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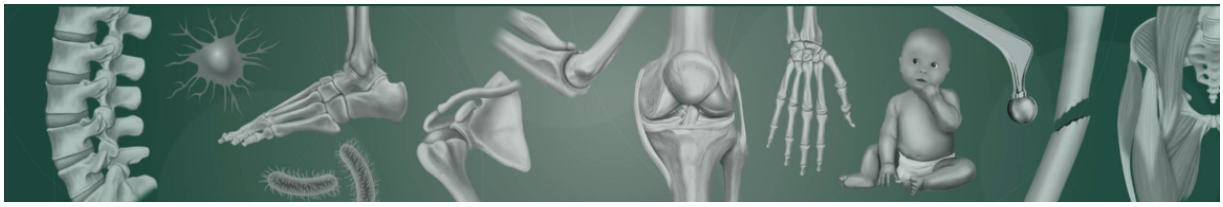

May 2025

Dear NOF members, and readers of Acta Orthopaedica

Highlights

Please find below 2 highlights of recently published articles.
We are happy to publish the first emulated target trial in our journal. The emulated target trial design is a strong method we may use more in the future to strengthen the evidence level from association to causation. Please read the highlight below.

Young NOF (https://www.norf.org/young-nof/young-nof-board/)

Acta's SoMe group will in the future be a reference group for the SoMe editor Aleksi Reito. Each NOF country will appoint a young surgeon to represent their country. They should support the SoMe editor, and be an inspiration to the editor for new, exciting posts.

Acta is the new official journal of the International RSA Society

Acta Orthopaedica is proud to announce that we are the new official publisher of scientific presentations from the IRSA congresses.

Acta is a natural journal for IRSA Society to publish in, as our journal has a long tradition of publishing RSA research. We have many reviewers highly qualified in evaluating RSA studies associated with our journal.

The International Radiostereometry Society (https://radiostereometry.org/) promotes research and development in radiostereometry (RSA) and related sciences throughout the world. The society

promotes the propagation of scientific information and encourages progression the field of radiostereometry in all its aspects, including research, education and clinical application.

IRSA arranges biennial congresses with the presentation of original research. Full manuscripts based on presentations from the congress can be submitted to Acta Orthopaedica and published as an IRSA article.

On behalf of the Editorial team,

Søren Overgaard
Editor-in-chief

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Selected Highlights

Development of ankle and knee range of motion after isolated gastrocsoleus lengthening in children with cerebral palsy: a register-based longitudinal cohort study

Olof Lindén, Henrik Lauge-Pedersen, Gunnar Hägglund, Philippe Wagner

Acta Orthopaedica, 96, 2025, 331–338.

Equinus foot position is a typical deformity in children with cerebral palsy (CP) and is treated using

lengthening the gastrocnemius-soleus complex. Surgical techniques typically lengthen 1) the gastrocnemius at muscular level, 2) its musculotendinous junction, or 3) the achilles tendon. The long-term outcomes of gastrocnemius-soleus lengthening in children with CP have remained unclear why this study is important.

In this study, surgeries were performed at the muscle or musculotendinous junction of gastrocnemius lengthening (GCL); Achilles tendon lengthening's (TAL) were divided into open TAL (OTAL) or percutaneous TAL (PTAL).

This register-based longitudinal cohort study was based on data from the Swedish Cerebral Palsy follow Up Program (CPUP), of 184 children born 2000–2011 who underwent isolated gastrocsoleus lengthening were included. Event limits were defined as ankle dorsiflexion ROM ≤ 0° or ≥ 20° and knee extension deficit ≤ –10°.

Ankle ROM for the entire cohort was –2° preoperatively. Postoperatively, the mean ankle dorsiflexion was 15° in all 3 groups followed by a gradual decline to between 0° and 5° at 10-year follow-up. The mean differences in ankle ROM 10 years postoperatively between open tendo Achilles lengthening (OTAL) and percutaneous tendo Achilles lengthening (PTAL) was –2.3° (95% confidence interval [CI] –7.4 to 2.7), and between gastrocnemius lengthening (GCL) and PTAL –4.4° (CI –10.4 to 1.5). The adjusted hazard ratio (aHR), adjusted for baseline ROM, Gross Motor Function Classification System level, and CP subtype, comparing ankle event rates between OTAL and PTAL was 2.5 (CI 1.1–5.7). GCL was also associated with a higher event rate compared with PTAL, aHR 2.0 (CI 0.85–4.6). The adjusted mean difference in knee ROM at 10 years between OTAL and PTAL was 5.1° (CI 0.4–9.8), and between GCL and PTAL 1.9° (CI –3.6 to 7.6).

