



■ EDITORIAL

Research prioritization in paediatric orthopaedics and the impact on funding

T. Theologis,
D. C. Perry

In 2017, the British Society for Children's Orthopaedic Surgery engaged the profession and all relevant stakeholders in two formal research prioritization processes. In this editorial, we describe the impact of this prioritization on funding, and how research in children's orthopaedics, which was until very recently a largely unfunded and under-investigated area, is now flourishing. Establishing research priorities was a crucial step in this process.

Research prioritization is increasingly important in orthopaedic surgery, with many of the specialist societies engaging in priority-setting exercises. The processes of generating these priorities are themselves academic activities, involving consensus-building techniques and the engagement of many stakeholders and patients.¹ However, like all research, the activity is only worthwhile if it generates impact through change. In the case of research priorities, this change may be demonstrated from those who provide funding, and/or by identifying appropriate priorities from the research community.

Children's orthopaedics has traditionally been practised empirically, with little evidence to support practice. However, in 2017, the British Society for Children's Orthopaedic Surgery (BSCOS) began their quest to improve the quality of the evidence that informs practice. Their first step was to define research priorities, but was it worth it?

Establishing research priorities

In order to engage the profession and all relevant stakeholders, BSCOS sought consensus among its members and undertook a formal research prioritization process through the James Lind Alliance (JLA),² which involved a wide group of professionals and patients.

The initial process involved only orthopaedic surgeons, from both BSCOS and the Orthopaedic Trauma Society (OTS).³ This was a modified Delphi study, overseen by the BSCOS Research committee. The process was simple to administer and quick to achieve results. Uncertainties were prioritized in order of their importance. A total of 86 surgeons contributed to both rounds of the Delphi process, scoring priorities from one (low priority) to five (high priority). Elective topics were ranked higher than those relating to trauma.

The top ten elective and top five trauma priorities were identified. The three topics that ranked highest were related to the treatment of slipped capital femoral epiphysis, Perthes' disease, and infection in bone. Most focused on elective lower limb surgery.

Next, a more formal research prioritization process, under the auspices of the JLA, focused on elective lower limb elective surgery.⁴ This offered the opportunity for patients and members of the public to have an equal voice to that of clinicians and research workers in influencing the agenda. The JLA's infrastructure is funded by the National Institute for Health and Care Research (NIHR),⁵ which oversees the process in a transparent and structured manner. The NIHR encourages active involvement of the public and supports the JLA in feeding back research priorities to national funding bodies.

The JLA process took 18 months between July 2017 and January 2019 to complete. During the first national survey, 388 people generated 1,023 questions, 801 of which were classified as true uncertainties. Following the JLA methodology, 75 uncertainties were developed from the initial 801 questions, and 26 were prioritized through a second national survey and taken to a face-to-face workshop, when the top ten were selected. These included questions dealing with cerebral palsy, common conditions of the hip such as Perthes' disease and developmental dysplasia of the hip, as well as rehabilitation techniques and methods to improve shared decision-making between clinicians and patients and their families.

Impact on funding

We followed up on the projects in children's orthopaedics that were funded in the UK, after completion of these research prioritization projects (Table I).

Correspondence should be sent to T. Theologis; email: tim.theologis@msd.ox.ac.uk

© 2024 Theologis and Perry.
doi:10.1302/0301-620X.106B5.
BJJ-2024-0063 \$2.00

Bone Joint J
2024;106-B(5):422-424.

Table I. Paediatric orthopaedic research projects prioritized by either the James Lind Alliance or the British Society for Children's Orthopaedic Surgery, which have already been funded.

