

**Table S1** Search strategy summary

Items	Specification
Date of search	March 13th, 2024
Databases and other sources searched	PubMed, Embase, MEDLINE, Preprint
Search terms used	PubMed: (Ventilator) AND (mechanical power) AND ((spontaneous breathing trial) OR (weaning)) MeSH terms and detailed free-text search included  Embase/MEDLINE: ('ventilator'/exp OR ventilator) AND mechanical AND ('power'/exp OR power) AND ('weaning'/exp OR weaning)  Preprint: Ventilator AND mechanical power AND weaning
Timeframe	1990–2024
Inclusion and exclusion criteria	Inclusion criteria: cohort studies conducted in ICUs, investigating the direct association between MP and weaning success during mechanical ventilation. Eligible studies were required to report relevant quantitative data and to be published in English  Exclusion criteria: reviews, case reports, conference abstracts, and studies on non-human subjects
Selection process	The selection of studies for inclusion was conducted by two independent reviewers (Jacob Harder and Joshua Molter). In cases of disagreement between the two primary reviewers regarding the eligibility of a paper, a third reviewer (Dr. Kenneth Nugent) was consulted to make the final decision. This approach ensured a balanced and objective selection process.

## PubMed full search

Search: (Ventilator) AND (mechanical power) AND ((spontaneous breathing trial) OR (weaning)) ("ventilated"[All Fields] OR "ventilates"[All Fields] OR "ventilating"[All Fields] OR "ventilation"[MeSH Terms] OR "ventilator"[All Fields] OR "ventilate"[All Fields] OR "ventilations"[All Fields] OR "ventilator s"[All Fields] OR "ventilators, mechanical"[MeSH Terms] OR "ventilators"[All Fields] AND "mechanical"[All Fields]) OR "mechanical ventilators"[All Fields] OR "ventilator"[All Fields] OR "ventilators"[All Fields] OR "ventilation"[All Fields]) AND (("mechanical"[All Fields] OR "mechanically"[All Fields] OR "mechanicals"[All Fields] OR "mechanics"[MeSH Terms] OR "mechanics"[All Fields] OR "mechanic"[All Fields]) AND ("power, psychological"[MeSH Terms] OR ("power"[All Fields] AND "psychological"[All Fields]) OR "psychological power"[All Fields] OR "power"[All Fields] OR "powered"[All Fields] OR "powers"[All Fields] OR "powering"[All Fields])) AND (((("spontaneous"[All Fields] OR "spontaneously"[All Fields]) AND ("breath"[All Fields] OR "breathe"[All Fields] OR "breathed"[All Fields] OR "breathes"[All Fields] OR "breathings"[All Fields] OR "breaths"[All Fields] OR "respiration"[MeSH Terms] OR "respiration"[All Fields] OR "breathing"[All Fields]) AND ("clinical trials as topic"[MeSH Terms] OR ("clinical"[All Fields] AND "trials"[All Fields] AND "topic"[All Fields]) OR "clinical trials as topic"[All Fields] OR "trial"[All Fields] OR "trial s"[All Fields] OR "tried"[All Fields] OR "trialing"[All Fields] OR "trials"[All Fields])) OR ("weaning"[MeSH Terms] OR "weaning"[All Fields] OR "weaned"[All Fields] OR "weanings"[All Fields] OR "weans"[All Fields]))