The development of ankle dorsiflexion ROM after three typical procedures for gastrocsoleus lengthening exhibited similar patterns with declining ROM during 10 year follow-up. Those CP children who underwent isolated percutaneous achilles tendon lengthening had a slightly lower rate of events than those undergoing open achilles tendon lengthening or gastrocnemius lengthening with respect to ankle ROM. For knee extension, results were associated with considerable statistical uncertainty, and no firm conclusions could be drawn.

The study showed that the development of ankle and knee ROM after isolated PTAL, OTAL, and GCL exhibited similar patterns. Those who underwent isolated PTAL had a lower rate of events than OTAL or GCL with respect to ankle ROM.

Co-editor
Ilkka Helenius

Effectiveness of total hip arthroplasty versus non-surgery on patient-reported hip function at 3 months: a target trial emulation study of patients with osteoarthritis

Amanda D Klaassen, Wiard Jorritsma, Nienke W Willigenburg, Carina L E Gerritsma, Bas L E F Ten Have, Dirk Jan F Moojen, Maaike G J Gademan, Rolf H H Groenwold, Rudolf W Poolman

Acta Orthopaedica, 96, 2025, 310–316.

A good example of advancing from association to causation in cohort studies.

Traditional statistical and epidemiologic methods reveal associations - but not causes. To answer real-world questions like whether a treatment causes an outcome, a formal causal framework is essential {1}. Why, then, do orthopedic researchers with access to rich clinical registries so rarely ask causal questions? In an April publication of Acta Orthopaedica, Klaassen et al. {2} offer a compelling example of what the journal now encourages: using target trial emulation to address questions that randomized trials have yet to answer - often because conducting an RCT was not feasible or ethically justifiable. Klaassen et al. prospectively compared total hip arthroplasty (THA) with non-surgical care for hip osteoarthritis and found that, at 3 months, THA improved hip function by 27 points on the HOOS-PS, while patients without surgery showed no meaningful change (i.e., 7 HOOS-PS points). The between-group difference favored THA, with a mean difference of –33 points (95%CI, –37 to –28) on the HOOS-PS scale {2}.

The first step is articulating the causal question in the form of the protocol of a hypothetical randomized trial that would provide the answer. The protocol must specify certain key elements that define the causal estimands (eligibility criteria, treatment strategies, treatment assignment, the start and end of follow-up, outcomes, causal contrasts) and the data analysis plan. By leveraging treatment variation during the COVID-19 pandemic, the Klaassen et al. study {2} mimics a trial and delivers real-world evidence that THA leads to a substantial, clinically meaningful benefit. The second step is to emulate the protocol components using observational data: identify eligible individuals, assign treatment strategies based on their observed data, define time zero, and follow them until outcome or study end. The analysis parallels the target trial but adjusts for baseline (i.e., pre-exposure) confounders to approximate randomization, assuming relevant pre-exposure variables are accurately measured. It is critical, however, that target trial emulations adopt an intention-to-treat (ITT) approach in their main analyses to preserve comparability with randomized trials and minimize bias from post-baseline events {3}. Deviating from ITT principle, such as conditioning on treatment adherence, risks selection bias, especially in nonrandomized settings. Per-protocol or as-treated analyses may provide complementary insights but should be secondary, applied as sensitivity analyses, clearly justified, and acknowledged as more vulnerable to unmeasured confounding and stronger assumptions {3}.

It is reassuring that these ‘target trial emulation’ principles and methods enhance transparency, strengthen causal inference, and help shift the field from correlation to causation. Klaassen’s findings {2} are consistent with the recent randomized PROHIP trial, in which Frydendal et al. demonstrated that, among patients aged 50 years or older with severe hip osteoarthritis, total hip arthroplasty resulted in significantly greater pain relief and functional improvement at 6 months compared with structured resistance training {4}.

The Acta Orthopaedica statistical editors encourage that more cohort studies are designed using target trial emulation to address causal questions. In these trials, researchers must clearly state their causal question and demonstrate that their study design aligns with this aim {5}.

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