Research prioritization	Subject	Funding body
JLA no. 1	Core outcomes in children's lower limb surgery	NIHR doctoral fellowship started 2023
JLA no. 3 and BSCOS elective no. 5	Lower limb orthopaedic surgery in children with cerebral palsy who can walk	Action Medical Research; recruitment completed, results in Spring 2024
JLA no. 4	Surgery vs non surgical treatment for Perthes' disease	NIHR HTA funded trial – OpNonSTOP study; recruitment starts July 2024
JLA no. 6	Effectiveness of selective dorsal rhizotomy in cerebral palsy	NIHR doctoral fellowship started in 2024
JLA no. 7	Effectiveness of non-surgical treatment for children with cerebral palsy who can walk	NIHR HTA funded two commissioned trials, the SPELL study ⁶ and the ROBUST study, ⁷ both currently recruiting
JLA no. 8 and BSCOS elective no. 6	Optimizing the screening for DDH	DDH research programme being developed with NIHR Academy Funding, with multiple doctorates; SMARTIE and SMARTER studies ⁸
BSCOS elective no. 1	What is the optimal approach to treat severe stable SCFE - correction of deformity or pinning in situ?	NIHR HTA funded Recruiting Big BOSS Study ⁹ BJJ editorial ¹⁰
BSCOS elective no. 2	What is the optimal approach to treat Perthes' disease - surgical containment, or nonoperative treatment?	NIHR doctoral fellowship and NIHR HTA funded Recruitment starts July 2024 ^{11,12}
BSCOS elective no. 3	Bone and joint infection; diagnosis and treatment	HTA/NIHR commissioned study on diagnostic imaging recruiting ^{13,14}
BSCOS elective no. 7	What are the approaches to the management of late presenting DDH in infants, and how may differences in treatment effect subsequent outcomes	DDH research programme being developed with NIHR Academy funding, SMARTIE and SMARTER studies
BSCOS elective no. 8	Do infants with centred, but sonographically immature hips, benefit from neonatal splintage?	DDH research programme being developed with NIHR Academy funding, SMARTIE and SMARTER studies
BSCOS trauma no. 1	Do children with medial epicondylar fractures benefit from surgical fixation compared to nonoperative treatment in terms of functional outcomes?	NIHR HTA funded, recruitment complete Results of SCIENCE study expected Spring 2025 ¹⁵ Protocol ¹⁶ Qualitative study published ¹⁷ BJJ editorial ¹⁸
BSCOS trauma no. 3	Do younger children with displaced distal radial fractures (either at the metaphysis or the physis) benefit from reduction with or without fixation, or do the results of nonoperative treatments offer similar functional and cosmetic outcomes	NIHR HTA funded Recruitment for CRAFFT Study reaching completion ¹⁹ Qualitative study published ²⁰ BJJ editorial ²¹
BSCOS trauma no. 4	Do children with minimally displaced fractures of the distal tibial physis benefit from operative treatment, compared to those treated with nonoperative treatment	NIHR HTA funded Recruitment for ODDSocks study starts Spring 2024 ²² BJJ editorial ²³

BJJ, *The Bone & Joint Journal*; BSCOS, British Society for Children's Orthopaedic Surgery; DDH, developmental dysplasia of the hip; HTA, Health Technology Assessment; JLA, James Lind Alliance; NIHR, National Institute for Health and Care Research; SCFE, slipped capital femoral epiphysis.

Research in children's orthopaedics is now flourishing, following the establishment of research priorities. This has engaged paediatric orthopaedic surgeons in the process of prioritization, allowing them to take ownership of this task and leading to the development of a research network, which is currently supporting multicentre trials and a growing community of doctoral students. Involving children and their families in the prioritization of research, with the support of the JLA, was key to getting funding.

While the priorities were intended to develop the landscape of research in this area in the UK, we are aware that they have been used to encourage funding for research throughout the world. For instance, randomized controlled trials concerning medial epicondylar (COMET)²⁴ and distal radial fractures (DRIFT)²⁵ have been funded by the USA National Institutes of Health. Although the UK priorities may broadly apply internationally, they may need to be tailored to the specific needs of

different regions in order to reflect the needs of the patients and the funding bodies.

A clear research agenda has transformed children's orthopaedic surgery in the UK, allowing it to become one of the subspecialties in which the most research is now undertaken, with considerable associated international involvement.

References

- Gwilym SE, Perry DC, Costa ML.** Trauma and orthopaedic research is being driven by priorities identified by patients, surgeons, and other key stakeholders. *Bone Joint J.* 2021;103-B(8):1328–1330.
- No authors listed.** The James Lind Alliance. <https://www.jla.nihr.ac.uk/> (date last accessed 26 February 2024).
- Perry DC, Wright JG, Cooke S, et al.** A consensus exercise identifying priorities for research into clinical effectiveness among children's orthopaedic surgeons in the United Kingdom. *Bone Joint J.* 2018;100-B(5):680–684.

