

Society of Pediatric Anesthesia Improvement Network (SPAIN): Prospective, Observational, Longitudinal, Multi-institutional Study of Pain Management Practices for Anterior Cruciate Ligament Reconstruction

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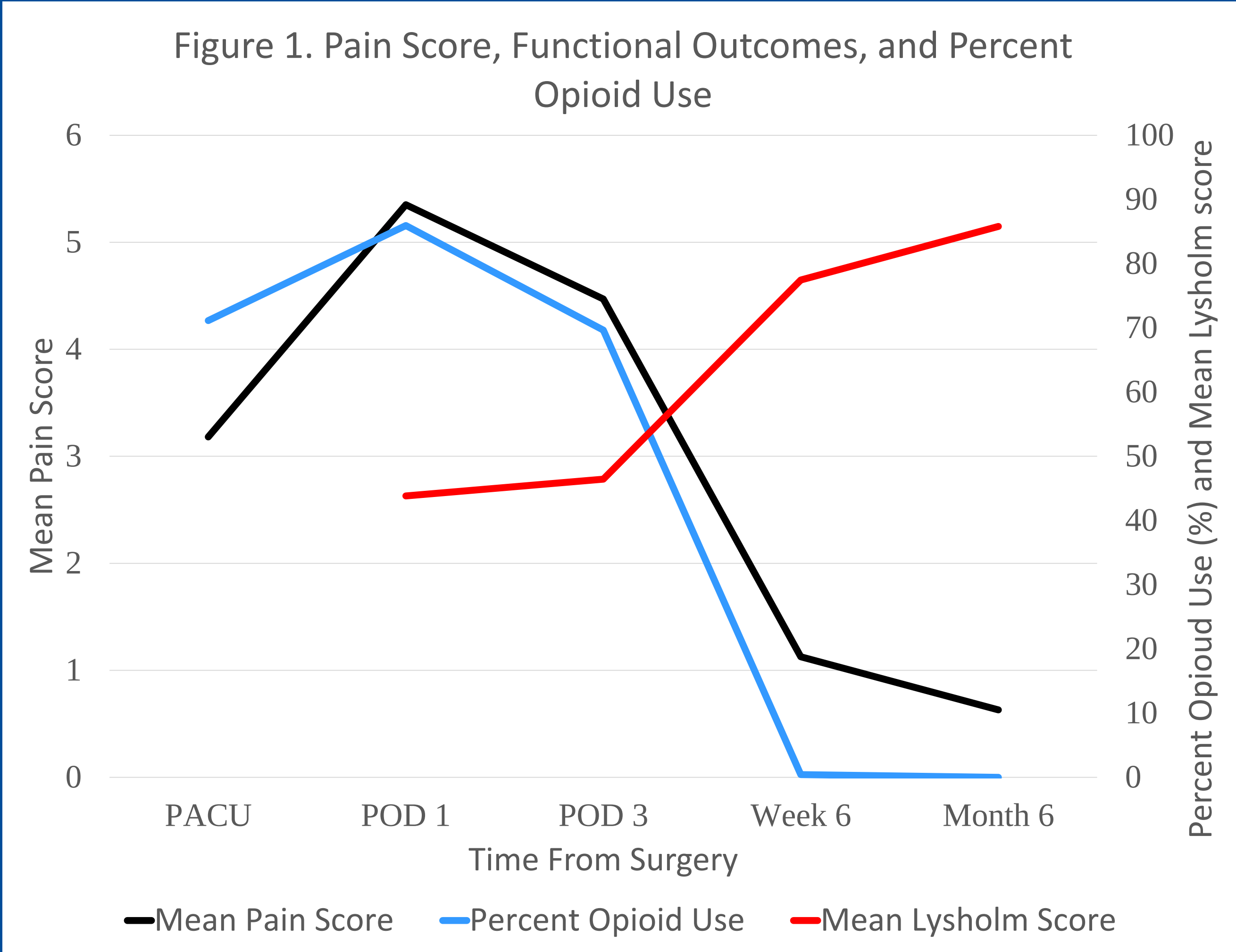
INTRODUCTION

