

Percutaneous peripheral nerve stimulation used for knee pain: single-center results from a retrospective chart review

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OBJECTIVE

- Knee pain impacts approximately 25% of adults and adversely affects function and mobility, and pain reduction can enable rehabilitation and functional recovery [1].
- Conventional pain treatment options often lack sustained efficacy and can produce unwanted side effects [2, 3].
- A recent double-blind randomized controlled trial found percutaneous peripheral nerve stimulation (PNS) can reduce knee pain [4], and the present study evaluates real world experience using the same system.

Study: IRB-approved retrospective review of a single center’s experience using percutaneous PNS to treat chronic knee pain.

METHODS

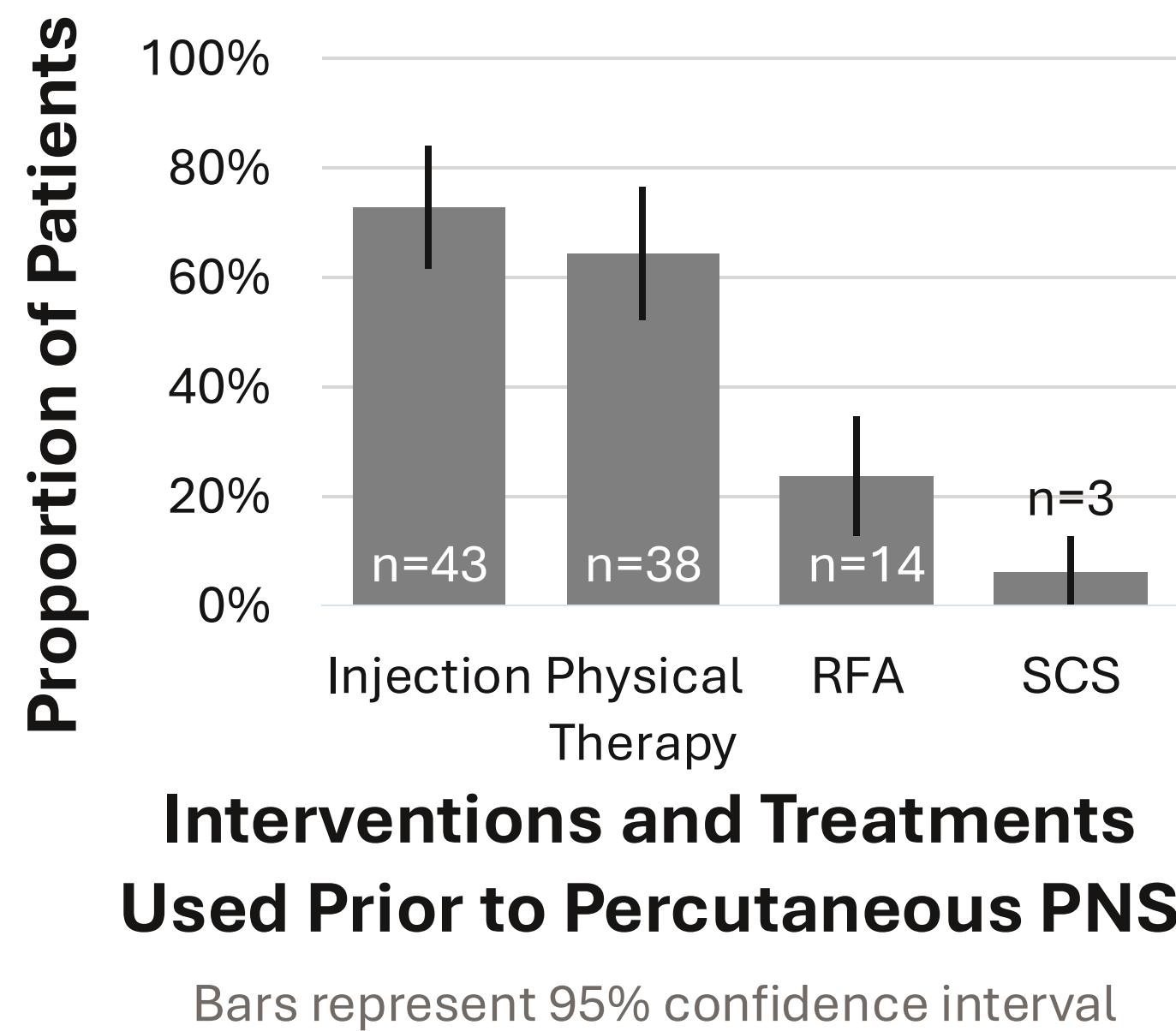
- Treatment with percutaneous PNS device with lead(s) connected to body-worn external pulse generator.
- Leads removed after end of treatment (typically 60 days).
- Data were extracted from electronic medical records and supplemented by data available for patients who opted in to provide outcomes to the device manufacturer’s database.
- Patient characteristics included demographic data, clinical characteristics related to their knee pain (diagnosis, other treatments used, etc.), and treatment outcomes.
- The proportion of patients who reported substantial (≥50%) pain relief was evaluated at end of treatment (EOT).



