

Duus, et al. (2014). The reliability and validity of passive leg raise and fluid bolus to assess fluid responsiveness in spontaneously breathing emergency department patients. *Journal of Critical Care*, 1–5. doi:10.1016/j.jcrc.2014.07.031

Based on “*The User’s Guides To The Medical Literature: A Manual for Evidence-Based Clinical Practice*”, second edition.

IS THE STUDY VALID?	
<i>At the beginning of the study, were source and spectrum of patients appropriate for the research question?</i>	
<ul style="list-style-type: none"> • Did participating patients present a diagnostic dilemma? 	<p>No. The patients in this study were suspected to be volume depleted and were going to receive IV fluids whether they were in the trial or not.</p>
<i>In the middle, as the study progressed,</i>	
<ul style="list-style-type: none"> • Did the Investigators compare the test to an appropriate, independent reference standard? 	<p>In this study the reference standard should be considered the fluid bolus. Since the current “reference standard” for determining whether or not someone is fluid responsive is administering a fluid bolus, yes, the reference standard was appropriate in this case. It is not clear however, whether the machine used to measure the effect of the passive leg raise and fluid bolus has sufficient accuracy and reliability.</p>
<ul style="list-style-type: none"> • Did Investigators Perform the Same Reference Standard to All Patients Regardless of the Results of the Test Under Investigation? 	<p>That was the design of the study, however, only 94 of the 109 patient enrolled actually received the fluid bolus. The authors do not comment on why they did not have 100% compliance with the study protocol.</p>
<i>At the end, at the study completion,</i>	
<ul style="list-style-type: none"> • Were Those Interpreting the Test and Reference Standard Blind to the Other Results? 	<p>There was no mention of blinding in this study.</p>
<ul style="list-style-type: none"> • If follow up was part of criterion standard, was it complete? 	<p>Not all of the patients received the criterion standard fluid bolus.</p>
WHAT ARE THE RESULTS?	
<ul style="list-style-type: none"> • What were the calculated sensitivities and specificities? • What are the likelihood ratios associated with a positive/negative test? • What are the positive and negative predictive values? • How strong was the association between the test in question and the criterion standard? 	<p>PLR 2 compared to Bolus1:</p> <ul style="list-style-type: none"> • Sensitivity - 0.80 (0.72-0.88) • Specificity - 0.61 (0.51-0.71) • LR+ = 2.05 • LR- = 0.327 • Kappa = 0.396, p< 0.001

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HOW CAN I APPLY THE RESULTS?	
<ul style="list-style-type: none"> • Will the reproducibility of the test result and its interpretation be satisfactory in my clinical setting? 	<p>With NICOM as the measurement tool, it does seem that passive leg raise results in a repeatable change in SV baseline. The correlation of PLR and bolus for causing fluid responsiveness seems to be okay, though not excellent.</p>
<ul style="list-style-type: none"> • Is study question similar to my PICO question? 	<p>No. The patients in this study were healthy patients who were not septic.</p>
<ul style="list-style-type: none"> • Will the test results change my management strategy? 	<p>Probably not. The patient’s in this study don’t match my patient population of interest. I am more interested in patient’s in whom there is a question as to whether or not they will be volume responsive. The physiology of those patient’s is likely significantly different than the patients included in this study.</p>
<ul style="list-style-type: none"> • Will patients be better off as a result of the test? 	<p>It is unclear based on this study.</p>