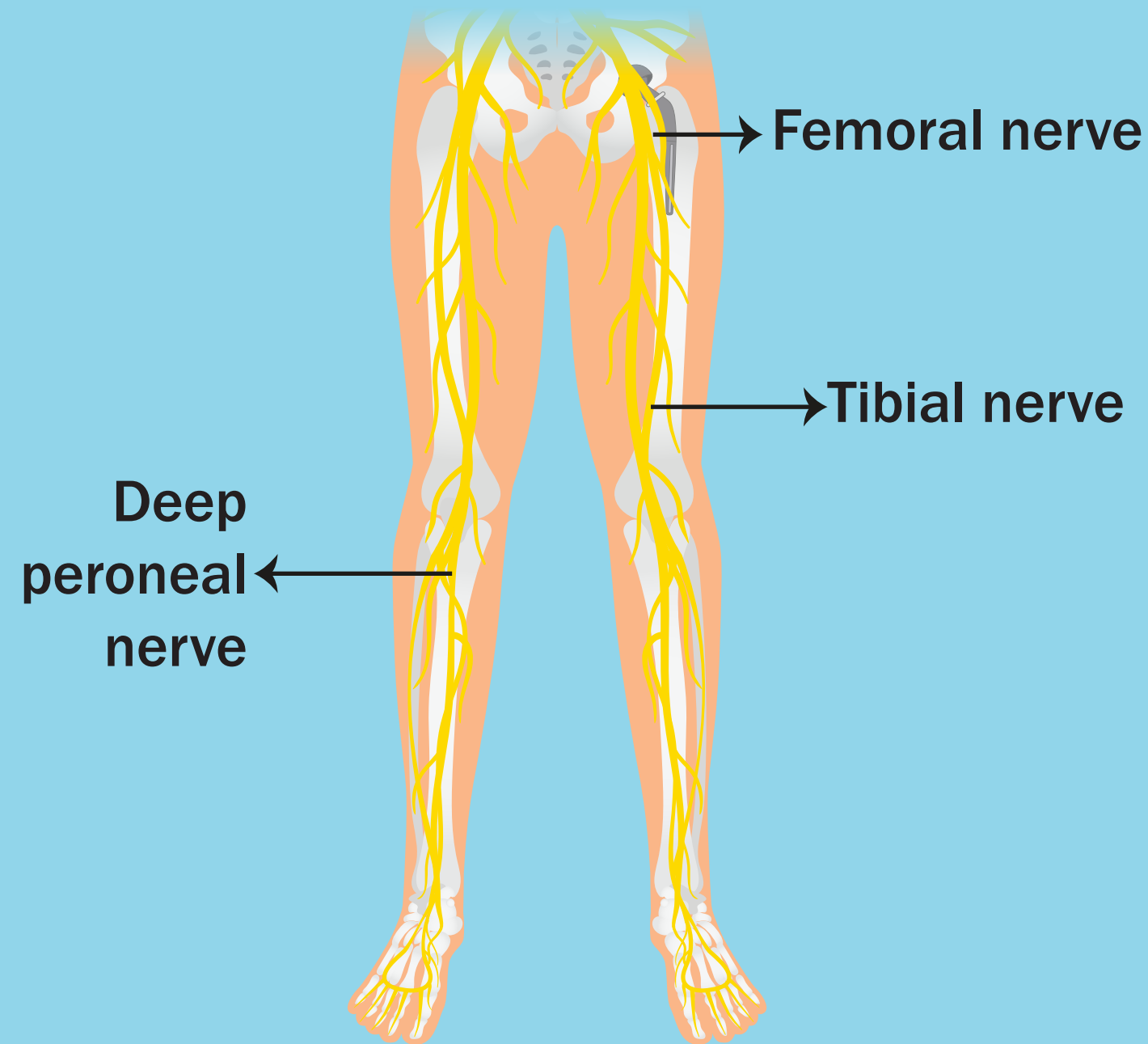


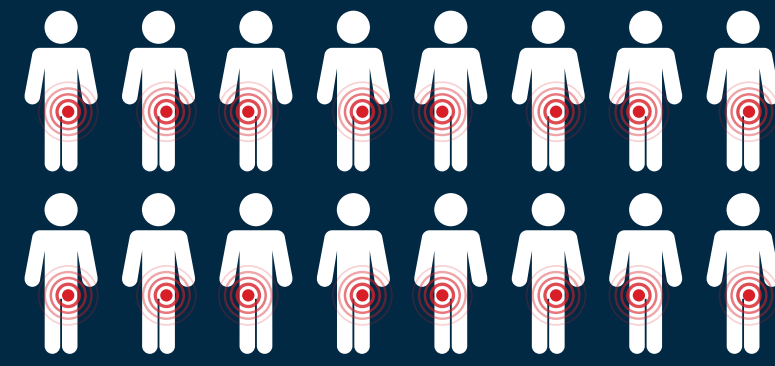
# Maximum Limb Lengthening During Hip Replacement to Prevent Nerve Injury

Nerve injury is a potentially devastating complication following total hip arthroplasty (THA)



Limb lengthening during THA is a major risk factor, and finding the critical limit of lengthening is crucial

## Neuromonitorization study



16 patients scheduled for THA

## Preoperative measurement



Total femoral length

Distance between anterior superior iliac spine and medial malleolus (ASIS-MM distance)

## Intraoperative measurement



Safe limit of lengthening (change in somatosensory or motor evoked potentials [SEPs, MEPs])

Critical limit of lengthening (meeting of MEP or SEP thresholds)

## In peroneal nerve...

Mean safe limit of lengthening  
14.9 ± 6.2 mm

Mean critical limit of lengthening  
22.4 ± 5.6 mm

Mean decrease in MEP amplitudes at critical limit



3%

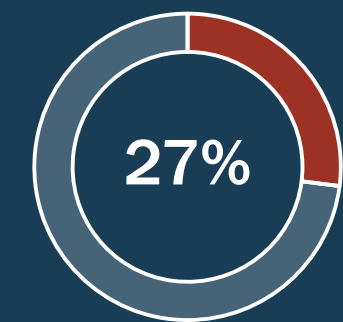
Relative to femoral length

5%

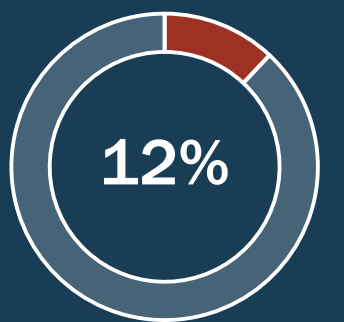
1.7%

Relative to ASIS-MM distance

2.6%



Tibial nerve



Femoral nerve

THA can result in deep peroneal nerve damage, and limit of nerve lengthening is directly correlated with anthropometric measurements

Critical Limit of Lower-Extremity Lengthening in Total Hip Arthroplasty: An Intraoperative Neuromonitorization Study

Bayram et al. (2020) | DOI: 10.2106/JBJS.19.00988

www.jbjs.org

theJBJS

@JBJS