DEMOGRAPHICS

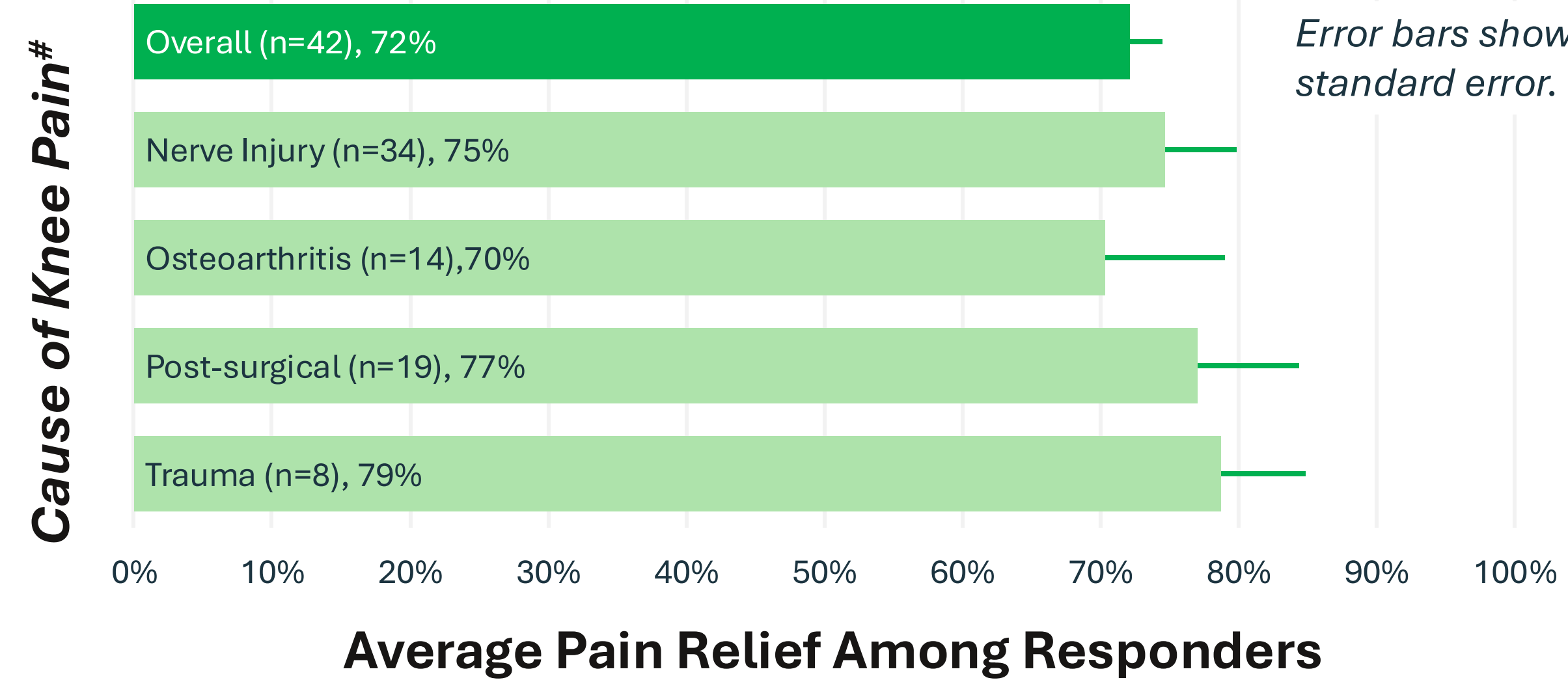
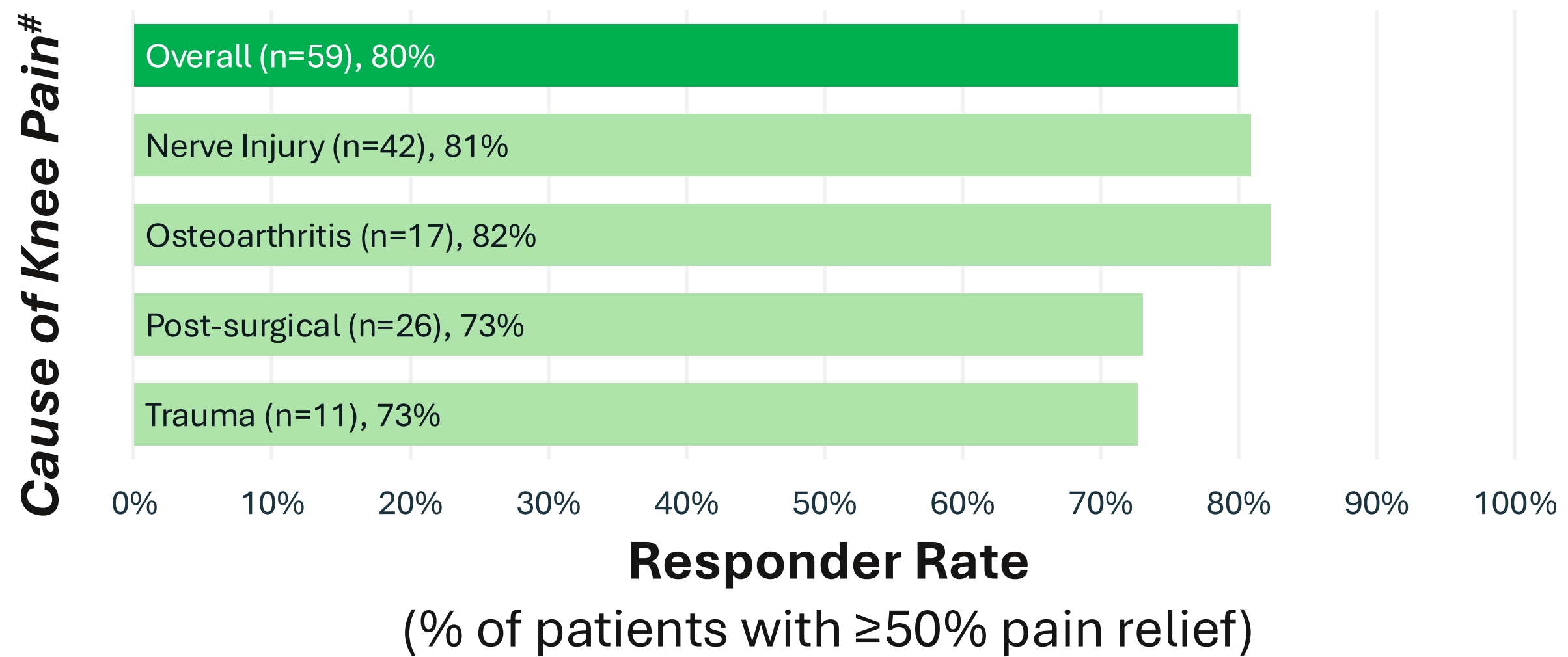
- 59 charts evaluated, all with two leads implanted.
 - The most common combination of nerve targets was the femoral and saphenous nerves (n=35 of 59).