- ACL injuries account for 10.3% of all sports injuries between 13 and 17 years
- Inadequate pain control after ACL reconstruction can lead to decrease ambulation, delayed discharge, and increased readmission rates.
- There is little comparative data on long term outcomes from the different possible management strategies of ACL reconstruction in children.
- SPAIN ACL is a prospective multicenter registry capturing data relating to perioperative course and management of children undergoing ACL reconstruction surgery. The goal of SPAIN ACL is to understand the pragmatic variations in analgesic management practices at different pediatric institutions and the influence of these variations and patient factors on short- and long-term pain, functional and psychological outcomes.

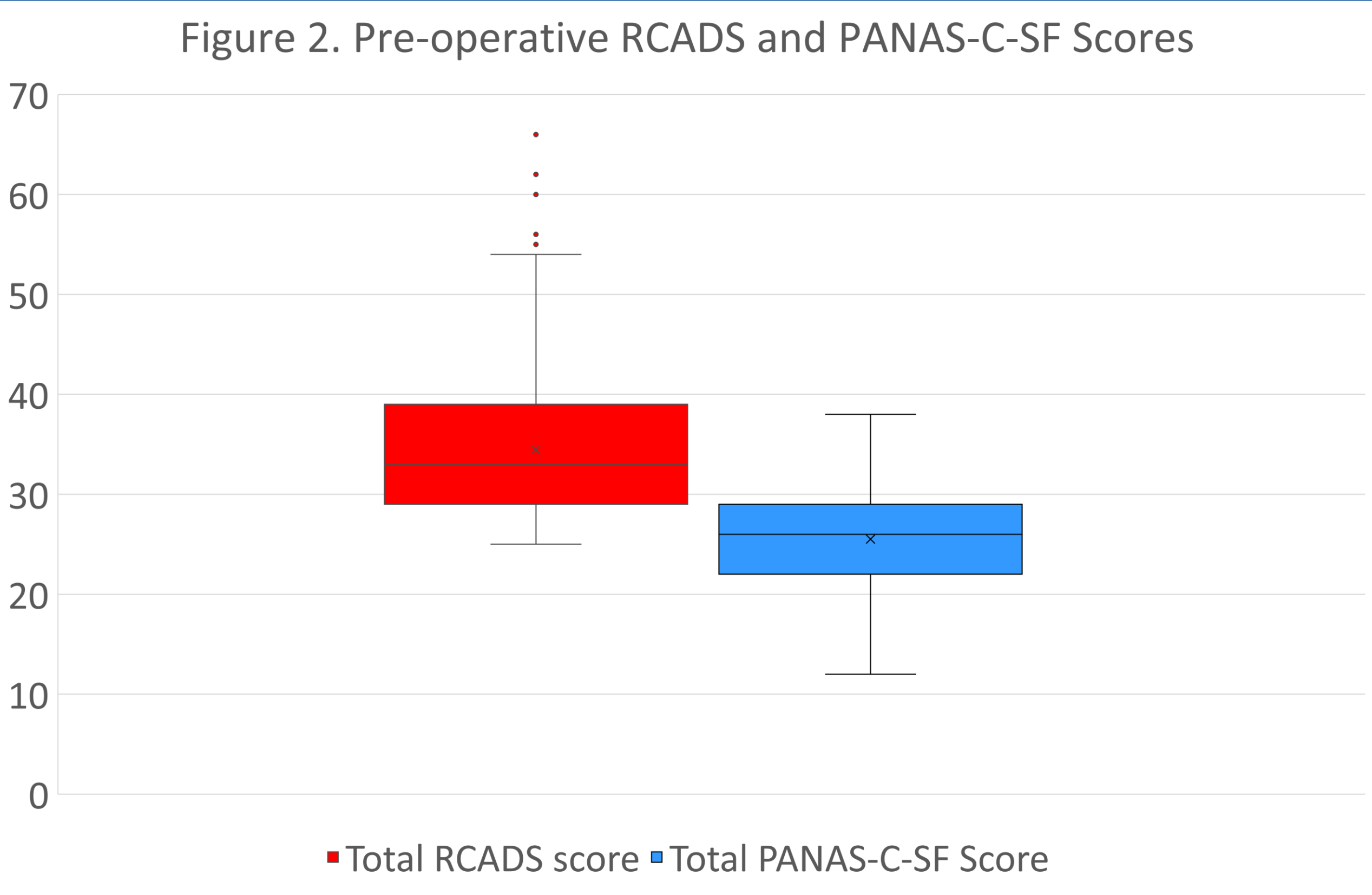
METHODS

- Prospective multicenter observational study enrolling children aged 12 to 17.5 years undergoing ACL repair at 15 institutions over two years.
- Patient demographics, psychologic factors (RCADS and PANAS CSF Scales), surgical variations (including the type of graft), perioperative pain management modalities (including regional block), and pain scores were collected.
- Patients were followed longitudinally using standardized electronic surveys for pain, opioid use, subjective functional outcomes (Lysholm scale), objective functional outcomes (strength test and time to return to sports) and emotional outcomes (post-traumatic stress disorder, CPSS scale) on postoperative day POD 1, POD 3, week 6 and month 6 after surgery.

Variations of blocks for ACL Repair	
Percentage of patients with a block	88.3%
Percentage of patients with out a block	11.7%
Percentage with a single block	52.6%
Percentage with a dual block	38.2%
Percentage with a triple block	9.1%



Types of blocks for ACL Repair	
Adductor canal with single shot only	37.6%
Adductor canal + Sciatic Single Shot	11.1
Adductor canal + IPACK Single Shot	9.7
