Introduction:
Passive leg raising (PLR), pulse pressure variation (PPV), and the end-expiratory occlusion (EEXPO) test are dynamic indices of fluid responsiveness, widely validated in critically ill patients. Our study aims to investigate the prevalence of conditions in which their use is limited.

Methods:
From January to November 2019, patients with acute circulatory failure, defined by the need of either norepinephrine support or fluid administration in the previous 24h, were included. The validity criteria of PLR, PPV and EEXPO were evaluated.

Results:
100 patients were enrolled. Septic shock was present in 79% of cases, cardiogenic and hypovolemic in 8% and 7% respectively, and 6% of shocks were vasoplegic (non-septic). At the time of enrolment, 94% of patients had norepinephrine infusion, 66% were mechanically ventilated (MV) and 28% had acute respiratory distress syndrome. PLR results were not reliable in 34% of cases, due to either compression stockings (14%) or intra-abdominal hypertension (IAH) (11%). In 7% of cases, no cardiac output (CO) monitoring could be obtained. Among MV patients, PPV was not interpretable in 83% of cases mainly due to spontaneous breathing activity (24%) and low tidal volume ventilation (21%). The remaining non-interpretable cases (38%) had multiple concurrent limitations. EEXPO could not be interpreted in 20% of MV patients, because either a 15-s respiratory hold could not be maintained (62%), or CO could not be monitored (38%). PLR and EEXPO were both valid in 33% of patients, while all the 3 tests were valid in 6% of patients (50% and 9% of MV patients, respectively).

Conclusion:
In conclusion, PLR interpretation is not reliable in 34% of shock patients. In MV patients, PPV and EEXPO test cannot be evaluated in 83% and 20% of cases, respectively.