- Implant side
 - Left (n=30)
 - Right (n=27)
 - Bilateral (n=2)
- Gender
 - Female (n=44)
 - Male (n=15)



RESULTS

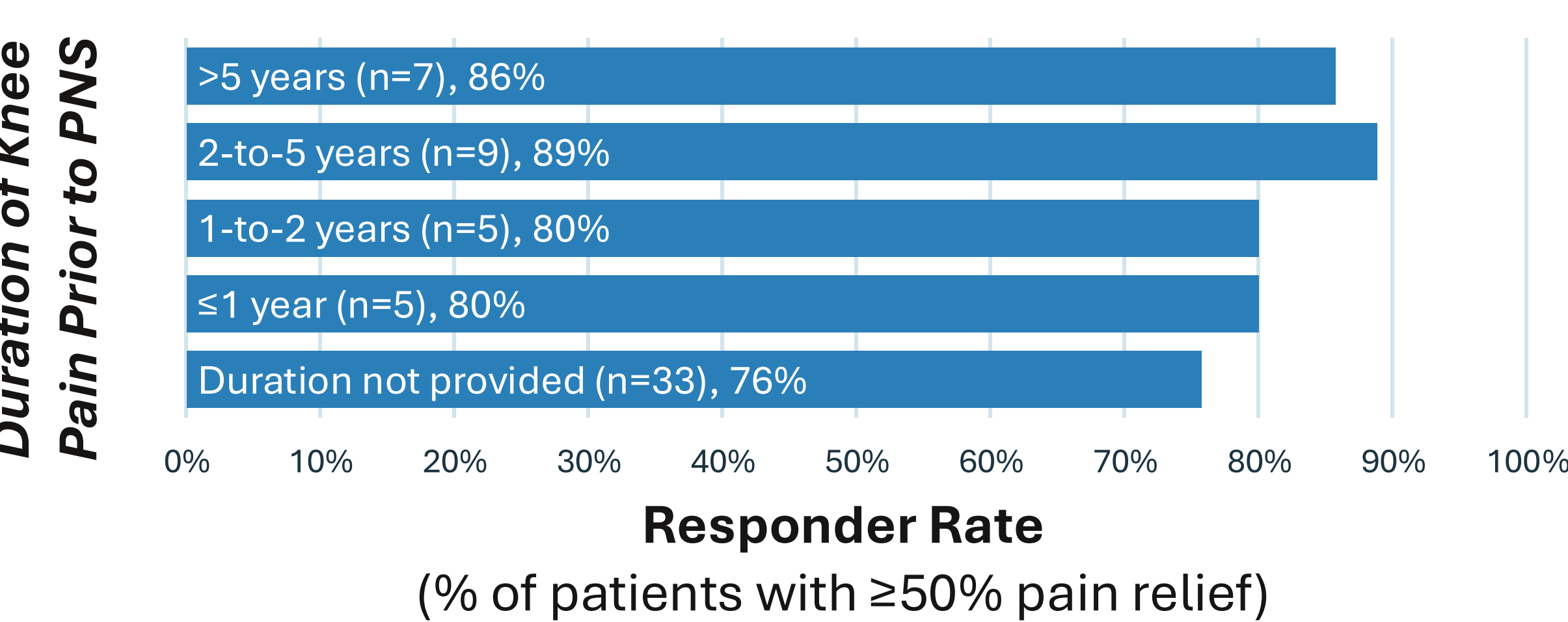
Consistent pain relief across causes of knee pain



Safety: No adverse events were serious or unanticipated. Two suspected infections were addressed with either topical or oral antibiotics and both patients reported ≥50% pain relief at EOT.

