced team and performed in stages. However, further study is needed to identify possible barriers, exercise dosage and classify a safety profile.
Safety and feasibility of early physical therapy for patients on extracorporeal membrane oxygenator: university of maryland medical center experience	Wells *et al.* 2018 [15]	Examine the feasibility and safety of mobilizing patients during ECMO support.	Veno-venous / Bifemoral and double lumen catheter Venoarterial / Bifemoral	It is feasible and safe to offer early rehabilitation, including orthostatism and ambulation, for patients on ECMO support, regardless of the cannulation site.
Mobility levels with physical rehabilitation delivered during and after extracorporeal membrane oxygenation: a marker of illness severity or an indication of recovery	Mayer *et al.* 2022 [16]	The objectives of this study were to determine whether the physical rehabilitation intervention for individuals on ECMO is associated with clinical outcomes and to assess whether the mobility response during physiotherapy sessions in the ICU is associated	Veno-venous; Double lumen Veno-venous; Veno-arterial VV-VA (hybrid) / Bifemoral, internal jugular vein, aorta and subclavian artery, and atria	The findings of this study demonstrate that early physical rehabilitation is associated with greater survival of patients on ECMO and discharged home, regardless of the mobility level of the applied scale.

		with survival, length of stay, willingness to discharge and readmissions within 30 days.		
Awake extracorporeal life support and physiotherapy in adult patients: A systematic review of the literature	Cucchi *et al.* 2022 [17]	The primary objective of this work was to investigate survival after hospital discharge in adult patients who underwent ECMO. The study was carried out from the analysis of four databases from 2002 to February 2015. Together, one can observe safety results, physiotherapy feasibility, length of stay in the ICU and hospital stay, ECMO cannulation strategies and scales of assessment.	Veno-venous / Femoro-femoral Veno-arterial / jugular-axillary	Survival after hospital discharge was found in 80% of patients who were not intubated during the ECMO period. Physical therapy was safe and feasible, regardless of the cannulation approach, with different target therapies achieved through ambulation and weaning from invasive mechanical ventilation support. However, a more comprehensive and consistent evaluation protocol for mobilization, sedation, delirium and pain score is strongly recommended and necessary for future multicenter randomized controlled trials, in addition to the involvement of a multidisciplinary team.
Sedation and mobilization during venovenous extracorporeal membrane oxygenation for acute respiratory failure: an international survey	Marhong et al. 2017 [18]	To characterize sedation, analgesia, delirium and mobilization practices in patients with ECMO support by venovenous cannulation for severe acute respiratory failure.	Veno-venous / Femoro-femoral	Most centers reported targeting moderate to profound sedation using continuous midazolam infusions. A minority of respondents reported mobilizing these patients out of bed, with the severity of the illness being the most frequently perceived barrier to mobilization. The most significant barriers to physical therapy during venovenous cannulation ECMO were hemodynamic instability in 72% of respondents, level of dependence in

				49% and hypoxemia in 48%. Delirium was a reported barrier to mobilization for 20% of respondents. Future investigations in this population should focus on minimizing sedation, safe mobilization, and developing objective criteria to help guide the transition from deep sedation to more awake states after cannulation.

ECMO = Extracorporeal Membrane Oxygenation; ARDS = Acute Respiratory Distress Syndrome; ICU = Intensive Care Unit