

Plaster cast versus functional bracing for Achilles tendon rupture: the UKSTAR RCT

Matthew L Costa,^{1*} Juul Achten,¹
Susan Wagland,¹ Ioana R Marian,¹
Mandy Maredza,² Michael Maia Schlüssel,¹
Anna S Liew,¹ Nick R Parsons,³
Susan J Dutton,¹ Rebecca S Kearney,²
Sarah E Lamb,^{1,4} Benjamin Ollivere⁵
and Stavros Petrou^{2,6} on behalf of the UKSTAR
Trial Management Group

¹Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, UK

²Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, Coventry, UK

³Statistics and Epidemiology Unit, Warwick Medical School, University of Warwick, Coventry, UK

⁴College of Medicine and Health, University of Exeter, Exeter, UK

⁵Division of Rheumatology, Orthopaedics and Dermatology, School of Medicine, Queen's Medical Centre Nottingham, University of Nottingham, Nottingham, UK

⁶Nuffield Department of Primary Care Health Sciences, University of Oxford, Oxford, UK

*Corresponding author matthew.costa@ndorms.ox.ac.uk

Declared competing interests of authors: Matthew L Costa is a National Institute for Health Research (NIHR) Senior Investigator and a member of the NIHR Health Technology Assessment (HTA) General Board (1 November 2016 to present). Rebecca S Kearney is a member of the NIHR HTA Clinical Evaluation and Trials Board (8 November 2018–present) and the NIHR Integrated Clinical Academic Doctoral Panel (29 November 2017–present) and was a member of NIHR Research for Patient Benefit Board (28 January 2016–24 January 2019). Sarah E Lamb reports that she was a member of the following boards: HTA Additional Capacity Funding Board (2012–15); HTA Clinical Trials Board (2010–15); HTA End of Life Care and Add on Studies (2015); HTA Funding Boards Policy Group (formerly Clinical Specialty Group) (2010–15); HTA Maternal, Neonatal, Child Health Methods Group (2013–15); HTA Post-board funding teleconference (2010–15); HTA Primary Care Themed Call Board (2013–14); HTA Prioritisation Group (2012–15); and the NIHR Clinical Trials Unit Standing Advisory Committee (2012–16). Stavros Petrou is a NIHR Senior Investigator.

Published February 2020

DOI: 10.3310/hta24080

Plain English summary

The UKSTAR RCT

Health Technology Assessment 2020; Vol. 24: No. 8

DOI: [10.3310/hta24080](https://doi.org/10.3310/hta24080)

NIHR Journals Library www.journalslibrary.nihr.ac.uk

Plain English summary

Achilles tendon rupture affects > 11,000 people each year in the UK, leading to prolonged periods away from work, sports and social activities. Traditionally, after a ruptured tendon, the foot and ankle are held still in a plaster cast for ≥ 8 weeks. Functional bracing is an alternative treatment that allows patients to mobilise earlier, but there is little evidence about how it affects later recovery.

This study aimed to compare traditional plaster casting with functional bracing for adult patients with Achilles tendon rupture. The participants reported their own recovery using the Achilles Tendon Rupture Score, which consists of 10 questions about symptoms and physical activity (in which a score of 100 is the best possible outcome). We also recorded quality of life, complications, including re-rupture of the tendon, and costs from both the NHS and the patients' perspective.

A total of 540 patients, treated at 39 hospitals, agreed to take part and were assigned by chance to either plaster cast or functional brace. Patients reported their recovery at 8 weeks and at 3, 6 and 9 months.

What did the trial find?

Patients recovered steadily after their injury but were still not back to normal at 9 months. The average Achilles Tendon Rupture Score rose from 38 out of 100 at 8 weeks to 73 out of 100 at 9 months.

Patients who had the functional brace reported that their recovery was a little better at 8 weeks than did the patients having the plaster cast, but there was no evidence of a difference after that. There were 17 cases of re-rupture of the Achilles tendon in the plaster cast group and 13 cases in the functional brace group. There was no evidence of a difference in costs.

In conclusion, this study provides strong evidence that early weight-bearing in a functional brace provides similar outcomes to traditional plaster casting and is safe for patients having treatment for Achilles tendon rupture.

