Stair-climbing test: beyond the height

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Patient selection has contributed significantly to improve the incidence of postoperative complications after anatomical lung resection. Stair-climbing test is one of the low technology alternatives available, sometimes underused, to improve this selection. In the current issue, Boujibar and colleagues[1] present the first systematic review and meta-analysis assessing stair-climbing test as a tool to predict postoperative complications after lung resection and to determine which patients require further high-technology cardiopulmonary evaluation.

Boujibar and colleagues describe the first systematic review and meta-analysis, which addresses the role of the stair-climbing test in predicting the incidence of postoperative complications after major lung resection.[1] The authors conclude that achieved height during the stair-climbing test is a useful screening tool to decide whether a patient, due for thoracic surgery, needs further high-technology cardiopulmonary evaluation or can proceed directly to the operation. Despite the great heterogeneity of the six studies included in the meta-analysis, the authors were able to pool data regarding the altitude performance in metres to draw their conclusion. They conclude that the height achieved during the test, not the symptoms experienced nor the time invested, is the best predictor value of postoperative complications.[1] Although the stair-climbing test is a cheap, well-validated preoperative assessment tool and its results (climbing time, power and achieved height)[2 3] have been correlated with maximal oxygen uptake during exercise (VO_2max), it is considerably underused.

As a follower of the American College of Chest Physicians (ACCP) guidelines on preoperative evaluation for lung resection,[4] I have performed multiple symptom-limited stair-climbing tests. I have encountered recurring problems such as a lack of standardisation[3 5] and a lack of a safe, controlled environment to perform the test—where complications can be managed, should they arise.[6] Specifically, these limitations include different height of the steps; number of floors climbed; difficulty finding an appropriate staircase to perform the test; and need to treat any emergencies along the stairs. This has led other authors to modify the test,[3] to develop low-technology tests performed in fully equipped laboratories[6] or (what is worse) to skip any cardiopulmonary evaluation prior to surgery.[7]

Given this heterogeneity, both in clinical practice and clinical research, the robust analysis conducted by the authors is welcome. In addition, as the authors point out in their manuscript, thoracic surgeons are constantly improving surgical technique and developing less invasive approaches. These improvements have been shown to decrease the morbidity and mortality after lung resection and to improve long-term survival, even in patients with limited pulmonary reserve.[8] However, to attribute these achievements only to the evolution of technology and surgical approaches would be unwise. It is likely to be a combination of improved preoperative patient selection, intraoperative techniques and postoperative care which leads to better outcomes.

The clinical and research community must continue to adapt guidelines in line with rapidly evolving clinical practice, where minimally invasive approaches are preferred, more sublobar resections are performed and limits are pushed to operate on patients traditionally considered inoperable.[8] Practice standardisation and identification of patients at increased risk of morbidity and mortality after lung resection are among the main objectives of the ACCP guidelines. Their implementation, however, still leaves room for improvement.[7] The same thoughts could be applied to the tests included in these guidelines. It does not matter how good their predictive value is, if they are not reproducible, cost-effective, easy to perform, safe for the patients and available to the clinicians, they will not be widely adopted.

The results of Boujibar and colleagues[1] could have been affected by a number of confounding factors such as the different types of resections analysed, the lack of definition of the complications studied and the heterogeneous follow-up. However, their findings may help to refine stair-climbing test performance. The reduction of the climbed altitude threshold to 10 m from the 22 m recommended in the ACCP guidelines[4] may ease the definitive implementation of stair-climbing test as a screening tool. This will allow better selection of those moderate-risk to high-risk surgical candidates that need further cardiopulmonary evaluation prior to anatomical lung resection.

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