

Clinical Research– Junior Category

Best Poster

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Predictors of Gait Speed Recovery after Total Knee Arthroplasty: A Longitudinal Study

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Aims: In patients with end-stage, symptomatic knee osteoarthritis, although a total knee arthroplasty (TKA) substantially improves self-report physical function, performance-based physical function such as gait performance improves more slowly and gait limitations may persist at one year or beyond post-surgery. As this mismatch was already evident in the first 3 months post TKA, identifying the predictors of gait speed recovery in the acute post-TKA phase could open up opportunities to provide effective preventive care for at-risk patients. The present study aimed to identify the factors associated with acute gait speed recovery post TKA.

Methodology: We performed a prospective longitudinal study of 1,765 patients who underwent primary TKA between July 2013 and July 2015. At 4-, 8-, 12-, and 16-weeks post-surgery, fast gait speed was measured. The predictors of gait speed over time since TKA were identified using multi-variable generalised least-squares modeling.

Result: Lower post-operative quadriceps strength and knee flexion range-of-motion were closely associated with lower gait speed over time (0.084m/s, 0.064m/s, and 0.055m/s change in gait speed per interquartile range change in ipsilateral quadriceps strength, contralateral quadriceps strength, and knee flexion range-of-motion, respectively). Additional strong predictors of lower gait speed included older age (0.11m/s), lower levels of pre-operative Short-Form-36 physical function (0.066m/s), greater body mass (0.046m/s), and the pre-operative use of a walking aid (overall $P < 0.001$). Patients who reported that they limited their daily activities due to a fear of falling also had poorer gait outcomes (0.033m/s and 0.054m/s slower gait speed for "Occasional" and "Often" categories, respectively, vs. "None").

Conclusion: Gait speed recovery post TKA is driven by both physical and psychological factors, suggesting that identifying and treating the underlying physical and cognitive causes of gait limitations may be crucial to optimise functional recovery.