# [Exercise Capacity After Repair of Ebstein Anomaly in Adults.](https://www.ncbi.nlm.nih.gov/pubmed/30701277)

Morrical BD, Dearani JA, Bonnichsen CR, Taggart NW.

Pediatr Cardiol. 2019 Apr;40(4):726-732. doi: 10.1007/s00246-019-02056-9. Epub 2019 Jan 30.

PMID: 30701277

[Similar articles](https://www.ncbi.nlm.nih.gov/pubmed?linkname=pubmed_pubmed&from_uid=30701277)

**Take Home Points:**

* Most patients reported symptomatic improvement after surgical repair of Ebstein anomaly – as assessed by NYHA class and self-reported symptoms.
* Formal exercise testing did not reveal objective evidence of functional improvement.
* Echo parameters showed improvement in terms of the degree of TR and RV size.
* Those on betablockers at ANY time had a reduced exercise capacity as measured by METs and VO2max.



***Commentary by Dr. Blanche Cupido (Cape Town), section editor of ACHD Journal Watch:*** The surgical repair techniques for Ebstein anomaly have evolved over the last few decades but timing of surgery remains variable. Though patients report symptomatic improvement, there are no objective functional capacity data for those patients post-repair in adulthood. This retrospective review, from the Mayo Clinic, aimed to describe the effect of repairing or replacing the tricuspid valve (TV) in Ebstein anomaly by comparing exercise test data in adults before and after surgery.

They enrolled all patients with Ebstein anomaly who underwent tricuspid surgery at the Mayo Clinic between June 2007 and January 2015. All patients had both pre- and postoperative exercise test data and echocardiograms.

Three hundred and twenty two patients had tricuspid surgery during the study period. Of these, 32 had pre-and post-exercise tests adequate for analysis. The mean age at time of surgery was 40 years old, 69% of the cohort was female.

* 19 patients had a ‘Cone’ repair
* 13 had a tricuspid valve replacement
* 26% were re-operations
* 75% were symptomatic prior to surgery

All patients had good surgical results with the tricuspid regurgitation being significantly reduced post-operatively (77% had severe TR pre-op; 91% had no/mild TR post-op) – p<0.001. Though the RV size did not normalize, it was significantly decreased.

The NYHA class improved dramatically after surgery with 68% of patients improving to class I. 

There was no significant difference in the functional aerobic capacity, metabolic equivalents, exercise time or VO2max between the pre- and post-operative exercise tests.



Beta blockers had a significant effect on net exercise performance. Those patients who were never on a betablocker before, achieved higher METS and higher VO2max than those on betablockers. Functional aerobic capacity was not affected.



The addition of betablockers did not alter pre-and post-exercise parameters. Furthermore, there was no association with pre-or post-operative arrhythmia and betablocker usage.

There was no difference in exercise parameters between those who had a repair and those who had a tricuspid valve replacement. There was no difference in exercise capacity between those with a first repair vs a re-do repair.