Femoral Catheter + Sciatic and LFCN Single shot	8.2
Adductor Canal Catheter Only	6.5
Femoral + Sciatic Single Shot	6.2
Femoral Single Shot	4.7
Adductor Canal + LFCN Single Shot	3.8
Femoral Catheter + Sciatic Single Shot	3.2
Femoral Catheter Only	2.6
Adductor Canal Catheter + LFCN Single Shot	2.1
Femoral Single Shot + IPACK	1.2
Fascia Iliaca Catheter Only	0.9
Femoral + Sciatic + LFCN Single Shot	0.6
IPACK Block Only	0.3
Adductor Canal Catheter + Sciatic Single Shot	0.3
Femoral Catheter + Sciatic Catheter	0.3
Femoral + LFCN Single Shot	0.3
Femoral Catheter + Sciatic Single Shot + Fascia Iliaca Single Shot	0.3



RESULTS

- N=526. The survey response rate approximated 76%, 73%, 62%, and 61% for POD 1, POD 3, week 6, and month 6 respectively.
- Variations in block/pain management regimens for the cohort are presented in Table 1. 88.3% of patients had at least one type of block, with the most common being a single adductor canal block (37.6%).
- Mean pain scores and opioid usage declined with increasing time from surgery, while functional outcomes improved as seen in Figure 1.
- The broad variation in personality within the data registry is demonstrated in Figure 2 indicating a non-homogenous population.

DISCUSSION

- Our study describes practice and choice variations of pain medications and nerve blocks for ACL at different pediatric institutions.
- We found variations in immediate pain outcomes. The variations in short term pain outcomes by analgesic techniques will be analyzed at study completion. Future analyses will assess for association of pain modalities and psychosocial factors with post-surgical recovery variations. This data registry will also address the impact of different nerve blocks on functional outcomes.

REFERENCES

Kirkham et al. Analgesic efficacy of local infiltration analgesia vs. femoral nerve block after anterior cruciate ligament reconstruction: a systematic review and meta-analysis. Anaesthesia 2017; 72:1542-43