4. **Vella-Baldacchino M, Perry DC, Roposch A, et al.** Research priorities in children requiring elective surgery for conditions affecting the lower limbs: a James Lind Alliance Priority Setting Partnership. *BMJ Open*. 2019;9(12):e033233.
5. **No authors listed.** National Institute for Health and Care Research. <https://www.nihr.ac.uk/> (date last accessed 26 February 2024).
6. **No authors listed.** The SPELL study. NDORMS, University of Oxford. <https://www.spell-study.org/> (date last accessed 19 February 2024).
7. **No authors listed.** The ROBUST study. NDORMS, University of Oxford. <https://www.robust-study.org/> (date last accessed 19 February 2024).
8. **Franco H, Saxby N, Corlew DS, Perry DC, Pigeolet M.** An assessment of the impact of developmental dysplasia of the hip on patients' wellbeing. *Bone Jt Open*. 2023;4(3):120–128.
9. **No authors listed.** Big BOSS Study. NDORMS, University of Oxford. <https://bigboss-study.digital.com/> (date last accessed 19 February 2024).
10. **Howard A, Thomas GER, Perry DC.** Stable slipped capital femoral epiphysis with significant deformity. *Bone Joint J*. 2024;106-B(2):111–113.
11. **Galloway AM, Pini S, Holton C, et al.** "Waiting for the best day of your life". A qualitative interview study of patients' and clinicians' experiences of Perthes' disease. *Bone Jt Open*. 2023;4(10):735–741.
12. **Ali MS, Khattak M, Metcalfe D, Perry DC.** Radiological hip shape and patient-reported outcome measures in healed Perthes' disease. *Bone Joint J*. 2023;105-B(6):711–716.
13. **Theologis T, Brady MA, Hartshorn S, Faust SN, Offiah AC.** Diagnosing acute bone and joint infection in children. *Bone Joint J*. 2023;105-B(3):227–229.
14. **No authors listed.** NDORMS, University of Oxford. <https://www.picbone.com/> (date last accessed 19 February 2024).
15. **No authors listed.** The Science Study. NDORMS, University of Oxford. www.SCIENCEstudy.org (date last accessed 19 February 2024).
16. **Dorman SL, Shelton JA, Stevenson RA, Linkman K, Kirkham J, Perry DC.** Management of medial humeral epicondyle fractures in children: a structured review protocol for a systematic review of the literature and identification of a core outcome set using a Delphi survey. *Trials*. 2018;19(1):119.
17. **Papiez K, Tutton E, Phelps EE, et al.** A qualitative study of parents' and their child's experience of a medial epicondyle fracture. *Bone Jt Open*. 2021;2(6):359–364.
18. **Ferguson D, Perry DC.** Managing displaced fractures of the medial humeral epicondyle in children. *Bone Joint J*. 2024;106-B(3):224–226.
19. **No authors listed.** The CRAFFT Study. NDORMS, University of Oxford. www.CRAFFTstudy.org (date last accessed 19 February 2024).
20. **Phelps EE, Tutton E, Costa ML, Achten J, Moscrop A, Perry DC.** Protecting my injured child: a qualitative study of parents' experience of caring for a child with a displaced distal radius fracture. *BMC Pediatr*. 2022;22(1):270.
21. **Metcalfe D, Perry DC.** Surgically reducing displaced distal radial fractures in children. *Bone Joint J*. 2024;106-B(1):16–18.
22. **No authors listed.** ODD Socks Study. NDORMS, University of Oxford. <https://oddssocks-study.digital.com/> (date last accessed 19 February 2024).
23. **Peterson N, Perry DC.** Displaced distal tibial Salter-Harris II fractures. *Bone Joint J*. 2023;105-B(5):471–473.
24. **No authors listed.** Cast or Operation for Medial Epicondyle Fracture Treatment in Children (COMET). [ClinicalTrials.gov. https://clinicaltrials.gov/study/NCT05131672](https://clinicaltrials.gov/study/NCT05131672) (date last accessed 19 February 2024).
25. **No authors listed.** Distal Radius Interventions for Fracture Treatment (DRIFT). [ClinicalTrials.gov. https://clinicaltrials.gov/study/NCT05131685](https://clinicaltrials.gov/study/NCT05131685) (date last accessed 19 February 2024).

Author information:

T.Theologis, MSc, PhD, FRCS, Consultant Orthopaedic Surgeon, Nuffield Department of Orthopaedic Rheumatology and Musculoskeletal Science, Nuffield Orthopaedic Centre, University of Oxford, Oxford, UK.

D. C. Perry, PhD, FRCS(Orth), NIHR Research Professor of Children's Surgery and Emergency Care, Institute of Population Health, University of Liverpool, Liverpool, UK; Alder Hey Orthopaedics, Alder Hey Children's NHS Foundation Trust, Liverpool, UK.

Author contributions:

T.Theologis: Writing – original draft.

D. C. Perry: Writing – review & editing.

Funding statement:

The authors disclose receipt of the following financial or material support for the research, authorship, and/or publication of this article: D. C. Perry reports a NIHR Research Professorship, and funding from the NIHR Academy (NIHR301655).

ICMJE COI statement:

D. C. Perry reports a NIHR Research Professorship, and funding from the NIHR Academy (NIHR301655).

Open access statement:

This article is distributed under the terms of the Creative Commons Attributions (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original author and source are credited.

This article was primarily edited by J. Scott.