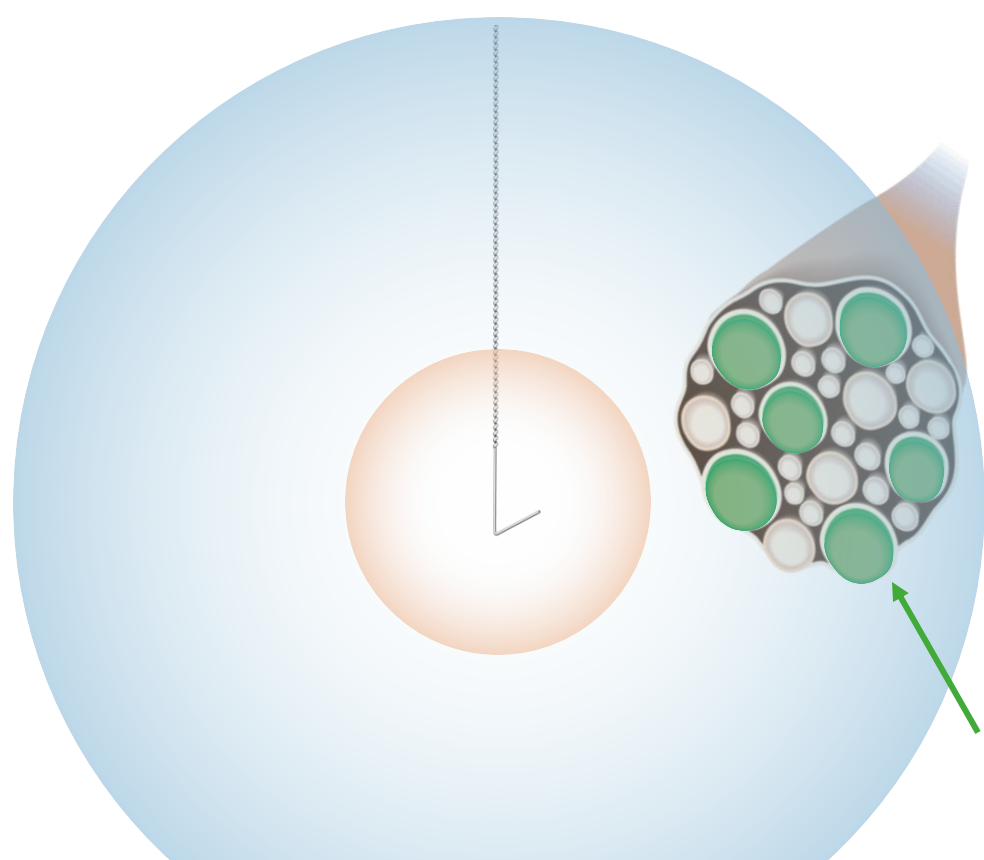
Some subjects had multiple knee pain causes. Nine subjects had an unknown or other cause of knee pain.

Consistent pain relief across knee pain duration

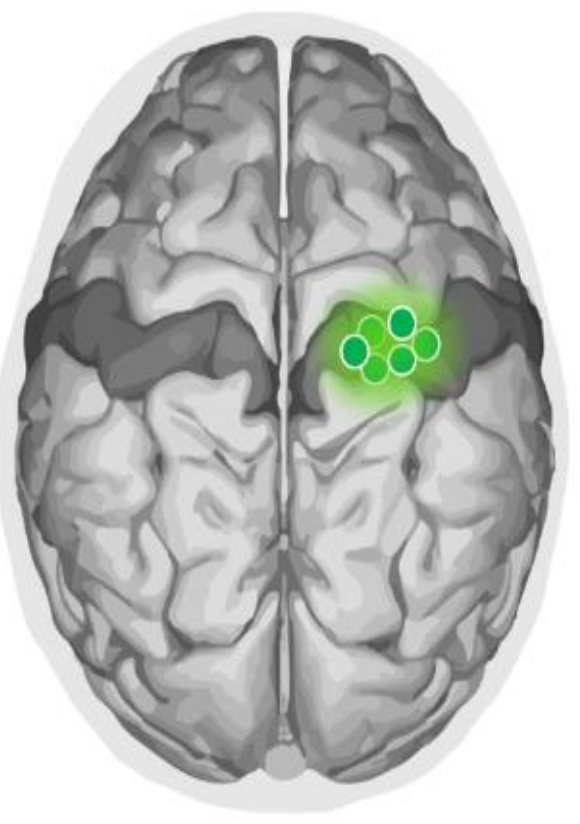


PROPOSED MECHANISM

- Consistent pain relief across knee pain causes, including in patients with multiple knee pain causes, lends support to a convergent central mechanism for PNS
- Remote selective targeting of the peripheral nerves with percutaneous PNS helps recondition the underlying centralized pain state [5].



Percutaneous PNS robustly activates sensory fibers



Robust activation reconditions the CNS

KEY TAKEAWAYS

- This single-center retrospective chart review demonstrated that percutaneous PNS may provide clinically significant relief of chronic knee pain.
- The success rate and average pain relief of patients with ≥50% pain relief were consistently high across patients with different causes of knee pain.
- Pain relief was also consistently high for different durations of pain prior to use of percutaneous PNS.

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References:

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