

# Effect of Remote Ischemic Conditioning in Patients with ST-Segment Elevation Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention: A Systematic Review and Meta-Analysis

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## Background

ST-segment elevation myocardial infarction (STEMI) is a common cause of mortality and morbidity. Primary percutaneous coronary intervention (PCI) is the standard treatment for STEMI. The study aims to test that remote ischemic conditioning (RIC) as an adjuvant therapy to primary PCI could decrease a combined outcome measure of myocardial damage by imaging and biomarkers and major adverse cardiac and cerebrovascular events (MACCE) on follow-up after STEMI.

## Methods

We searched for randomized controlled trials (RCTs) in four databases: PubMed, Scopus, Web of Science, and Cochrane, using relevant keywords. Studies were screened for eligibility. We extracted the data from the relevant articles, and then these data were pooled as mean difference (MD) with a 95% CI, using RevMan and WebPlotDigitizer.

## Results

Nineteen RCTs involving 8026 patients were eligible for our meta-analysis. The pooled data showed that RIC significantly increased the left ventricular ejection fraction (LVEF) within one week from PCI (MD= 2.87, 95% CI [1.25, 4.48], p = 0.0005). RIC significantly reduced myocardial infarct size (MD= -3.90, 95% CI [-7.76, -0.03], p = 0.05), microvascular obstruction (RR= 0.77, 95% CI [0.61, 0.97], p = 0.03), creatine kinase- MB peak level (MD= -2052.76, 95% CI [-3441.87, -663.64], p = 0.004) and significantly lower MACCE risk.

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RIC with primary PCI positively affects LVEF and reduces infarct size and CK-MB peak level in the short term; however, RIC has no significant effect on MACCE, myocardial salvage index, myocardial blush grade. We prefer using a preconditioning protocol and choosing the upper limb to increase cardiac function.

## Conclusion

RIC with primary PCI positively affects LVEF and reduces infarct size and CK-MB peak level in the short term; however, RIC has no significant effect on MACCE, myocardial salvage index, myocardial blush grade. We prefer using a preconditioning protocol and choosing the upper limb to increase cardiac function.