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 3.819

Health Technology Assessment is indexed in MEDLINE, CINAHL, EMBASE, The Cochrane Library and the Clarivate Analytics Science Citation Index.

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) (www.publicationethics.org/).

Editorial contact: journals.library@nihr.ac.uk

The full HTA archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hta. Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: www.journalslibrary.nihr.ac.uk

Criteria for inclusion in the *Health Technology Assessment* journal

Reports are published in *Health Technology Assessment* (HTA) if (1) they have resulted from work for the HTA programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

HTA programme

Health Technology Assessment (HTA) research is undertaken where some evidence already exists to show that a technology can be effective and this needs to be compared to the current standard intervention to see which works best. Research can evaluate any intervention used in the treatment, prevention or diagnosis of disease, provided the study outcomes lead to findings that have the potential to be of direct benefit to NHS patients. Technologies in this context mean any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease.

The journal is indexed in NHS Evidence via its abstracts included in MEDLINE and its Technology Assessment Reports inform National Institute for Health and Care Excellence (NICE) guidance. HTA research is also an important source of evidence for National Screening Committee (NSC) policy decisions.

This report

The research reported in this issue of the journal was funded by the HTA programme as project number 13/115/62. The contractual start date was in April 2016. The draft report began editorial review in June 2019 and was accepted for publication in October 2019. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care.

© Queen's Printer and Controller of HMSO 2020. This work was produced by Costa *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health and Social Care. This issue may be freely reproduced for the purposes of private research and study and extracts (or indeed, the full report) may be included in professional journals provided that suitable acknowledgement is made and the reproduction is not associated with any form of advertising. Applications for commercial reproduction should be addressed to: NIHR Journals Library, National Institute for Health Research, Evaluation, Trials and Studies Coordinating Centre, Alpha House, University of Southampton Science Park, Southampton SO16 7NS, UK.

Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Prepress Projects Ltd, Perth, Scotland (www.prepress-projects.co.uk).

Editor-in-Chief of *Health Technology Assessment* and NIHR Journals Library

Professor Ken Stein Professor of Public Health, University of Exeter Medical School, UK

NIHR Journals Library Editors

Professor John Powell Chair of HTA and EME Editorial Board and Editor-in-Chief of HTA and EME journals. Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK, and Senior Clinical Researcher, Nuffield Department of Primary Care Health Sciences, University of Oxford, UK

Professor Andrée Le May Chair of NIHR Journals Library Editorial Group (HS&DR, PGfAR, PHR journals) and Editor-in-Chief of HS&DR, PGfAR, PHR journals

Professor Matthias Beck Professor of Management, Cork University Business School, Department of Management and Marketing, University College Cork, Ireland

Dr Tessa Crilly Director, Crystal Blue Consulting Ltd, UK

Dr Eugenia Cronin Senior Scientific Advisor, Wessex Institute, UK

Dr Peter Davidson Consultant Advisor, Wessex Institute, University of Southampton, UK

Ms Tara Lamont Director, NIHR Dissemination Centre, UK

Dr Catriona McDaid Senior Research Fellow, York Trials Unit, Department of Health Sciences, University of York, UK

Professor William McGuire Professor of Child Health, Hull York Medical School, University of York, UK

Professor Geoffrey Meads Professor of Wellbeing Research, University of Winchester, UK

Professor John Norrie Chair in Medical Statistics, University of Edinburgh, UK

Professor James Raftery Professor of Health Technology Assessment, Wessex Institute, Faculty of Medicine, University of Southampton, UK

Dr Rob Riemsma Reviews Manager, Kleijnen Systematic Reviews Ltd, UK

Professor Helen Roberts Professor of Child Health Research, UCL Great Ormond Street Institute of Child Health, UK

Professor Jonathan Ross Professor of Sexual Health and HIV, University Hospital Birmingham, UK

Professor Helen Snooks Professor of Health Services Research, Institute of Life Science, College of Medicine, Swansea University, UK

Professor Ken Stein Professor of Public Health, University of Exeter Medical School, UK

Professor Jim Thornton Professor of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University of Nottingham, UK

Professor Martin Underwood Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, UK

Please visit the website for a list of editors: www.journalslibrary.nihr.ac.uk/about/editors

Editorial contact: journals.library@nihr.ac.uk